DISTRIBUTED LANGUAGING, AFFECTIVE DYNAMICS, AND THE HUMAN ECOLOGY VOLUME II

CO-ARTICULATING SELF AND WORLD

Paul J. Thibault

What if we thought of language not as a system of symbols to be manipulated, but as a living process by which we more complexly embed ourselves in the social ecology around us and thereby enlarge our capacity to understand and influence it? What if we viewed language in use not as something originating in "minds" or thoughts, but in our biological processes of perception and action, exploring and being emotionally enmeshed in our social and natural environment?

Paul Thibault's *Distributed Languaging* offers a detailed alternative model of how language works, based on an extensive synthesis of recent and classical research and his own sophisticated insights, with numerous detailed examples and analyses. Part of a larger intellectual movement toward post-representational and enactive accounts of how we deal meaningfully with life, this major synthesis opens up many new avenues for research and inquiry.

—Jay Lemke, Professor Emeritus,
City University of New York

What does it mean to become a self in a society of selves? How do we develop the capacity to participate in dialogically coordinated processes of stance-taking in and through our languaging with others? Why is human culture irreducible to subjective structures, individual agency and social interactions as emphasised in post-modernist discourse analytic, social semiotic, and socio-linguistic approaches? Why can't human consciousness be explained in terms of natural processes as emphasised in recent brain sciences? What is human consciousness? One can only be impressed by the vastness and immensity of the scope and depth of Paul Thibault's project as he takes up these tremendous questions and carves out an accessible and convincing exposition that interweaves insights and wisdom from Merleau Ponty's phenomenology of perception, Gibson's affordance theory, and Ingold's process anthropology, among many others, into a theory of "extended human ecology" emphasising process, flows and movement, in-betweenness, and relationality. I highly recommend this book to students and researchers in the language sciences, socio-linguistics, education, anthropology, psychology, neurosciences, artificial general intelligence (AGI), and cultural sciences.

—Angel M. Y. Lin, Professor & Tier 1
Canada Research Chair in Plurilingual and
Intercultural Education, Simon Fraser University

In the 20th century, linguistics was completely dominated by abstract objectivism. Since then a paradigm shift has taken place in both theoretical and empirical studies. The new experience-based network focuses on activities and products of languaging in terms of embodiment, temporality, multimodality, heterogeneities, and multilevel sense-making. This book is the perfect guide to these new trends.

Paul Thibault is one of the world's leading experts in interdisciplinary language sciences, especially spoken languaging. Here he explains the multifarious matters with great clarity. His text is a necessary read for anybody who is interested in following the development of language studies.

—Per Linell, Professor Emeritus in
Communication (Gothenburg University)
and in Language and Culture
(Linköping University), Sweden.

The modern linguistics of *languages*, inaugurated a hundred years ago by Saussure's famous *Cours*, is principally concerned with theorising about the acquisition and use by human beings of the systems of form-meaning pairings that allegedly permit linguistic interaction among those who have such a system as their shared possession. Latterly it has become ever more obvious that such systems are ultimately the result of metalinguistically organising and regulating the decontextualised products of *languaging*, as conducted within an interpersonal network or speech community whose members are constrained by societal norms to aim at linguistic convergence, and that although they undeniably exist as the cultural constructs we call "languages", retrojecting them on to languagers as the basis for their languaging is a fundamental conceptual error. As Paul Thibault puts it in this magnificently learned, wide-ranging survey of the prospects for forging a coherent discipline from multifarious nascent attempts to articulate and analyse the ingredients of a linguistics of languaging, "an understanding of languaging and its place in the human ecology requires a new synthesis of biology, complex systems thinking, cultural psychology, ecology, ecological psychology, the cognitive sciences, the language sciences, social theory, and much more". This book will be compulsory reading for anyone interested in contributing to that synthesis.

—Nigel Love, Department of Linguistics,
University of Cape Town, Rondebosch 7701,
South Africa

In this erudite and provocative book that deepens and extends his decades of discipline-transforming contributions, Paul Thibault cogently argues that relational entanglements connect language, culture, and biology to meaning, action, and affect. His core critique is that a linguistics premised on static formal abstractions is anemic and reductionistic, just as a shadow is to the polychromic figure casting it. In contrast, Thibault ardently argues for a theory of languaging

or communicative action that is multimodal, embodied, and integrated across multiple space-time scales. As we have come to expect from Thibault's prior research, his voraciously broad intellectual horizons allow him to artfully integrate ideas from ecological psychology, linguistics, semantics, philosophy, and distributed language approaches, among others, to create a transdisciplinary paradigm that will inform, and perhaps reform, the epistemogy, ontology, and methodology of the language sciences for decades to come.

—*Steven L. Thorne, Portland State*
University & University of Groningen

This book is by a linguist interested in gifts of imagination that lead to mastery of talk and reading. It will guide parents and teachers to enjoy the creative and emotional expressions of children, how they show purposes, experiences and feelings playfully to friends of all ages. We learn language as a tool, crafted to describe purposes and experiences of objects and events in cultural understanding. Two features of human vitality give us these special powers. From birth we use clever hands and voice to tell others stories of imagination in creative projects. And we seek to do this in love with playful friends, imitating and advising what we want to share. We discover "facts" as tricks to possess and to recall what is discovered by our imagination-in-action, the affordances of "reality" for enjoyment. This descriptive, psychobiological approach helps us accept the gifts of children for companionship with emotion. How we share the joys and dangers of life in our special ecology which has accumulated beliefs through thousands of years, remembered as symbols in work and art. Paul Thibault gives us a compassionate guide for parents and teachers, not just an expert review of the science of speaking and writing.

—*Colwyn Trevarthen, PhD, FRSE,*
Professor (Emeritus) of Child Psychology
and Psychobiology, School of Philosophy,
Psychology and Language Sciences,
The University of Edinburgh

This is a monumental two-volume project that challenges the received wisdom in contemporary linguistics. The Languaging approach, comprehensively and systematically advanced in the book, emphasises the living and experiencing process. Through many varied and real-life examples, the author demonstrates how languaging forms an integral part of the human ecology. It is a major contribution to knowledge, with far-reaching and long-lasting implications for language teaching and learning, human cognition, and human sociality.

—*Li Wei, Chair of Applied Linguistics,*
University College London

Distributed Languaging, Affective Dynamics, and the Human Ecology Volume II

Language plays a central role in human life. However, the term "language" as defined in the language sciences of the 20th century and the traditions these have drawn on, have arguably limited our thinking about what language is and does. The two inter-linked volumes of Thibault's study articulate crucially important aspects of an emerging new perspective shift on language—the Distributed Language view—that is now receiving more and more attention internationally. Rejecting the classical view that the fundamental architecture of language can be localised as a number of inter-related levels of formal linguistic organisation that function as the coded inputs and outputs to each other, the distributed language view argues that languaging behaviour is a bio-cultural organisation of process that is embodied, multimodal, and integrated across multiple space-time scales.

Thibault argues that we need to think of human languaging as the distinctively human mode of our becoming and being selves in the extended human ecology and the kinds of experiencing that this makes possible. Paradoxically, this also means thinking about language in non-linguistic ways that break the grip of the conventional meta-languages for thinking about human languaging. Thibault's book grounds languaging in process theory: languaging and the forms of experience it actualises is always an event, not a thing that we "use". In taking a distinctively interdisciplinary approach, the book relates dialogical theories of human sense-making to the distributed view of human cognition, to recent thinking about distributed language, to ecological psychology, and to languaging as inter-individual affective dynamics grounded in the subjective lives of selves. In taking this approach, the book considers the coordination of selves in social encounters, the emergent forms of self-reflexivity that characterise these encounters, and the implications for how we think of and live our human sociality, not as something that is mediated by over-arching codes and systems, but as emerging from the endogenous subjectivities of selves when they seek to coordinate with other selves and with the situations, artefacts, social institutions, and technologies that populate the extended human ecology.

The two volumes aim to bring our understanding of human languaging closer to human embodiment, experience, and feeling while also showing how languaging enables humans to transcend local circumstances and thus to dialogue with cultural tradition. Volume I focuses on the shorter time scales of bodily

dynamics in languaging activity. Volume II connects the shorter time scales of body dynamics to the longer cultural-historical time scales of the linguistic and cultural norms and patterns to which bodily dynamics are integrated.

Paul J. Thibault, who grew up in Newcastle, Australia, and completed his PhD under Michael Halliday's supervision at the University of Sydney in 1984, is Professor in Linguistics and Communication Studies at the University of Agder, Kristiansand, Norway. He was Hans Christian Andersen Academy Visiting Professor at the University of Southern Denmark, Odense (2015–2018). He has held academic posts in Australia, China, Italy, and Hong Kong. His research interests and publications are in the areas of applied and general linguistics, development, distributed language and cognition, graphics and interactivity, human–animal interaction, human interactivity, learning, multimodality, narrative, social theory, learning theory and teaching and learning in higher education, philosophy of language, philosophy of mind, and systemic-functional linguistics. He is also currently working on two new books entitled *The Linguistic Imagination* and *Language, Body, World: A critical rereading of Hjelmslev*. He is currently on the editorial boards of six international journals. With Mark King, he is developing theoretical frameworks and methodological tools for the study of human learning in tertiary settings using the perspectives of distributed cognition, eye tracking, interactivity, and Multimodal Event Analysis. With Anthony Baldry, he is developing the idea of multimodal ecological literacy. He has a deep interest in ecological questions since he was seven years old. He believes that the predominantly mechanistic theories of human cognition and semiosis need to be replaced by a new account of what it means to be a living, feeling human self in the human ecology.

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Distributed Languaging, Affective Dynamics, and the Human Ecology Volume II

Co-articulating Self and World

Paul J. Thibault

To my parents, Philip Jan Thibault and Sylvia Katherine Thibault, who laid down the pathways for me to follow

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Preface to Volume II

This book is the second volume of the inter-linked study on languaging and its place in the human ecology entitled *Distributed Languaging, Affective Dynamics, and the Human Ecology*. Volume II is the continuation and further development of the arguments laid down in Volume I. The two inter-linked volumes of this study aim to bring our understanding of human languaging closer to human embodiment, experience, and feeling. Volume I focuses on the shorter time scales of the material dynamics of our embodiment and the crucial role of bodily dynamics in languaging activity. For this reason, it is subtitled *The Sense-Making Body*.

Volume II, which is subtitled *Co-articulating Self and World*, integrates the shorter time scales of body dynamics to the longer time scales of linguistic and cultural norms and patterns. The subtitle of the present Volume II puts the focus on what selves do in the human ecology. I show that what selves do and how selfhood is constituted depend on what the human ecology needs them to do. Rather than an individual- or organism-centred perspective, I emphasise the dialectical nature of the relations between selves-in-interaction and larger-scale ecosystem processes. Just as selves participate in processes that enable them to maintain themselves, to develop, and to individuate, so do ecosystem processes. The progression outlined here between the two volumes is not a strictly linear one. The reader will find that discussion of both the shorter and longer time scales occurs throughout both volumes. The aim is to produce an integrated account of the multi-scalarity of human languaging in the human ecology.

Against Cartesianism, there is no such place as "the mind" "in here" in my account. Instead, as persons with selfhood, we have learnt to engage in a range of normative mental practices that are not confined to the inside of the organism, but which enable selves to co-articulate with aspects of their worlds. In utterances, wordings have a phenomenological existence: they depend on an individual's history of participating in culturally embedded languaging activity. How does the phenomenology of wordings stabilise bodily dynamics? Words, grammatical units and relations, and concepts are ideal or virtual "entities" that are ontologically defined by and constituted by ecosystem dynamics that play out over long cultural-historical time scales of language communities.

Languaging activity is first and foremost a mode of co-articulated bodily movement. It has the capacity to move self and others through physical and virtual spaces and modes of extended perception-action. In this way, persons:

1. participate in and accumulate an increasing diversity of social roles and social subjectivities;
2. integrate these role relations and associated experiences to particular inter-individual relational dynamics and their time-bound developmental trajectories;
3. partition or differentiate the world as an increasing diversity of inter-meshed social experiences in the form of an overall non-linguistic yet always social experiential topology;
4. develop skills for locating and tracking over time and place objects, events and persons in this topology and thereby integrating them to the embodied perspectives of the self.

Languaging necessarily entails the interactivity of an embodied and environmentally embedded self in concert both with other selves and with cultural aids, tools, and artifacts. Without throwing the baby of "meaning" out with the bathwater, I argue that the term "meaning" carries a lot of metaphysical baggage that needs to be re-thought. Languaging is not reducible to associations of signifiers with signified or forms with meanings. Meaning is an ecosystem-level property of the multi-scalar interactive and relational dynamics of languaging.

In the two volumes, I seek to develop an account of languaging, not "language" *per se*, that is embedded in and constitutive of ecosystem processes and flows on many inter-related scales of place and time. This approach can be applied to the investigation of the social world and the selves who populate it in the human ecology, including the many forms of learning in which selves participate along their life trajectories. I strive to articulate a view of the languaging sciences that has both explanatory power and implications for our self-understanding of the role of humans in the human ecology. This lays down the basis of a future research program for others to take up and fill in more of the details of how the multiple time scales of languaging relate to each other and therefore how the complex system dynamics of languaging can have consequences that can, potentially, ramify across many scales of ecosystem organisation in the human ecology.

Kristiansand, April 2020

Acknowledgements

Introduction to Volume 2

1. Affective and cognitive dynamics and the Distributed View of languaging

Cognitive science since its inception in the 1940s was deeply influenced by the idea that human cognition works pretty much in the same way that computers process and store information (Kay, 2000). Since the 1980s, developments in connectionism, distributed cognition, ecological psychology, neuroscience, complex systems theory, and social robotics have increasingly demonstrated the shortcomings of the computational view of mind. The notion that thinking is based on the internal manipulation of symbols was increasingly questioned by a new generation of researchers in the cognitive sciences, philosophy of mind, and so on. These developments have also made it possible to move beyond models of language based on codes, abstract systems of form-meaning pairings, and the processing of abstract forms (e.g., verbal patterns). The theory of the extended mind developed by Clark (1997, 2008), the theory of distributed cognition developed by Hutchins (1995, 2010) and the theory of the embodied enactive mind (Varela, Thompson, & Rosch, 1991) were early decisive steps in this direction. These theories put the emphasis on agents' cognitive dynamics and on the embodied-embedded nature of these cognitive dynamics. A Distributed Cognitive System (DCS) consists of a network of persons who interact with each other and with relevant artefacts and technologies in order to perform cognitive and learning tasks that could not be achieved by any of the components of the DCS on their own (Clark, 1997, 2008; Hutchins, 1995, 2010). A DCS thus has cognitive properties that are irreducible to the properties of its component parts. Cognition is distributed between brains, bodies, and aspects of the physical, technological, and cultural worlds of persons (Clark, 1997; Hutchins, 1995, 2010; Ross, 2007).

How can we re-think language in the light of this new thinking? On this view, languaging is constituted and enacted in interactive loops between brains, bodies, and the external environment rather than internal mental states and their representations or abstract verbal patterns, as in current discourse-analytical and form-based approaches. In many respects, linguistics has been influenced by positivistic criteria of data collection and analysis that impose strict limits on the object of investigation and how it is defined in accordance with the "verification principle"

established by the logical positivists in the 1920s and 1930s (Payne, 1997: 316). Accordingly, "language" is homogenised as formal abstracta that define language according to the supposed verifiability of observable, form-based criteria. "Language" so defined is also de-somatised.

A further consequence, as discussed above, is that language and the way people experience it have been redefined in terms that are determined by the highly specialised categories of the linguist that disregard the very dynamical bodily processes that animate and sustain languaging between persons. For example, the central role played by body movement in the construction and maintenance of languaging is ignored. The movement of the articulators in the production of particular phonetic gestures is seen as no more than a biomechanical operation that serves as the vehicle for the communication of linguistic forms, taken as the real concern of linguistic study (Fowler, 2014). Linguistics has neglected other theoretical traditions that have shown the fundamental role played by bodily movement in organising human experience. Schilder (1978/1935) has shown that body movement is an important locus of experience and has a fundamental role in the construction of the body-image: body dynamics articulate the relationship between movement and body-image.

Languaging cannot be localised in either the brain or in text: instead, it is distributed between brain, body, and environment. The emphasis in the distributed view is on living, moving, and feeling human individuals who are inter-connected with each other and with cultural artefacts and technologies rather than being mediated by abstract systems and codes (Cowley & Love, 2006). Instead, human sociality is defined by and is meaningful in relation to how the flow of activity is integrated with what has gone before, what is going on now, and what is expected or anticipated to happen next. The Distributed Languaging view emphasises how human agents coordinate their actions with those of others in the service of common projects rather than shared semiotic and/or social codes or systems that are said to mediate their interaction.

The real challenge, then, is to investigate and to understand how socio-cognitive-affective assemblages of persons, their bodies, artefacts, technologies, tools, and cultural patterns and norms help people to organise their individual and collective activities in novel ways—ways that enable them to organise their actions intelligently and ethically as agents who can evaluate and intervene in events and influence and guide them. On this view, persons are not only shaped and constrained by history, they are *in* history and are shaping it individually and collectively on, potentially, many different scales of place and time. I use the term *languaging* to emphasise that there is no such thing "language" in the sense of a determinate code or system that mediates human activity and which can be defined as a set of determinate form-meaning relations, as in most of current linguistics. This view removes "language" from living, feeling, acting persons and turns it into systems of form-based abstracta amenable to mechanistic processing by information processors rather than living persons engaging with, acting on, and moving in their worlds.

People are said to "use" language, and this very formulation both sustains and propagates the "general fragmentation" (Bohm, 1983/1980: 28–29) of the way we

look at our relationship to the world that we are immersed in, i.e., as if this relationship corresponded to the Actor-Action-Patient semantic model that is found in many languages (Bohm, 1983/1980: 29). The term "languaging" points to the processual, verb-like qualities as distinct from the noun-like qualities of the term "language". The "person-uses-language" view thus treats "language" as a separate entity that is the recipient of the actions emanating from another entity, the Actor. If, on the other hand, we entertain ideas like "languaging is going on" or "they are languaging" where "languaging" is more readily considered to be a continuous movement between mutually dependent agents who merge with and are enfolded in each other's body dynamics, a different view is possible. In order to understand this view more clearly, it is important to highlight the integrated biosocial nature of languaging.

2. The multi-scalarity of languaging

The distinction between first-order languaging and second-order language enables us to see that languaging straddles biology and culture and belongs to and inhabits both of them (Cowley, 2011; Love, 1990; Thibault, 2004a, 2004b, 2011a). First-order languaging is grounded in bodily dynamics and circumstances, but is constrained by second-order cultural processes and traditions deriving from longer, slower cultural-historical time scales. The distributed languaging view has developed the distinction between first-order languaging and second-order language to explain the relationship between the diverse time scales that are integrated in human languaging (Love, 1990; Thibault, 2011a, 2011b, 2011c, 2014a). The distinction between first-order languaging and second-order language may suggest to the reader that there are just two time scales. In reality, languaging is multi-scalar, involving many more scales, including, most crucially, intermediate scalar levels of self-organisation. One useful tool for thinking about the multi-scalarity of languaging is the three-level scalar hierarchy view developed by Salthe (1993: 36–52) in the field of biology. Salthe's construct is generaliseable to hierarchical systems of all kinds. The three-level scalar hierarchy provides a way of breaking a complex phenomenon down into a triad of constituent levels of organisation that enable us to contextualise the relations between levels and between the units and relations within levels.

The relationship between first-order languaging and second-order language can be re-interpreted in terms of three-level scalar hierarchy thinking. Following the logic of the three-level hierarchy view, the middle level of any given triplicate of levels is the focal level (i.e., level N). Second-order language can thus be seen as a newly emergent scalar level of organisation between lower scalar embodied first-order languaging and high-scalar ecological configurations and constraints, as shown below:

N+1: Ecological Relations and Constraints: cultural-historical conventions and
        patterns
N: Second-order language

N-1: First-order languaging events

The distinction between first-order languaging and second-order language can be explicated in terms of three-level hierarchy thinking. Second-order language is an intermediate level N that emerges between levels N-1 and N+1. The emergence of lexicogrammatical and phonological pattern on level N occurs in the context of already existing lower scalar and higher scalar levels. In sensitising to higher-scalar ecological constraints and affordances, the embodied dynamics of persons-in-interaction give rise to a newly emergent intermediate level—second-order language—of lexicogrammatical and phonological pattern that serves to scaffold persons' attempts to coordinate with each other. Moreover, the scalar levels can be multiplied and extended in either direction to reveal the relations above and below whatever level is focal. Below we see how first-order languaging events are focal on level N. Lower scalar body and neural dynamics and affordances on level N-1 are the enabling conditions, whereas the higher scalar, longer, slower processes of second-order conventions (N+1) and ecological relations and constraints (N+2) constitute boundary conditions and constraints, as shown below:

N+2: Ecological Relations and Constraints: cultural-historical conventions and
     patterns
N+1: Second-order language
N: First-order languaging events
N-1: Body and neurohormonal dynamics and affordances

The focal level is the level on which the processes that represent the focus of interest in a particular analysis occur. In the present example, level N consists of dialogically coordinated utterances, constrained by lexicogrammatical units, such as words, phrases, clauses, and so on. Level N in this analysis is the event or occasion scale of the situations in which people interact with each other and with aspects of the situation. However, the lexicogrammatical patterns that are observable on level N are themselves made possible by and depend on processes on level N-1. The neuromuscular and neurohormonal patterns of activity on level N-1, as Lemke (2000a: 277) points out, constitute affordances for processes on level N. By the same token, level N processes are constrained by longer time scale processes on the next higher level N+1. The emerging pattern on the higher levels is able to influence the probability of patterns and processes on the next level down, thereby acting as a set of boundary conditions or constraints on the lower levels.

Embodied first-order languaging between persons and other aspects of situations in the here-and-now takes place on the intermediate time scales of specific co-orchestrated activities and occasions that enact particular situations. It draws on micro-level or pico scale neural and bodily dynamics of biological individuals and meshes or integrates these with artefacts, cultural patterns, norms, technologies, tools, and values that derive from cultural-historical time scales. Languaging

therefore integrates embodied selves on the time scales of interactive events to both lower-scalar biosemiotic dynamics and to higher-scalar cultural-historical ones.

3. Languaging in the human ecology

Is an ecological account of languaging possible? If it is, what would such an account look like? The language sciences have made it difficult to answer these questions because they have separated "language" from how people, in their languaging, coordinate in socially organised ways though the inter-individual patterns created by their interacting bodies. In failing to accord a central place to inter-bodily and environment interactions, "language' is reduced to disembodied abstract forms that people "use". Such accounts are unable to provide an account of languaging as embodied, dialogically coordinated interactivity between persons in which wordings play a role. First-order languaging is therefore grounded in person-environment interactions, but is irreducible to the situated and the embodied *per se*. It necessarily draws on and evokes in the real-time interactivity of languaging agents meaning potentials and cultural patterns that are nonlocal and which derive from the longer, slower cultural-historical scales of a population of languaging agents. By the same token, wordings that transcend or float free of the dynamical properties of vocal tract and other bodily activity are a fiction of little explanatory value.

Gibson (1986/1979), Reed (1996), Swenson (1998), and other ecological psychologists have drawn attention to the principle that living beings and their environments constitute a single, unified system, which Gibson formulated as the mutuality of animal and environment. Intentionally directed activity, including human languaging, on this view, is seen as not contradicting the laws of physics, but is a specific manifestation of them (Swenson, 1998: 174). Swenson (1998: 174) points out that the directedness of intentional systems is in certain important ways distinct from rivers that flow downhill, heat that flows down a temperature gradient, or tornadoes, dust devils and Bénard cells that cease to exist when local potentials that provide their source of energy are extinguished or removed. These are vague precursor systems of intentional systems. I use the term 'vague' to denote a less specified, less determinate system (Salthe, 1993: 142–143). All of the above are also examples of far-from-equilibrium systems. They all require a continuous flow of energy into the system to maintain it and thus to ensure that it does not go to equilibrium. The examples listed above have agency though they lack the more specified, more determinate property of intentionality that we associate with many living systems. Moreover, they are self-maintenant systems, but they are not *recursively* self-maintenant ones (Allen & Bickhard, 2011: 108). The former contribute to their own self-maintenance through their own activity, but are at the mercy of external forces.

Recursively self-maintenant systems, on the other hand, have the capacity to "select amongst different types of activity that will be appropriate to changing conditions in the environment." (Allen & Bickhard, 2011: 108.) Languaging

constitutes a vast space of interaction potentials or meaning potentials that are constrained in situation-relevant ways so that appropriate selections are made effectively (Halliday, 1978). This means that potentially many different solutions can be selected from to achieve the same goal. Berthoz (2017/2013) proposes that the notion of vicariance allows for the substitution of one solution with another in this sense. Languaging massively draws on the principle of vicariance to yield complementary possibilities that allow for flexible, adaptive solutions to the coordination problem. Languaging is whole-body sense-making that is sensitive to and constrained by both local and nonlocal information potentials that specify and sculpt the dynamics of languaging into task-relevant co-articulations of neural, bodily and environmental dynamics that constrain and shape action in ways that are relevant to a particular activity or task.

The ability to switch from one action selection to some other points to a crucial difference between non-living systems and living systems. A further important difference, as Swenson (1998: 174–177) shows, is that intentional systems constitute their "autocatakinesis'" by accessing and feeding off nonlocal potentials that are "discontinuously located in space-time" (Swenson, 1998: 175). It is this capacity which explains the "dramatic increase in space-time dimensions" (Swenson, 1998: 175) of intentional systems. Recursively self-maintenant systems are normative (Allen & Bickhard, 2011: 108). Systems of this kind—all living systems—have an interest in and are compelled out of ontological necessity to engage in activities that are functional in contributing to the recursive self-maintenance of their own existence. In humans, languaging and the functions it serves human agents is a complex, diachonically emergent set of capacities and skills to this end. Languaging and learning how to language is a process of enskilment that enables selves to co-articulate themselves with the multifaceted human ecology in which they live their lives with others. Languaging is a process of movement, growth, and becoming of selves who move along together in the processes of caring for each other and in so doing they make and maintain the human ecology. The development and individuation of selves is, as Parisio di Giovanni puts it, "a kind of journey through different ecosystemic conditions of communication, each one dictated by external circumstances, tied not only to age, but also to other factors." (1992: 172; my translation). Persons can select amongst many different types of linguistic and other activity in accordance with changing circumstances and environmental conditions. This is so in the sense that the human ecology affords multiple and varied resources for interacting with its potentialities and thereby for discovering and using meaning and value that are functional in the recursive self-maintenance of persons.

The recursive self-maintenance of human persons crucially depends upon their participating in a wide range of languaging practices in the communities in which they live. Bickhard's term recursive self-maintenance, in referring to the capacity of the agent to select amongst different types of activity in response to variable environmental conditions, enables us to focus more clearly on the wide range of skills and capacities that languaging agents must develop in order to be able to participate in an increasing range of more complex socio-cognitive domains

together with the interactive capacities and skills to initiate, support, and sustain their participation. Given that humans are not born persons, and that personhood and selfhood are diacronically emergent outcomes along developmental and individuation trajectories of our participation in the languaging practices of one or more communities, it is reasonable to argue that languaging plays a central though not exclusive role in the attainment of and the ongoing recursive self-maintenance and self-individuation of human selves. The idea of recursive self-maintenance entails the development of the requisite skills and capacities that will prepare agents for and leave them open to their participation in increasingly diverse and more complex domains of interactivity and sociality.

Let's consider a simplified linguistic example to illustrate the basic point. The distinction between the "indicative" and "imperative" modes constitutes a selection between two ways of responding to and interacting with changing environmental conditions in conjunction with changes in the internal milieu of the person. Let us say that my attention and interest is aroused by some external event that I perceive and that I respond to by pointing in the direction of the perceived event and saying to my companion, "That looks interesting". In this case, my being affected by the event and my assigning value to it by virtue of it capturing my interest and attention constitutes a change in the current me-environment interaction. My utterance communicates my attention to and interest in the event and seeks to coordinate my interest with that of my addressee. Imagine, on the other hand, that I desire a cup of tea and, on being seated in the bar, I say to the barista, "Make me a pot of tea, please". In this case, my desire and corresponding bodily feelings prompt me to say something—my imperative utterance—that is intended to affect the barista in a certain way and thus to recruit him or her to my cause—getting a cup of tea.

Human selves-in-interaction are living systems that select from repertoires of action initiatives and responses and socio-cultural patterns that index aspects of our selfhood, e.g., the identities we articulate in and across situations. Moreover, like all living systems—animal and plant—we are forever on the move as we seek energy gradients to tap into (Vol. I, chapter 1). In my simplified example, I am able to select between two different kinds of linguistic action depending on my detection of specific environmental and internal (e.g., bodily) conditions and changes in these. If I notice something interesting, I can indicate it by commenting on it to my addressee. If I want a need or desire to be satisfied, I can ask my addressee to do what is required to satisfy my need or desire. The two kinds of linguistic action are, depending on my understanding of the current situation, alternative ways of acting appropriately and competently in the situation that I perceive to be in operation. In the human world, the two linguistic actions are alternative means of contributing to my recursive self-maintenance as a person in the two situations. I can select between one or the other depending on and in response to my perceptions of and feelings about changing environmental circumstances. Importantly, my response in both cases also entails internal processes and changes in these. It is by means of this internal activity and my ability to monitor it at least to some extent that I can actualise one or the other selection. My

internal activity, and changes in this activity, is itself a response to changing conditions and circumstances, both external and internal, that other subpersonal processes (perceptual, neurohormonal, etc.) are sensitive to. The affective dynamic I have sketched here cannot be explained with reference to external criteria alone. Crucially, persons have intrinsic internal complexity that enables them to effect changes in their responses to changing internal and external conditions. Without going into any linguistic detail, the two options outlined above are examples of the emergence of normative linguistic function that may be appropriate or not in a given environment.

All of our mental activities, including our languaging, have their origins in the self and are extensions of its desire (Brown, 2005: 29). The term "mental" does not refer to a hidden private domain, but to all of our sense-making activities. Desire is anticipatory and directs and animates from within the self's actions such that the future participates in the formation of one's present actions and perceptions. Persons neither "represent" a pre-given world "out there" by means of internal mental models and representations that mediate between the organism and the world nor do they simply impose pre-given categories of the mind on a meaningless external world. Instead, self and world are two poles of a diachronically emergent relational dynamic that is interactively constituted and maintained by the recursive operations of continually iterated action-perception cycles whereby the self-world relation is constituted. Languaging builds on and extends this basic fact. The world that we know is interactively constituted. However, this does not mean either that the world "out there" is simply a subjective or even solipsistic construction of the self's mental categories or that we can never know what lies beyond our own mental categories.

The point is that action-perception is a means of interactively exploring and constituting the world through the actualisation of its potentialities and, when necessary, of being corrected by the feedback that we receive from the world, including other persons, when we explore it. In this way, we develop perceptual, conceptual, and semantic categories that simultaneously embed us in the world on the basis of histories of successful past interaction outcomes at the same time that they enable us to develop approximations of the world "out there" that can be corrected and improved as perception is refined and extended into new domains, or is corrected in the case of error (Thibault, 2012a: 686–689). Languaging builds on action-perception and is a further extension of it rather than something totally different that transcends action-perception. Languaging, like perception, is not an "interface" that stands between self and world. Instead, it is a way of acting on and of interactively constituting focused ways of attending to the world and of shaping and directing future interaction potential. Languaging is both a means of interacting with and differentiating the non-linguistic affordances of the world and is itself a second-order system of linguistic affordances that persons interact with and which function to guide, coordinate, and enact extended modes of action-perception that enable persons to act on and affect the world in targetted ways, including, of course, other persons.

Languaging can and often does serve to keep basic physiological parameters within required limits and to satisfy basic metabolic needs such as hunger and thirst. If I am hungry, I can ask for something to eat. When I ask for a pot of tea, I may well have felt a bodily craving for my morning cuppa as I emerge half awake from uneasy dreams, but my imperative utterance, in seeking a solution to my bodily craving, which is itself integrated to social situations and their norms, also enacts an empirical social "I". It is by means of the empirical "I" that I present myself as a social self that is able to negotiate social norms and satisfy local standards for the actualisation and presentation of my competency as a social self. The social self so displayed and enacted must be in possession of the skills and capacities required to be open to the potentialities of the situation. He or she must be able to display the self as one who is competently able to deal with these potentialities and changes in them as the situation unfolds. Physiological needs and motor-sensory interaction with the physical world are, in languaging, integrated to the requirement that humans interact with and recursively self-maintain and recursively self-individuate themselves as persons with selfhood in their social and cultural worlds.

1   Perçaction

There are then, in short, divers *tones* of mental life, or, in other words, our psychic
life may be lived at different heights, now nearer to action, now further removed
from it, according to the degree of our *attention to life*.

Henri Bergson, *Matter and Memory*,
1911/1896, p. xiv; italics in original.

1. Introduction: languaging as extended
action-perception system

In this chapter, I develop the idea, first proposed by Robert Verbrugge (1977,
1980, 1985) in the Gibsonian tradition of ecological psychology, that human lan-
guaging enables people to attune to environmental structure and to undergo forms
of virtual experience that are not supported by environmental stimulus informa-
tion in the current environment. According to Verbrugge, languaging constrains,
supports, enables, and guides forms of virtual action, perception, and experience:

> language leads us to experience events, to view them from fixed and moving
> points of observation, to move about in social and geographic environments.
> These imaginal experiences are similar in quality to experiences we have in
> nonimaginal contexts. This mode of experience will be called *virtual percep-
> tion* (*action*), on rough analogy to the virtual experiences of optics, in each
> case one moves from the real to the virtual.
>
> (Verbrugge, 1977: 93)

Verbrugge further writes:

> language can evoke and guide virtual experience. It activates and constrains
> an attunement to structure, a structure that may be very different from that
> specified by the immediate physical environment.
>
> (Verbrugge, 1977: 94)

The virtual modes of action, perception, and experience that are constituted in
and through human languaging are activated and supported by intrinsic functional

constraints that perceivers detect and make use of in the affordance layouts of utterances and texts, i.e., their linguistic pattern. Lexicogrammatical differentiators are the means for achieving an attunement with some aspect of the world that is meaningful to the interactants and observers whose perspectives are coordinated by the utterance. On this basis, I argue that languaging is a form of ecologically extended action-perception for attuning to, acting on, exploring, and discovering one's world rather than a system of symbols that stand for something else. The French neologism *perçaction* in the title of this chapter was coined by French neurophysiologist Alain Berthoz (1997) to draw attention to the ways in which action and perception are a unified system that is deeply grounded in our neurophysiology. Languaging builds on this foundation and extends it, as I argue in this chapter. In doing so, we can dispense with the idea that words are "symbols" that "stand for" or substitute for something else.

   Bolinger (1949: 54) pointed out that the doctrine of the arbitrariness of the linguistic sign is based on the idea that words, etc., are surrogates for experience. On this view, words are representational stand-ins for experiences or surrogational substitutes for the things they stand for (Harris, 1996: chap. 9). Languaging, in my view, does not stand for something else. Instead, it is a diverse set of activities and practices for activating, enabling, promoting, and regulating in individual persons and in social groups flows of activity and experience even in the absence of environmental stimulus information to support that experience except the stimulus information that is made available by phonetic and related gestures and text.

   Bolinger (1949) critiqued the idea that the relationship between form and meaning is arbitrary in the following terms:

> One of the cardinal assumptions of linguistics is that the signs of language are, by and large, not appropriate to the meanings that they convey. I do not mean that linguists have assumed that signs are inappropriate , but only that there is no bond between the sign and its meaning which could not as well be dissolved in favor of some other sign with the same meaning: *perro* is a historical accident that has perpetuated itself, but has no more intrinsic right to symbolize "perro" than has, say, *becerro* or *alma*.

> The assumption of the arbitrariness of the sign has had its causes and its effects. To a great extent I suspect that it was born, or at least confirmed, at the hands of the comparativists, who observed the series *perro-dog-can-chien-hund* etc. and concluded that since forms differing as radically as any set of forms can differ in their phonetic content are yet able to convey a meaning with equal aptitude, the question of aptitude is irrelevant and resemblances for the most part are to be studied as indications of related origin or contact, not as suggesting any kind of psychological or semantic necessity.
>
> (Bolinger, 1949: 52)

Bolinger (1949: 54) pointed out that the notion of arbitrariness is based on the idea of the "substitutive" or "vicarious" function of words. On this view, words

stand for or replace experience. Instead, words and more generally utterances are embedded in and are an intrinsic part of our embodied experience as are our *per-çactions* of any other object or event in the world:

> we see that the "substitutive" or vicarious function of words is substitutive only at first. We are accustomed to regarding the reaction of mouth-watering at sight (visual image) of a lemon as "natural", and the same reaction on hearing (auditory image) the word *lemon* as "arbitrary". But once the activity of the word has been integrated into the individual's system the reactions based upon it are as "natural" as any other. The sound *lemon* becomes a part of the sensory complex 'lemon' just as the sound of a bell, heard frequently (but not always) when other bell-stimuli are presented, becomes part of the sensory complex 'bell'. The "form" *lemon* is now a part of the "meaning" "lemon", and may be abstracted from it to represent it, on the basis of the part standing for the whole, just as a pictorial image or a smell or a taste may be abstracted from the whole and used to represent it.
>
> (Bolinger, 1949: 54)

The integration of the word *lemon* to the individual's sensory-kinetic experience of lemons allows the individual to use the word *lemon* to creatively simulate virtual experiences of lemons. The integration of the word *lemon* to the individual's sensory-kinetic experience of lemons means that one element of the "sensory complex" can serve to activate an awareness of or an experience of lemons that is not dependent on the pick-up of perceptual stimulus information about lemons in the here-and-now. We can use one aspect of the overall, now integrated, sensory-kinetic complex /LEMON/—the word *lemon*—to create or to activate a /LEMON/ experience. The gesture-sound-wording complex *lemon* is a vicariant in the sense that it bypasses and/or inhibits direct perception of environmental actualities and calls on a repertoire of sensory-kinetic invariants belonging to the overall /LEMON/ complex. The person has a repertoire of previously experienced encounters with lemons that they can flexibly draw on in response to a changing environment.

The word *lemon*, now integrated to the /LEMON/ complex, transforms the gesture-sound-wording complex into an experience of (some aspect of) lemons. The gesture-sound-wording complex *lemon* directs attention to the sensory-kinetic invariants associated with the /LEMON/ complex and activates and supports an attunement to invariants of the /LEMON/ kind without the constraints of the stimulus flux (Gibson, 1986/1979: 256). The word—the gesture-sound-wording complex—*lemon* has the functional capacity to direct an attunement to non-perceptual forms of awareness that bypass the constraints of the stimulus flux. The perceiver is sensitised to sensory-kinetic invariants that can be extracted from the stimulus flux and attuned to without engaging in the pickup of environmental information by means of perceptual exploratory activity. The integration of the word *lemon* to the overall /LEMON/ complex means that this word enables the individual to bypass perceptual exploratory activity so as to create or emulate virtual experiences of the /LEMON/ kind, which are enabled and supported by the linguistic pattern detected in". The entire phrase should read as follows: " which

are enabled and supported by the linguistic pattern detected in the sensory-kinetic dynamics of vocal tract activity.

The externalist view that a linguistic or other sign is an arbitrary pairing or association of an abstract form with an abstract meaning fails to account for the expressivity of the body. Above all, it fails to account for the integration of signs to embodied experience. Dynamic-vectorial, rhythmic, and physiognomic properties inhere in the body movements of living organisms just as they may also inhere in a wide variety of other objects and actions that humans interact with (Werner & Kaplan, 1984/1963: 21). The idea of a coded relationship between a form and a meaning presumes that the former is already formed and that expressive form and meaning or referent are correlated with each other.

Instead, dynamical, vectorial, rhythmic and other physiognomic properties of bodily expression require an intentional act of symbolisation to produce the symbolic relationship by bringing to the fore "latent expressive qualities in both vehicular material and referent that will allow the establishment of a semantic correspondence between the two entities." (Werner & Kaplan, 1984/1963: 21). The expressive potentialities of organismic/physiological states and processes are grounded in sensory-kinetic experience. The schematising or form-creating activity of the organism is intentionally directed outwards, beyond the self, to phenomena in the world. Both form-creating activity and that which this activity is directed towards are emergent from and reciprocally shaped by the same form-building sensory-kinetic matrix (Werner & Kaplan, 1984/1963: 23–24).

Werner and Kaplan wrote about the "dynamic schematizing activity" of the organism as the basis of symbol formation when the child undergoes a dynamic phase shift in his or her development from the pre-symbolic world of thing-as-action to a symbolic world of objects-of-contemplation as follows:

> the (pre-symbolic) world of the very young infant is primarily one of things-of-action, articulated in terms of affective-sensory-motor patterns. Soon, however, the directedness towards knowing begins to emerge, and the world undergoes a most significant transformation from things-of-action to objects-of-contemplation. In this process aimed at the knowing of objects, the growing child makes use of some of the specific sensory-motor and affective response patterns by which he had articulated the things-of-action surrounding him; these patterns thus undergo a *shift of function*. They are now utilized for allowing the child to become aware of the characteristics of objects: in other words, they become the means by which he comes to know objects, to reflect on them, to present them to himself. Clearly related to this shift from outward reaction towards inward reflection upon objects is the *internalization* of sensory-motor patterns; in other words, objects are given form, structure, and meaning through inner-dynamic schematizing activity which shapes and intertwines the sensory, postural, affective, and imaginal components of the organismic state.
>
> (Werner & Kaplan, 1984/1963: 18)

The primordial expressive matrix, consisting of affective, kinaesthetic, postural, kinesic, proprioceptive, and other elements, is shaped and directed by the inner

dynamic of the schematising activity—a dynamic that is deeply and non-arbitrarily grounded in embodied experience.

Seeing a lemon, picking it from the lemon tree, holding a lemon in one's hand and feeling its texture and shape, biting a lemon, tasting it, cutting it with a knife, eating it, squeezing lemon juice on fish, making lemon juice, being stung by its bitter quality, drinking cold remedies made from lemon juice by one's mother, and so on, are all aspects of encountering lemons. Initially, they are all separately partitioned clouds in Thelen's terms. At first, the separate semantic spaces are highly constrained and tied to specific situations. Using Thelen's (1995: 96–98) cloud model of how abstract concepts are built up from the coalescing of diverse concrete experiences, we may say that early infant articulatory acts access a small, constrained solution space of separate clouds. Experiences so accessed are disparate and not integrated. Picking a lemon from the tree is not related to squeezing its juice on one's fish, and so on.

As Thelen explains, with widening experience, the semantic spaces expand and begin to intersect to the point where they overlap (Thelen, 1995: 97). At this point, superordinate or schematic categories emerge on the basis of more abstract understandings. The gesture-sound-wording complex /lɛmən/ thus affords forms of silent mental rehearsal that are not dependent on the pick-up of environmental stimulus information about lemons in the immediate environment. This development makes possible forms of incipient action that do not require direct sensory-kinetic encounters with actual lemons. Incipient action may include talking about lemons, thinking about lemons, planning to buy them at the market, and so on. However, these incipient actions are always grounded in bodily experiences of real lemons just as the gesture-sound-wording complex /lɛmən/ will always evoke the sensory-kinetic complexes in which this experience is grounded in individuals through the coupling of sensory-kinetic experience of lemons with the gesture-sound-wording complex /lɛmən/.

The "sensory complex" (the sensory-kinetic invariants) invoked by the gesture-sound-wording complex /lɛmən/ is a structural change within the expressive matrix of the person just as the gesture-sound-wording complex itself is to the extent that it is difficult to separate the one from the other. From the perspective of an external observer, the listener may appear to be the recipient of an external sound which he or she then processes as an input. On this view, external sound and internal processing are distinct and separate stages. However, Bolinger points out that the gesture-sound-wording complex, once it is integrated to the individual's system, becomes part of the sensory complex that it evokes. From the internalist perspective of the agent, gesture-sound-wording complex and sensory-kinetic complex are not separate, but fully integrated. What the linguist may wish to isolate and describe as the agent's "linguistic behaviour" is in fact always linked in complex circular patterns of causation to other systems—perception, kinaesthesia, action, memory, attention, as well as other noncognitive and nonlinguistic functions such as breathing, and so on.

The gesture-sound-wording complex /lɛmən/ is a higher-order or compound sensory-kinetic invariant that becomes embedded in the individual's embodied engagements with the world. The gesture-sound-wording complex may be

metonymically disengaged from the sensory complex. It can then serve apperceptively to evoke in other contexts with other persons similar though never identical couplings of articulations of *lemon*, perceptions, actions, affective and intentional interpretations, and so on. The resulting sensory-kinetic complexes, which include the gesture-sound-wording complex *lemon*, are naturalistically grounded in agents' bodily experiences. The intrinsic functional constraints of the gesture-sound-wording complex *lemon* therefore constrain and enable an attunement to experiences of the /LEMON/ kind in actual and virtual contexts. The distinction between actual and virtual contexts is one of degree, not kind. In situations in which actual lemons are being talked about, the word *lemon* sets up a semantic frame of reference that establishes coherence among the different sensory modalities. The word stabilises the multiple degrees of freedom of these modalities and therefore sets up a stable semantic posture for orienting to and coordinating with the object—for example, the lemon—that one is attending to.

The word *lemon* is a second-order linguistic affordance that makes available information and provides indications as to the affordances of the environment object or event and how to interact with it. The word *lemon* can also serve to activate, guide, and support an attunement to sensory-kinetic invariants pertaining to the /LEMON/ complex or some aspect of it without the support of the stimulus flux. In such cases, the word serves to evoke virtual experiences of some aspect of the individual's /LEMON/ complex, as explained above. In both cases, utterances enable, guide, and support top-down forms of attentional control whereby persons, in and through their dialogically coordinated languaging activity, can move through actual and virtual environments in ways that free them from the stimulus flux at the same time that control is shifted from locomotion through the physical world to intellectual movement through virtual worlds and hybrid physical-virtual worlds that is stabilised and guided by the I-here-now deictic frame of reference of languaging agents (Vol. I, chap. 4, section 4).

Words both coordinate inter-individual activity as well as the changes in the CNS of the participants—changes that modulate and maintain the forever changing correlations between the "inside" and "outside" of the organism. Furthermore, words are not code-like. Words are not encodings (inputs) of meanings (outputs). They are gesture-sound-wording complexes that are embedded in the individual's sensory-kinetic matrix. By the same token, words enable and support more complex regulatory capacities with respect to the sensory-kinetic matrix. Languaging is an ecosystemic expansion of interactive competence with respect to action-perception that affords increased interactive openness and sociality.

The nervous system does not encode information from the outside world. The stimulus does not contain a message that is decoded by the brain. Freeman (1995: 66) shows that the sensory cortices at the interface between brain and the external world work very differently from the encoding/decoding model. First, the stimulus is transduced by the receptor layer into a pattern of action potentials and "then into the cerebral cortex, through the thalamus to cortex" (Freeman, 1995: 66). At this point, the stable pattern destabilises the entire sensory cortex so that the previous state, expressed in a spatial pattern of activity, is now expressed in a different

spatial pattern, which is nonlinear and chaotic. Non-linear and chaotic patterns, Freeman explains, create novel patterns (Freeman, 1995: 67).

Freeman emphasises that the new pattern is "triggered, not selected, by the stimulus, and it is determined by prior experience with this class of stimulus." (1995: 66). The stimulus—the vocal tract gesture and the auditory stimulus information it causes to be propagated through the medium of the surrounding air—is not the encoding of a pre-existing message that is transmitted to the listener, who in turn decodes it. Rather, the new pattern that is triggered expresses the "nature of the class and the meaning for the subject" (1995: 66). In other words, it is grounded in the perspective of the self and its experience. Maturana (1970) articulated the same fundamental insight. An external stimulus is not a cause of behaviour. Rather, the external stimulus, e.g., a speaker's vocal tract activity, is able to bring about a change within the internal dynamics of the perceiver. As Freeman's neurobiological research shows, the external stimulus places the cortex in one of its basins of attraction. The latter are always grounded in and shaped by prior experience.

The words spoken by one speaker to another do not function as external stimuli ("inputs") that 'cause' something to happen in the nervous system of the other to yield an "output". Rather, a word is a perturbation that dynamically changes the pattern of interactions *within* the nervous system of the other. The nervous system forms dynamic responses that can form new patterns of neuronal activation or follow prior ones. Each change re-weights the patterns of interaction of the self in ways that are constantly varying. Words therefore trigger dynamical changes within the self. Only the self's dynamical state at any given moment can determine what it will do next, how it will respond, what significance it attributes to the change, and so on.

2. Languaging as higher-order system of sensitivity

In Gibson's ecological psychology, perception is an active and exploratory process. By means of the systems of sensitivity (vision, hearing, olfaction, etc.), animals of all kinds actively explore their environments in order to detect and make use of perceptual stimulus information about environmental events. The exploratory activities of the animal and the pick up of perceptual information are tightly coupled. Perception is an achievement of the animal's active exploration and is dependent on it. For this reason, it is more correct to think in terms of the recursive loops or cycles of action-perception that animals enact in order to attune to and to maintain awareness of their environment. Dialogically coordinated languaging builds on and extends this principle in the human ecology.

In Gibson's ecological theory of perception, the media of light, sound, chemical composition, etc., are structured by the environment as perceptual invariances that organisms have become attuned to over the course of evolution and development. Gibson claims that the information available to the sensory systems of different animal species is specific to environmental events and therefore it is *not* arbitrary (Gibson, 1986/1979; Reed, 1996). In Gibson's realist theory of perception, knowledge is attunement to environmental structure (Gibson, 1986/1979).

The ecological psychologist Bert Hodges (2007a: 599) points out that one dif-
ficulty in considering languaging as action-perception system is that it appears
to have no dedicated sensory anatomy in the way that the eyes, for instance, are
the organs of sensitivity associated with looking. However, it was Gibson who
developed a comprehensive alternative to the view that perception is linked to
particular parts of the body. For example, Gibson outlines the visual system as a
higher-order system of sensitivity, as follows:

> The single eye is a system of low order, although it is already an organ with
> an adjustable lens for sharpening the retinal image and a pupil for higher
> order; it is stabilized in the head relative to the environment with the help of
> the inner ear, and it can scan the environment. The two eyes together make
> a dual system of still higher order; the eyes converge for near objects and
> diverge for far ones. And the two-eyes-with-head-and-body system, in coop-
> eration with postural equilibrium and locomotion, can get around in the world
> and look at everything.
>
> (Gibson, 1983/1966: 42)

Gibson argues that perception is not the result of receptors that respond to energy
(e.g., light, chemical energy, mechanical energy) or organs such as the eye, the
nose or the ear. These are lower scalar anatomical units. Instead, Gibson's theory
is founded on the notion that perceptual systems exist on a higher order than do
lower order units like the receptors cells and the organs of sensitivity such as the
ears, the nose, or the eyes. Perception systems are not localised in specific organs
such as the eye, the nose, or the ear, but are "higher-order systems of sensitivity"
(Gibson, 1983/1966: 43) that actively explore and search for stimulus information
in the environment of the organism.

Gibson's acount of vision as a hierarchically organised action-perception sys-
tem provides us with a useful starting point for charting a new view of languaging
as a higher order system of sensitivity that functions as an extended action-per-
ception system. Languaging *qua* action-perception system is not localised in the
auditory system associated with listening. It is a system of higher order sensitivity
that includes, for example, visual perception and auditory perception working in
synergy. Eye movement analysis shows that there is a close and strong relation-
ship between the processing of speech sounds and the ways in which listeners
direct their gaze such that online processing of speech sounds is strongly con-
strained by visual perception. Using headband mounted eye trackers, researchers
have investigated the online perception and understanding of spoken language
in naturalistic and experimental contexts (Richardson, Dale, & Spivey, 2007;
Spivey-Knowlton, Tanenhaus, Eberhard, & Sedivy, 1998). Rapid eye move-
ment saccades—the fixation referred to is a couple of hundred milliseconds—are
below the threshold of participants' awareness. Nevertheless, these experiments
and others show that listening to utterances involves having one's visual attention
directed and redirected in anticipation of future responses to specific features of
the perceiver's visual environment.

The linguistic information made available by phonetic gestures is perception-priming and perception-directing (Magnuson, McMurray, Tanenhaus, & Aslin, 2003; Marian & Spivey, 2003; Spivey & Marian, 1999; Spivey, Richardson, & Fitneva, 2004). Eye movement analysis using eye tracker technology shows that there is a close and strong relationship between the processing of speech sounds and the ways in which listeners direct their gaze such that online processing of speech sounds is strongly constrained by visual perception. The whole body is involved in sense-making. Recent findings reported in *Nature* show that the neural processing of speech is more broadly multimodal than previously believed, including passive audio-tactile and visuo-tactile integration (Gick & Derrick, 2009). The visual dimension of facial movements is crucially important to the intelligibility of speech (Kamachi, Hill, Lander, & Vatikiotis-Bateson, 2003; Yehia & Vatikiotis-Bateson, 1998). Visible facial movements in speech affect what we hear, including in gendered ways (Irwin, Whalen & Fowler, 2006). The experimental research of Barsalou (1999) and Matlock (2004) has shown that metaphorical uses of motion verbs have been found to elicit perceptual simulation in listeners. For example, the metaphorical use of the motion verb directs the listener's attention to specific features of a visual scene in ways that enable listeners to orient themselves within the scene. The research referred to here indicates that vision and spoken language work synergistically to orient to the environment as a whole body sense-making process in order to adjust to and explore the environment, including simulated environments which are not available to online perception.

The dynamics of first-order languaging are a function of the morphology of the facial systems, the vocal tract, and the upper limbs. Languaging exploits the articulatory potential of these body units, which had previously evolved for other, non-communicative adaptations. The degrees of freedom of the morphology of these anatomical areas provides for very many very fine-grained discriminations and many potential ways of co-articulating the organs of the vocal tract and related systems such as the face. By the same token, the structure and physiology of these systems and their coordination constrains the total number of possible linkages between them. However, parts of the anatomy are not the units of function.

Ecological psychologist Edward Reed shows that models of action based on the sequencing of units fail to recognise the embodied and temporal dimension of animals' action systems. Reed's observation has important implications for embodied languaging dynamics. Writing from the perspective of ecological psychology, Reed defined action as an animal's way of acting on and modifying its environment, as follows:

> actions are an animal's modes of changing its relationship to its environment. Actions involve the detecting, obtaining, and utilization of affordances. The components of actions are not neural or muscular events, but are themselves processes of regulation, which I have termed postures and movements, indicating regulations that maintain and transform the animal's relation to its environment, respectively. Traditional theories of action focus almost

exclusively on questions having to do with the ordering and arrangement of responses. The present approach implies that the explanations of action should detail the various control processes involved in interlocking movements and postures to achieve desired functional effects.

(Reed, 1996: 93)

In the case of languaging, synchronic, form-based theories of second-order language and their descriptive formalisms replaced the dynamical, time-locked organisation and integration of processes on different time-scales as the object of study. Theoretical explanation focused on verbal and other abstracta. The resulting abstracta are artificially separated from the bodily dynamics of embodied first-order languaging behaviour and, accordingly, analysed as pairings of abstract forms and meanings. On this view, meanings are mapped onto forms according to arbitrary social conventions and code-like mechanisms (Love, 2007; Thibault, 2011a). The separation of "language" and "paralanguage" is based on these assumptions. Whereas "language" is seen as a stable system of pairings of meanings and forms, the dynamical and embodied properties of "paralanguage" are seen as non-code-like extra-linguistic features that combine with or accompany "language".

In contrast to form-based theories, languaging, I argue, is an embodied mode of action constrained by its intrinsic functional organisation that enables persons to act on and modify their relationship to their environment. Languaging is an embodied action system embedded in a still larger dialogic matrix that is distributed across persons, times, and places. It is functionally organised on and spread across various levels of upper body morphology and physiology. The vocal tract alone is not the sole locus of languaging activity. The vocal tract is a system of a lower order with respect to languaging seen as a higher-order system of sensitivity. This does not change the fact that the vocal tract is an embodied action system capable of being modulated and adjusted in complex ways to project acoustic information into the environment of other interactants. The vocal tract operates in synchrony with head movement and orientation relative to the environment and the inner ear (proprioception). The vocal tract operates in functional synergy with the facial systems, including the eyes, to explore and act on the environment (exteroception), including other persons. The vocal tract system-with ears-eyes-and-facial-system is also associated with head orientation and head turning. In turn, these systems are harnessed to the use of the hand-arm-haptic-visual-auditory system of articulate gestures. Hand gestures are typically considered to be primarily visual-spatial, though they too involve the whole range of sensorial modalities—acoustic, haptic, olfactive, visual, and spatial (Bouissac, 2006).

Gibson (1986/1979) and Reed (1996: 80–82) distinguish between exploratory and performatory activity. Exploratory activity is the active orienting to, exploring, taking stances on, and making use of environmental information; performatory activity serves to regulate the organism's own pattern of activity (Reed, 1996: 80). Following Gibson (1983/1966) and Reed (1996: 80–82), I differentiate between the *co-performatory* and *co-exploratory* dimensions of languaging activity.

Speakers and listeners engage in interactively synchronous co-exploratory and co-performatory acts during languaging (Stuart & Thibault, 2015). Speakers, seen as the primary producers of distributed acts of languaging behaviour, also engage in both co-exploratory and co-performatory acts in dialogically coordinated languaging. Vocal tract gestures and other related movements of speakers are not only performatory activities that regulate one's own and others' activity. They are also exploratory activities that elicit responses in others—responses that provide information about the other and the other's orientation to relevant aspects of the environment.

Listening is a form of active, attentive exploratory activity in contrast to passive hearing. However, listening is just one aspect of the exploratory activity that characterises languaging behaviour. Exploratory activity is the active searching for, attending to, and making use of information that is generated by the exploratory activity of the agent. In whole-body sense-making, exploratory activity includes not just listening, but also adjustments of the head, the body, and the other sense organs that are involved in the active exploration of and pick up of information about the other's languaging in dialogically coordinated languaging behaviour. This involves an orientation to the multimodal ambient energy fields that are generated by somebody's whole-body sense-making. Listeners may also engage in performatory activity in response to the information that is picked up in their exploration of the other's languaging. They may perform actions with other body parts (arms, legs, torso) that regulate their own activity. These performatory actions are high-impact and high-energy with respect to the low-energy and low-impact movements involved in exploratory activity.

Table 1.1 summarises the general characteristics of the various action-perception systems and languaging, seen as higher-order systems of sensitivity.

3. *Perçaction*: the normative character of intersubjective action-perception as the ground of languaging

Berthoz (1997) has proposed the idea of *perçaction* to show, as did Gibson (1986/1979), that action and perception are not separate systems. Instead, action and perception operate simultaneously and in parallel as different facets of a single, unified system of action-perception. The brain functions not by producing models *of* the world "out there", but by simulating in its own dynamics world models that operate on the world as action (output) and generate hypotheses about the world that can be tested, adjusted, and corrected in accordance with the way the world responds (input) (see also Freeman, 1995, 2000a). We do not perceive a raw physical world that is without meaning. It is a mistake to assume that the categories of language are imposed on a formless and meaningless world to give it form and meaning. The phenomenal world that is created by *perçaction* is already meaningful. However, the phenomenal world created by *perçaction* is not the same as the physical world that the physicist studies. The phenomenal world is a simulation that is created through our embrained and embodied interactivity with the world. Such simulations of "reality" are simplex solutions that enable us to manage our

Table 1.1 Languaging in relation to other higher-order systems of sensitivity, i.e., other modalities of action-perception

Modality	Action; articulated movement; active attending to	Perception; pick up and discrimination of environmental stimulus information from both somatic and extra-somatic sources
	Exteroception	
Vision	looking; gaze vectors	seeing: attending to environmental event; tracking other's gaze vector
Sound	Listening	hearing; attending to source event
Olfaction	Sniffing	odorous information about source event
Taste	Mastication	Tasting
Haptic	feeling/touching	
finger-hand-arm	reaching for, grasping, holding, manipulating	detection and exploration of texture, degree of hardness, pliability, etc.
Pointing	indicating, co-orienting to selected environmental object	object selected as locus of perceptual and cognitive processing, coordinated attention and action
movement/locomotion	moving around environment; occupying points of observation	change of location; change of point of observation
	Interoception	
internal milieu of body (interoception)	neurohormonal flows; physiological changes: rate of respiration, heart beat, blood pressure, galvanic skin response	moods, bodily feelings
pre-reflective perception of embodied self (proprioception) as the one who perceives the external environment	co-awareness of one's self and body movement as the performer of action-perception and the ways in which one's own action modifies one's perception of the environment	information specifying body movements, body postures, embodied self-location,

(*Continued*)

Table 1.1 Continued

Extero-Intero-Proprioception		
languaging	phonetic and related gesturing and other expressive movements of face system and hand-arm system	voice: 1. hearing one's own voice; 2. transitive effects of speech sounds on others ("telling"): speech sounds made available to others for perceptual pick up; 3. speech sounds make available information about affordance layout of utterances and the relation of these to the speaker and the speaker's relation to actual and virtual environments; 4. perceived responses of others function as dialogical feedback loops that provide information about the other and the other's relationship to the self and to the relevant environment; 5. intransitive affects of voice on self ("thinking")

interactivity with a complex world and to anticipate possible future actions and events.

Berthoz (2012/2009) proposed the idea of "simplexity" to explain how living systems develop simplified principles and strategies for managing the complexity of their environments. They do so by reducing the complexity they encounter in their environment to a more manageable simplexity. Human beings, like all complex adaptive living systems, develop simplex strategies to reduce, manage, and make sense of complexity in their worlds. Berthoz defines "simplexity" as follows:

> The word connotes the remarkable fact that biological devices, or processes, appeared in the course of evolution to allow animals and people to survive on our planet. Given the complexity of natural processes, the developing and growing brain must find solutions based on simplifying principles. These solutions make it possible to process complex situations very rapidly, elegantly, and efficiently, taking past experience into account and anticipating the future.
>
> (Berthoz, 2012/2009: 3)

Perçaction and languaging both provide simplex solutions in this sense. For example, *perçaction* does not pick up and respond to all of the possible physical

parameters and invariances of a perceived event. Instead, perceptual categorisations provide simplex procedures and solutions that enable perceivers to detect the potentialities of environmental objects and events for both actual and potential action. This is a realist, not a constructivist, epistemology though the realism intended here has nothing to do with naive realism. Rather, living systems, through their interactivity with their worlds, construct models of the world and enact stances on the world that can be and are corrected by the responses (the feedback) that the world, including other persons, gives back. A selection-&-variation logic applies (D. Campbell, 1974): actions, differentiations, perceptions, etc., that are inappropriate, incorrect, false, unsuccessful, wrong, etc., will tend to be de-selected because they do not serve the ongoing recursive self-maintenance of the agent system. On the other hand, those actions, differentiations, and perceptions that prove to be successful will be selected and retained precisely because they contribute to the ongoing recursive self-maintenance of the agent system.

It is important to emphasise that languaging is far more than an evolutionary adaptation to one's environment (Darwin, 1872). Adaptation does not require understanding (Wettersten, 2016: 462). People exercise capacities and skills that are products of human evolution in order to make sense of things. However, these skills and capacities and their actualisation in determinate circumstances are not reducible to the products of evolution. Humans exploit the products of their evolution in order to gain knowledge of the world they live in. The examples discussed in Volume I, chapter 4, section 4 show that languaging is a skilled form of action that enables people to make sense of their worlds, to gain knowledge of it, and to find their way in it. Utterances individuate context-sensitive differentiations that enable people to make sense of things and to think about them. Sense-making, thinking, and knowing are interactively constituted in and through dialogically coordinated languaging as social processes of exploration, discovery, and enquiry. People engage in concerted interactivity with each other and with selected affordances of the local experiential topology so that those aspects of the situation that they attend to fit with current selection pressures that enable the interactive potentialities of the situation to be indicated and acted on.

The subjective origins and ground of all mental life in the self and its adaptation to external "reality" during the microgenetic derivation of all mental acts mean that languaging does not provide a ready-made system of categories that constitute a particular model of reality (Vol. II, chapter 3, section 5). Instead, its categories are the historical interaction outcomes of the efforts of many selves to adapt subjective mental process and their living, feeling bodies to the world. Languaging is grafted on to and is integrated with action-perception (*perçaction*) at the same time that it extends and augments it. In the first instance, languaging operates on an already socially constituted world, which I have elsewhere referred to as the pre-linguistic but always socially and interactively constituted experiential topology (Thibault, 2012a, 2019). The experiential topology is the habitual Lifeworld. It is the collective product over time of the accumulated *perçactions* of many selves in a given community.

Both *perçaction* and languaging are simplex adaptations of subjective mental process to the complexity and variability of the social world of other selves. Selves learn to attune to, to synchronize with, and to be moved by the movements of other selves (Bråten, 2007; Bråten & Trevarthen, 2007; Trevarthen, 1998). In developing ways of cooperating with and coordinating with others, they learn to attune to and to attend to the motives, the feelings, the emotion displays, the intentions, and the attentional foci and interests of others. Infants learn to do so through intrinsic value biases (Edelman, 1989, 1992, 2004) that select for an intersubjective focus on the bodily movements of others as ways of gauging intention, interest, and feeling. In so doing, they learn to attune to others' body movements in ways that bias action-perception in dialogically coordinated and socially organised interaction formats that select for cooperation and the ability to interpret other persons as selves with motives, intentions, feeling—with a subjective mental life—that one can tap into and harness for the self-regulation not only of the self but also of communities of selves.

The essentially intersubjective resources of languaging enable the subjectivity of the self to adapt its subjective mental process and to focus on or highlight relevant aspects of its subjective experience. In this way, the self's subjectivity can be coordinated with the subjectivities of other selves on the basis above all of the values that selves seek to realise in and through their languaging. Languaging enables selves both to focus intentional structures for themselves and their own self-awareness, self-control, and self-monitoring (endophasia) or to coordinate with the intentional structures of other selves (exophasia) (see also Bottineau, 2012: 17–18; see Vol. II, chapter 4). Intersubjective action-perception becomes progressively hierarchised, ritualised, stylised, technologised, and integrated to social practices and thus adapted to the movements and flows of the living of human social life in languaging activity (Vol. II, chapter 4, sections 11–13).

An object that is referred to by an utterance, or which is perceived by the perceptual systems, is the actualisation of the distal pole of an act of consciousness that has its origins in the self and its motives and intentions. By the same token, as Kenneth Burke (1969/1945: 49–50) pointed out, the intrinsic motives of selves are also prompted or elicited by their "scenic" (situational) motives (see also Burke, 1966). A social arrangement that promotes war and aggression will elicit the urge or drive to kill one's enemy whereas a social arrangement founded on cooperation will elicit the urge or desire to act harmoniously and peacefully towards others. Attention is not so much directed towards an already given object "out there". Instead, the self's act of attending to the object imports desire, feeling, interest, categorisation, and so on, into the object such that the object includes the attention that is directed at it and without which it would not be heeded (Brown, 2015: 50). This is another way of saying that feeling and value, which originate in the self, are imported into the self's objects and are incorporated into them. In my view, this helps to explain the intersubjective basis of perception noted by Merleau-Ponty (1945: chap. IV) and Berthoz (2010).

Merleau-Ponty (1964: 183) remarked: "*Je me sens regardé par les choses.*" ("I feel looked at by things."). According to Berthoz (2010: 14), Merleau-Ponty's

observation suggests the intersubjective character of perception and also recalls theories of mimesis whereby people project human attributes and powers onto non-human objects and life forms. These observations by Berthoz are consistent with what microgenetic theory has shown about the way in which value, which originates in the self, is incorporated into the self's objects, e.g., the objects perceived by the self or indicated linguistically. Werner (1957/1940) has discussed the physiognomic character of perceptual experience whereby we perceive the world in terms of dynamic, movement-based ways that imbue the things perceived with animacy and life. Werner defined this aspect of perceptual experience in terms of its physiognomic character, meaning that the things perceived take on the expressive and life-like qualities of living forms. In a discussion of children's interactivity with play objects in clay-modeling, Werner comments on the child's preferences for dynamic interpretation rather than in terms of static properties as follows:

> Such dynamization of things based on the fact that the objects are predominantly understood through the motor and affective attitude of the subject may lead to a particular type of perception. Things perceived in this way may appear "animate" and, even though actually lifeless, seem to express some inner form of life. All of us, at some time or other, have had this experience. A landscape, for instance, may be seen suddenly in immediacy as expressing a certain mood—it may be gay or melancholy or pensive. This mode of perception differs radically from the more everyday perception in which things are known according to their "geometical-technical," matter-of-fact qualities, as it were. In our own sphere there is one field where objects are commonly perceived as directly expressing an inner life. This is in our perception of faces and bodily movements of human beings and higher animals. Because the human physiognomy can be adequately perceived only in terms of its immediate expression, I have proposed the term *physiognomic perception* for this mode of cognition in general. There is a good deal of evidence that physiognomic perception plays a greater rôle in the primitive world than in our own, in which the "geometrical-technical" type of perception is the rule.
>
> (Werner, 1957/1940: 69)

Rosenthal (2004: 8) links Werner's idea to both the expressive qualities of percepts and their conative dimension. The expressive character of percepts accords with the idea discussed above that the self's brain dynamics, in the microgenetic derivation and actualisation of an object, imports value into it. The conative dimension of perception was also recognised by Bühler (1990/1934), for example, in his discussion of the physiognomic character of the voice. The voice can function in dialogue to impel the addressee to direct his attention to the addresser when the latter says "I": "Something about the person who says 'I' in actual human contact must be perceived; it may be that there are visible expressive gestures or expressive factors in the voice that demand attention, it may be the only sort of diacrisis

that must be performed for which otherwise the personal name is used" (Bühler, 1990/1934: 110).

For Bühler, the perception of the speaker's voice has the character of a physiognomic perceptual experience that is conative in the sense defined by Rosenthal. The speaker's voice impels the addressee to act in relation to or to orient to the speaker. Werner argued that physiognomic perception is most active in children, in "primitive" peoples' animistic and magical modes of thought, and in certain clinical conditions such as damage to the prefrontal cortex or an overreactive caudate nucleus (Luria, 1973: 200–201). However, the expressivity of physiognomic perception tends to recede into the background in the normal course of adult social life due to both second-order social conventions that promote it in some circumstances and inhibit it in others as well as inhibitory brain mechanisms (Kinsbourne, 2005; Rosenthal, 2004).

The observations of Berthoz and Merleau-Ponty that I discussed above have important implications for the intersubjective basis of the action-perception cycles that are the basis of first-order languaging. Table 1.2 proposes four parameters that show the common basis of both action-perception and languaging.

Intersubjective action-perception has suggestive parallels with languaging. I draw on Michael Halliday's (1979) account of the intrinsic functional organisation of the clause in terms of four major semantic metafunctions, to show that action-perception exhibits a similar kind of organisation though in a less specified way with respect to languaging. Intersubjective action-perception can therefore be said to be proto-metafunctional (Thibault, 2004a: 63–76). Given that action and perception are not separate systems, but operate in parallel, as two aspects of a single unified action-perception system, this is hardly surprising. Both action-perception and languaging have intrinsic functional constraints on what operations can be performed, and how. Briefly, Table 1.2 shows that both action-perception and languaging: (1) discriminate or partition selected aspects of the environment; (2) actively explore and operate on the environment in order to elicit information about the environment; (3) are deictic and situated relative to the embodied point of view of the agent; and (4) are recursive operations on some selected aspect of the environment that draw on a history of such operations in establishing which operations are dependent on which environmental conditions.

Human biology supports the development of intrinsic functional capacities to participate in intersubjective action-perception and languaging. The intrinsic functional capacities and properties of both action-perception and languaging constrain the agent's possibilities for participating in both. Moreover, the simulations created by intersubjective action-perception constitute the pre-linguistic experiential topology on which languaging in the first instance operates. We do not perceive a raw physical world "out there". Instead, we develop the capacity to perceive an already socially constituted, though nonlinguistic experiential, topology that takes the form of a vast network of nonlinguistic representations (Bickhard, 1998). In the first instance, languaging operates on, situates agents in, and enables them to explore and move around this topology.

Table 1.2 Four internal parameters of action-perception and languaging compared

Action-Perception (Perçaction)	Languaging
Differentiates and attunes to actual environment through perceptual categorisations	Differentiates and attunes to actual and virtual environments through semantic categories of lexicogrammar
Exploratory activity generates stimulus information relative to a point of observation, not passive input of meaningless sensation; intersubjective basis of perception	Enacts interactive-dialogical stances from point of view (language as social action) through exploratory/probing activity of utterances that seek/elicit responses; in turn, the responses of the other provide information to the speaker
Deictic, situated relative to embodied point of view of self; thematisation of locus of perceptual processing	Deictic, situated relative to embodied point of view that can imaginitively transcend one's embodied self-perspective to view things from the other's point of view; situation-transcending; phoricity: tracking past and anticipating future referents; thematisation of local environment as the point of departure for the development of a quantum of meaning
Movement based exploration of environment gives rise to recursivity of action-perception cycles; Now pulses replace each other	Recursive exploration of environment give rises to here-now deictic field along unfolding narrative trajectory; operator-argument relations: recursive construction and meta-construction; entextualisation

Utterances do not encode some pre-existing content or state of affairs. Instead, they are structures of action that point to, locate, and differentiate (partition) some aspect of the world by:

(1) evoking apperceptions of previous experienced situations in which the linguistic differentiator functioned (Bickhard, 2005);
(2) indicating a usually quite delimited contrast space of possibilities in the form of relevant equivalence classes (Garfinkel, 1981: 51–66; Vol. I, chapter 4, section 5) of presupposed underlying functional relations in the particular region of the experiential topology that a particular utterance focuses on and activates.

Utterance operate on the experiential topology in the following ways:

(1) their intrinsic functional organisation provides indications as to which aspect of the functional relations in the experiential topology, usually consisting of a delimited contrast space of possibilities, is relevant; and
(2) they specify which operations are to be performed on the given contrast space, how it is to be modified, e.g., added to, subtracted from, or otherwise changed.

On this view, utterances are functionally organised structures of action that have the capacity to operate on and transform participants' understandings of social situations. The intrinsic functional organisation of utterances are affordance layouts of constraints and enablements that specify which operations can be performed, when, in what order, in relation to which others, and so on. The possibilities for linguistic action and interaction are intrinsically constrained by the functional organisation of utterances. These constraints, e.g., the operator-argument/transitivity structure of the clause, selections of mood and modality, etc., indicate how the currently active experiential topology is to be modified in the course of interaction. Utterances are action structures for operating on underlying experiential topologies and changing them.

In section 6 below, I examine the nature of the experiential topology in more detail.

4. Gibson's affordance theory and its relevance to languaging

The term "affordance" derives from the work of the ecological psychologist James J. Gibson, who was the originator of the term in his ecological theory of perception (Gibson, 1983/1966, 1986/1979; Reed, 1996; Hodges, 2007a, 2007b). Gibson defined an affordance as the opportunities for action that a given environmental event or object provides an animal. Affordances are always defined relative to a particular species and its modes of interactivity with its environment. Vocal tract and related languaging activity cause structured changes in ambient energy fields. These changes are variants and invariants in the ambient energy field: they constitute information that is picked up by the perceiver who interacts with the field. Ecological information is thus picked up in the course of the perceiver's active exploration of this field.

Perception is an active, exploratory process: the pattern of the exploratory interactivity differentiates and thus individuates the pattern that is interacted with (Gibson & Gibson, 1955; see also Bickhard & Richie, 1983: 14). Information takes the form of what Reed calls "arrays of contrasts in environmental energy fields" (1996: 51). It is through their exploratory interactivity with these fields that agents pick up information in Gibson's sense of the term. Agents detect and extract information through the active exploratory activity of the perceptual systems. Information is not encoded and transmitted by motor-sensory organs. The ear actively explores and interacts with the auditory array, in the process its patterns of interactivity create information. There is no encoding of that information. It was this fundamental insight that led to Gibson's development of the idea of affordance. Gibson explains:

> The theory of affordances is a radical departure from existing theories of value and meaning. It begins with a new definition of what value and meaning *are*. The perceiving of an affordance is not a process of perceiving a value-free physical object to which meaning is somehow added in a way that no one has been able to agree upon; it is a process of perceiving a value-rich

ecological object. Any substance, any surface, any layout has some affor-
dance for benefit or injury to someone. Physics may be value-free, but ecol-
ogy is not.

(Gibson, 1986/1979: 140)

Agents perceive meaning and value in the affordances to which they orient. They
attend to the functional nature of things and events, i.e., their functional potenti-
alities for interacting with and using the thing or event in ways that have mean-
ing and value. Agents' patterns of interactivity that pick up linguistic patterns in
someone's vocal tract actions are what Bickhard and Richie (1983: 16) call "inter-
action outcomes" that specify further potentialities for action, meaning, and value.
Perception is saturated with ecological meaning that is functional to the agent.

Affordances are not the same as the physical habitat. Different species may
dwell in the same physical habitat but relate to very different affordances and
therefore to very different ecological niches in the same habitat. Affordances
are more appropriately seen in terms of the organism-environment system that
is created by the interactivity between an animal and its environment. The inter-
activity between animal and environment is always sense-saturated and sense-
making (Steffensen, 2011, 2013). Towards the end of his career, Gibson came to
understand perception as the active exploration of the environment rather than the
passive reception of stimuli. He saw perception as a perpetual quest for values,
rather than the achievement of goals (Gibson 1986/1979: 243; Hodges 2007a:
586). Gibson's (1986/1979; K. Russell, 2004). Gibson's fundamental claim was
that perception is an active exploration of the affordances of the animal's envi-
ronment. What we perceive are not raw stimuli, but "the values and meanings of
things" (1986/1979: 127). Gibson coined the term affordance to refer to the values
and meanings that things and events in the environment have for the animal, i.e.,
what the environment "offers the animal, what it provides or furnishes, either for
good or ill" (1986/1979: 127).

Gibson showed that perception is not the passive stimulation of a sensory
nerve by a sensory input (a sensation) that is then processed by the brain and
converted into a perception. Instead, perception is the *activity* of a perceptual sys-
tem (Gibson, 1986/1979: 244). The perceptual systems engage in the activities of
looking, listening, touching, tasting, sniffing, and so on (Gibson, 1986/1979: 244).
These activities are different, though functionally overlapping, modes of what
Gibson calls overt attention. A perceptual system actively and overtly explores
and attends to information that is made available to it. The activity of a perceptual
system is anticipatory; it is not the result of the integration of the passive accu-
mulation of a sequence of images that must be processed, for example, as a visual
scene (Gibson, 1986/1979: 244). Rather than a sequence of sensory inputs that the
system learns to predict and thus to process as a sequence of discrete images (vis-
ual, auditory, etc.), the perception of the environment, Gibson (1986/1979: 244)
argues, is based on invariances in a changing flow of stimulation. The flow of the
animal's interactivity with its environment generates the flow of time-extended
invariances and thus perceptual content. It is the flow which is explored and

sampled by a perceptual system rather than a series of discrete stimuli (Gibson, 1986/1979: 222). As Bickhard (2005) also argues, it is the flow of our interactivity which is anticipated, not the inputs and outputs of that activity.

Gibson's theory of affordances emphasises that activity is motivated by the realisation of meaning and value in the animal's environment. Reed (1996) further points out that the seeking after meaning and value is psychologically basic and usually entails the modification of the person's environment. Moreover, Reed points out that in so modifying their worlds, humans "collectivise" or pool motivation. That is, in a given population of individual persons, the actions of the individuals affect each other in ways that bias the subsequent efforts of others. This leads, in time, to systematic biases in the directions that the activities of a particular population assume over time. In this way, collective affordances, including those adapted to teaching and learning, emerge in a population and thus enable downstream manipulation and engineering of the cognitive-semiotic environment of future generations.

Gibson's ecological realism posits that the environment has an objective existence that is independent of the phenomena of experience. In other words, reality is not reducible to internal representations. Gibson views perception as "direct" because the perceiver's perceptual relations to the environment are not mediated by internal models. The realist perspective on the person-environment relationship rejects the idea of some kind of meditational interface between person and environment. According to the meditational view, the person is separated from its environment and has no direct contact with it. Instead, contact with the environment is mediated by categories, schema, representations, ideas and so on that stand between the person and a chaotic and undifferentiated external world and a no less chaotic and undifferentiated internal world of thought. The world is only knowable by virtue of these internal conceptual and other schema.

Gibson's realist view sees things very differently. On this view, the relationship is a direct and synergistic one based on the principle of functional coordination—both intra-individual and inter-individual. The fundamental units are the synergistic relations or the coordinative mechanisms within and between organism and environment that enable and sustain the animal-environment interaction system. Gibson's concept of affordance is central here. The affordances of the animal's environment imply "the complementarity of the animal and the environment" (1986/1979: 127). It is worthwhile reflecting on Gibson's use of the term "complementarity" to describe this relation.

Person and environment are usually seen as contraries or antinomies that play out in dichotomies such as nature vs. nurture, local vs. global, self vs. nonself, brain vs. behaviour, mind vs. body, associationistic vs. holistic, and so on. Gibson's argument applies to the relations between all animal species and their respective environments. My concern is with the environments in which human languaging occurs in the human ecology. Gibson's notion of complementarity presupposes that the person and his or her environment are complementary viewpoints on one overall person-environment interaction system. The concept of affordance therefore entails a person-environmental interaction system. Affordances are qualities

of the properties of surfaces, objects, and events with reference to the action possibilities of perceivers (Gibson, 1986/1979: 143).

Gibson's hypothesis is that the surfaces, objects, and events of the environments offer or afford information for the perception of what they afford the person, i.e., the meanings and values that guide the person's actions in its environment (1986/1979: 127). Gibson distinguishes the qualities (properties) of surfaces, objects, and events from their affordances and argues that, typically, perceivers perceive the affordances of surfaces, objects, and events before they learn to discriminate their properties (1986/1979: 134). This is clearly the case in the child's early languaging: children learn to respond to the affordances of utterances before they learn to analyse their properties.

Perceivers detect and make use of invariants in the stimulus information made available in ambient light, sound, odours, and so on. Knowledge is created through the perceiver's interactivity with the invariances that it detects and makes use of to guide its actions. For example, the structuring of the acoustic medium of air that occurs when my telephone rings guides the action of my going to the telephone to answer it. The ringing of the telephone is an environmental event which makes available information about the source event in the environment—the telephone ringing. This information serves to guide my action in relation to the telephone if I make use of that information. For example, the stimulus information made available by the source event affords my picking up the telephone to speak to the person who is calling me or, if I choose, ignoring its ringing. The media of light, sound, chemical composition, and so on are structured by environmental events in lawful and invariant ways that perceivers can become attuned to over the time scales of development and evolution.

The information available to their perceptual systems is specific to environmental events. There is no need to postulate internal representations that mediate the animal's perception of events, objects, etc., in its environment. Gibson's realist account of perception views knowledge as an attunement to environmental structure, i.e., a capacity for recognising invariants and guiding one's action in relation to them. The ability to attune to the stimulus information made available in the environment requires the development of capacities and skills whereby agents exercise, hone, and refine the perceptual systems. Perception is skilled activity that is learned and therefore can be refined and improved. In this regard, Gibson (1986/1979: 258–263) wrote of the education of perception: attunement to environmental structure can be developed and improved through learning such that the perceiver is able to make ever finer discriminations. In doing so, perceivers modify, refine, and expand their relations to their environments.

Gibson (1986/1979: 245, 249, 263) introduced the notion of "resonance" to explain the time-extended exploration and pick up of environmental invariants and their transformations. As Robbins (2001: 191) points out, Gibson's notion of "resonance" is congruent with and indeed anticipates subsequent understandings of the brain's reentrant neural architecture (Edelman 1989, 1992, 2004; Edelman & Tononi, 2000; Freeman, 2000a, 2000b). The neurobiologist Gerald M. Edelman explains that perceptual experience of, for example, a scene in the world is a

time-extended process of reentrantly integrating (1) world-side or exteroceptive neuronal activity that is generated by the perceiver's interactivity with its external environment with (2) body-side neuronal activity that is generated in relation to the brain's interactivity with the internal milieu of the perceiver.

In this way, information that is picked up about the world is, through reentry, integrated with and related to somatic meanings based on physiological neurohormonal responses and flows. Perceptual categories are thus built up that are related to both the brain's patterns of association and to the bodily feelings of the perceiver. In exploring and discriminating perceptual differentiations in the stimulus information that is detected in the perceiver's environment, the discriminations that are picked up by this activity are associated with internal changes that enable the perceiver to recognise particular events and objects in the world. The brain constructs its own models of the world. It does nor re-process sensory input in the form of "sensations" that are then upgraded by internal psychological processes as "representations" of the external world. Instead, sensory input, in the form of the perceptual stimulus information that is picked up, serves to constrain and in part to direct and shape the endogenous microgenetic construction processes that give rise to mental acts of all kinds, including utterances (Werner & Kaplan, 1984/1963; Brown, 2005, 2015; Vol. II, chapter 3, section 5).

In this way, new perceptual input is (1) contextually integrated to the global topological experiential field and (2) updates it (section 6 below). Perception is not based on the transmission over the nerves of bits of information that are then matched to internal mental models or representations. The pick up of invariants takes place over time and depends on the exploratory activities of the perceiver. Gibson likened the perceptual systems to the tuning of a radio to the right frequency. Gibson's metaphor points to the ways in which the perceptual systems continually adjust, sharpening their focus, continuously honing details, and responding to feedback generated by the animal's interactivity with its environment (Gibson, 1986/1979: 218–219, 245). Perception is an exploratory activity: the body moves through its environment to explore it, the head turns to explore the ambient array, the eyes or ears, for example, sample the two fields of the array so constituted.

Attunement to environmental pattern and structure is both a selective and selectionist process that is grounded in bodily movement. The selective detection and discrimination of a new environmental structure by the perceptual systems selects for changes in the brain's neural dynamics that create new basins of attraction in the topological field of the brain's own dynamics (selectionist). The process is selectionist because the incorporation of the epigenetic level into the brain's dynamics through the body's own activity acts on global brain dynamics to strengthen or weaken synaptic connections between populations of neurons. The detection of the invariance structures of the environment through movement-based discrimination and attunement enables the agent to select and to update and modify the agent's action trajectory as dynamically changing neural dynamics respond in real-time to the discriminations that are picked up. The "education of

attention" is a selective and selectionist process that enables flexible and adaptive activity.

On still lower levels, eyelids, lens, pupil and retinal cells make what Gibson calls "optimizing adjustments" (1986/1979: 219). All of these movements—both coarse-grained and fine-grained—enable an entire perceptual system to adjust to and to attune to the relevant invariants that the perceiver seeks to detect. Knowledge is a process of progressive attunement to ever finer environmental differentiations. The processes of exploratory adjustment and perceptual pick up depend on the output-input transformations that are effected through the perceiver's active exploration of its environment. These processes can be educated; perceptual pick up is "susceptible to learning and development" (Gibson, 1986/1979: 250). Perceptual learning is a process of *differentiating* the information that is picked up (Gibson, 1986/1979: 252; Gibson & Gibson, 1955). Knowledge of the world is obtained and developed not through innate ideas, the processing of raw sensations, *a priori* categories, internal representations, or stored knowledge (Gibson, 1986:1979: 253), but through the perceiver's time-extended and active perceptual exploration of the world.

Gibson's theory of affordances has important implications for how we account for human languaging. In the tradition of ecological psychology, Carol Fowler (2010, 2014) and Robert Verbrugge (1977, 1980) have investigated different aspects of language in the perspective of ecological psychology. Rejecting the premises of (linguistic) phenomenalism, a realist theory of language is faced with the puzzle of explaining how utterances enable virtual and other forms of experience (Verbrugge, 1977). While accepting that utterances are not isomorphic to the experiences that they evoke for language users, the realist view does not accept that utterances are arbitrary representations of things and events in the world. Utterances embody linguistic pattern or wordings that agents can detect and make use of. Linguistic pattern is a crucial aspect of the affordance layout of an utterance or text that interactants perceive and make use of. This fact raises an important question: what is the relationship between persons, linguistic pattern, the environment, and evoked experience?

We can start to answer this question by considering Gibson's cautionary advice against trying to understand perception in the same way that we commonly understand communication, i.e., as the transmission of content or information from one mind to another by means of a code that mediates the transmission process (Gibson, 1986/1979: 63). A careful examination of Gibson's distinction between the kind of information that is communicated by being transmitted from a sender to a receiver by means of a medium or channel of communication and Gibson's concept of ambient stimulus information shows that visual and graphic displays and spoken and written language, for Gibson, are, in spite of the differences that Gibson points to, alike insofar as the information that they provide is indirect and mediated by the first observer (Gibson, 1986/1979: 63). Information of this kind, Gibson argues, does "not permit firsthand experience—only experience at second hand" (1986/1979: 63).

Gibson's theory is concerned above all with *ambient* stimulus information—the information that is available in the environment for perception. This kind of information does not entail any kind of signal that is sent from a sender to a receiver. The world, Gibson points out, does not communicate with us (Gibson, 1986/1979: 242–243). Instead, the world is specified in the structure of the light, sound, chemical composition, etc., that the environment makes available to us. The theory of communication that Gibson alludes to in this passage is the influential code model of communication. Gibson's cautionary advice against assimilating perception to this model is, in my view, correct, and yet it still assumes that communication is something fundamentally different from perception in ways that Gibson did not fully recognise. In other words, Gibson does not question the predominant view that a communication system such as a language is a code-like mechanism for encoding a message into a signal form for the purpose of transmitting it to someone else who then decodes the signal in order to retrieve the sender's message. Gibson's primary concern, as I pointed out above, is with the ambient stimulus information that is available in the environment and which perceivers can detect and make use of.

However, Gibson (1986/1979: 41–42) also points out that other animals, including other persons, are "the most complex objects of perception that the environment presents to an observer". Specifically, animals afford each other not only behaviour, but also social interaction (Gibson, 1986/1979: 42):

> As one moves, so does the other, the one sequence of action being suited to the other in a kind of behavioral loop. All social interaction is of this sort—sexual, maternal, competitive, cooperative—or it may be social grooming, play, and even human conversation.

> This brief description does not even begin to do justice to the power of the notion of affordances in social psychology. The old notions of social stimuli and social responses, of biological drives and social instincts, are hopelessly inadequate. An understanding of life with one's fellow creatures depends on an adequate description of what these creatures offer and then on an analysis of how these offerings are perceived.
>
> (Gibson, 1986/1979: 42).

In chapter 8 of *The Ecological Approach to Visual Perception* (1986/1979), Gibson elaborates his theory of affordances. Again, he returns to the notion of other animals, including other persons, as rich sources of affordances:

> The richest and most elaborate affordances of the environment are provided by other animals and, for us, other people. These are, of course, detached objects with topologically closed surfaces, but they change the shape of their surfaces while yet retaining the same fundamental shape. They move from place to place, changing the postures of their bodies, ingesting and emitting certain substances, and doing all this spontaneously, initiating

their own movements, which is to say that their movements are *animate*. These bodies are subject to the laws of mechanics and yet *not* subject to the laws of mechanics, for they are not *governed* by these laws. They are so different from ordinary objects that infants learn almost immediately to distinguish them from plants and nonliving things. When touched, they touch back, when struck they strike back; in short, they *interact* with the observer and with one another. Behavior affords behavior, and the whole subject matter of psychology and the social sciences can be thought of as an elaboration of this basic fact. Sexual behavior, nurturing behavior, fighting behavior, cooperative behavior, economic behavior, political behavior—all depend on the perceiving of what another person or other persons afford, or sometimes on the misperceiving of it.

<div align="right">(Gibson, 1986/1979: 135)</div>

Gibson says very little about language. However, the above passage is highly suggestive for and relevant to an account of languaging as a form of extended action-perception. In the above passage, Gibson mentions modulation of body surfaces, self-initiated animate movement, changing postures, responsivity, and so on. Gibson's view of language and how it fits into a theory of affordances is ambivalent. There is a tension between the old perspective and the new one he is seeking to develop. On the one hand, Gibson appears to assimilate language to a code theory of communication and the very different conception of information that this entails with respect to Gibson's specificational theory of perceptual information. On the other hand, Gibson cautions against building a theory of perception on the basis of the code theory. The information for perception is specificational, and is not transmitted via a medium or channel from a sender to a receiver. Moreover, Gibson includes human conversation in a more general conception of the kinds of social interaction that persons, and animals more generally, afford each other. Gibson writes: "What other persons afford, comprises the whole realm of social significance for human beings" (1986/1979: 128).

This ambivalence can be resolved if we see more clearly that language itself does not fit the code model of communication and cognition that Gibson rejects as the basis for a theory of perception. Instead, human languaging affords or makes available to other persons information that others can detect and make use of if they so desire and if they are in possession of the relevant cultural skills and capacities for doing so. On this view, language can be viewed as a form of extended action-perception system. Through their languaging, persons make available stimulus information that has the capacity to activate and guide action-perception in both one's self and in other persons. Gibson's realist inclinations focused his concerns on the physical environment though he was by no means indifferent to the cognitive, social, cultural, and educational implications of his theory.

Gibson's (1950, 1977, 1983/1966, 1986/1979) concept of information is very different from the one developed by Claude Shannon and Warren Weaver in their co-authored book *The Mathematical Theory of Information* (1964/1949). In

making Shannon's original ideas accessible to a wider audience, this book propagated across and resonated with a range of disciplines not envisaged in Shannon's original work. Shannon and Weaver's book influenced psychology, anthropology, biology, economics, philosophy, and linguistics (Kay, 2000: 98). Information, in this theory, bracketed out semantics and defined information as the probabilistic selection from a set of possible messages (Shannon & Weaver, 1964/1949: 11). Information was defined in statistical terms: the information conveyed by a message increased as the probability of its occurrence increased. It was a theory of the transmission of information between machines; information is accordingly separated from biology, agency, meaning, value, and point of view.

Shannon and Weaver's conception was developed in the context of machine intelligence. Meaning was irrelevant to this conception. For Gibson, the information in the stimulus information that the perceiver picks up and which specifies environmental events for the perceiver is *meaningful* for the perceiver. Information of this kind serves to guide the activities of perceivers in their environment at the same time that it is constituted by their own exploratory activity. Information is carried by patterned invariants of energy distributions that are "structured by environmental layouts and sources relative to a stationary or moving point of observation" (Turvey, 2012: 130). Linguistic patterns are spatial and temporal patterns that are available in the ambient acoustic energy that results from someone's vocal tract activity.

These patterns are intrinsically temporal; they are not perceived as static images. Instead, they are "scanned, sampled, or otherwise interacted with in such a way as to detect and identify—to pick up—an encounter with a discriminable pattern" (Bickhard & Ritchie, 1983: 13). These activities of scanning and sampling are interactions between perceiver and the temporal patterns of languaging (and other) behaviour that take place in time. The perception of environmental events is time-dependent in the following two senses. First, it does not occur in a discrete instant of time, but is dependent on the time-locked flow of interactivity – perceptual invariants must be interacted with through time to be picked up (Bickhard & Richie (1983: 25, Fowler, 2010: 289–290; Gibson, 1986/1979: 221). Second, the time-extended flow of interactivity in some act of perception is "informationally dependent on the occurrence of past aspects of that pattern—that is, perceiving involves memory" (Bickhard & Richie, 1983: 25).
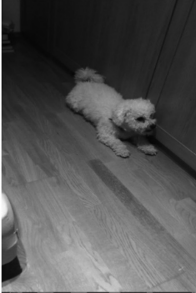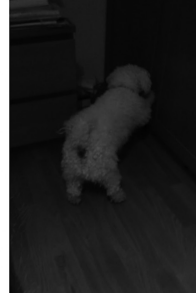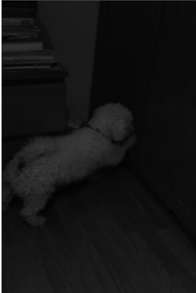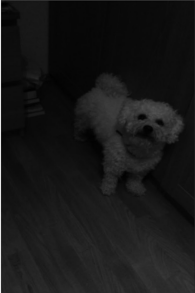
Information in Gibson's sense is generated by the animal's activity in its environment. Information in Gibson's sense is specificational; it is information *about*, i.e., information that specifies something about an environmental event or layout for the animal. Thus, to perceive X is to detect information about X; they are simply two aspects of the same state of affairs (Turvey, 2012: 130). The information which the organism detects specifies possibilities for action, cognition, and learning for the organism. Gibson (1986/1979) coined the term "affordance" to refer to the opportunities for action of particular organisms. The metaphysical hypothesis of organism-environmental dualism is thus replaced by the scientifically grounded fact of organism-environment mutuality or reciprocity (Turvey, 2012: 133).

According to Gibson's realism, affordances exist in the external environments of different animal species. Affordances are also dependent on the actions of a particular animal species. Perception is an active and exploratory process of seeking and detecting the affordances of the perceiver's environment, i.e., those patterns of stimulation that specify and guide the perceiver's activity in its ecological niche. Affordances refer to predictable or reliable relations between an animal's action and the environmental stimulus information that is picked up and detected as a result of that action. In this sense, affordances have an objective existence. They exist in the environment independently of the animal until the animal interactively discovers them, explores them, and makes use of their potentialities for changing action and awareness or for satisfying its needs and wants in some other way.

The establishment of persisting interactive control loops is very evident in the interactivity between persons and pet dogs. By means of these loops, the organism can seek out desirable and beneficial situations and avoid undesirable and harmful ones. Interactive control loops are established and in part consist of persisting environmental features that are in some way significant for the animal. Dogs become highly attuned to such features in their interactivity with the persons who take care of them, including their languaging. Pepsi is the bichon frise shown in the episode transcribed in Table 1.3. Whenever Pepsi sees me getting my pullover, jacket, and shoes, he becomes very excited. These items are, in the world of Pepsi and me, part of an interactive control loop that involves getting ready to go outside for a walk. (I am not always sure who takes whom for a walk in these circumstances!). The frame-by-frame analysis below should be cross-referenced to other details provided in the transcribed episode in Table 1.3. The numbering below refers to the numbered frames in the transcription in Table 1.3.

1. Pepsi is resting on the floor beside my clothes cupboard. I am seated at the desk working on the computer. Pepsi turns his head towards me and utters several low high-pitched whimpers.
2. Pepsi turns his head towards me then stands up and moves towards me and stops, looking up at me. I am turned towards Pepsi. Eye contact is established. I say: *what are you going to do Pepsi*?
3. Pepsi jumps up, standing on his hind legs, and vigorously paws me while uttering soft, high-pitched whimpers and one final soft, high-pitched yelp.
4. He then returns to the floor and looks up at me.
5. He then turns and moves towards the door of the room where he pauses, turns to look at me, holding that position for 7.68 s.
6. He walks back to me, pauses in front of me, still seated, and looks up at me.
7. He turns away and moves to the one of the clothes cupboard doors and begins to paw at it vigorously. I say: *what is it Pepsi*? (as he starts to move towards the clothes cupboard).The pawing occurs in three rapid bursts and lasts for just over four seconds (00:26:259—00:30:289).
8. Pepsi moves to the next clothes cupboard door and repeats the pawing procedure.

Table 1.3 Pepsi wants to go out for a walk; Transcription of interactive control loop between Pepsi and the author

Frame 1: 00:00:160 - 00:400:240	Frame 2: 00:400:240 - 05:090:472	Frame 3: 05:090:472 - 08:800:370	Frame 4: 08:800:370 - 00:09:200
Frame 5: 00:09:200 - 00.21.190	Frame 6: 00.21.190 - 00:23:009	Frame 7: 00:23:009 - 00:30:400	Frame 8: 00:30:400 - 00:40:789
Frame 9: 00:40:789 - 00:39:210	Frame 10: 00:39:210 - 00:51:805	Frame 11: 00:51:805 - 00:55:607	Frame 12: 00:55:607 - 01:01:990

9. He again repeats the pawing procedure. I say: *oh come on Pepsi* (as Pepsi stops pawing and turns his head towards me).
10. He moves back towards me and stands in front of me, looking up at me to establish eye contact. I say: *yeah Pepsi we'll do that later, we'll go out later, ok*.
11. He moves closer to me, looking up at me to establish eye contact. I say: *mm* Pepsi: *soft yelp* + begins to turn towards me + *soft high-pitched whimper* as he moves towards me. I say: *mm*. Pepsi: low breathy guttural vocalisation followed by sequence of low guttural vocalisations as he begins head turn leading into Frame 12;
12. He turns away, moves to the door of the room, which is closed, and begins pawing the door.

If Pepsi sees me pick up my shoes, he responds excitedly in his going-for-a-walk mode in anticipation of a walk outside even if I am not planning to go out-side. He is also attuned to the cupboard in which my outdoor clothes are stored and will vigorously scratch with his front paws on the cupboard door to let me know it's time to get ready for a walk. Both of these examples—Pepsi observing me pick up my shoes or outdoor clothes and Pepsi's scratching on the clothes cupboard door—are persistent features of this particular interactive control loop that includes Pepsi, me, the objects and actions mentioned above, and going for a walk outside as the desired outcome. From Pepsi's point of view, the objects mentioned make sense and have "sense" in relation to this particular interactive control loop.

Shoes and pullovers make sense to me in a range of other interactive control loops that are not available to Pepsi. Moreover, Pepsi, unlike me, has no words like "shoes", "walk", etc. He cannot bark to me, "Put your shoes on. It's time for my walk" or "Remember the time we went for a walk and you wore the new shoes you bought in Australia". However, there is a sense in which Pepsi attunes to and responds to the flow of my languaging, especially when it is directed at him. This does not mean that he parses my languaging into word-like entities, but that he is able to respond to, to be affected by, and to integrate aspects of the flow of my languaging to his own awareness of the situations and interaction flows in which we are co-participants. Dogs can interactively exploit aspects of the flow of 9E human languaging (see Vol. I, *Introduction*, section 4) though not neces-sarily those aspects that humans privilege or take to be criterial for the definition of "language" (see also Fraser, 2019). Their capacity to do so is grounded in the fact that dogs like humans sensitise to those aspects of 9E languaging that enable us to *feel* our way through our encounters with each other. Moreover, the objects relevant to this particular interactive control loop involving Pepsi and me can to some extent be lifted out of the control loop such that they have a sense for Pepsi independently of any particular performance of the interactive loop. This much is evidenced by Pepsi's excitement on merely seeing me take hold of the items in question. Seeing the shoes resting on the floor does not elicit this response. In any case, it is the embedding of these items in this particular interactive control loop that is the source of the sense they have for Pepsi.

A given perceiver's ecological niche is defined by what it affords the perceiver. In the Gibsonian perspective, meaning arises as a result of the perceiver's effortful activities to explore and to detect this ecological information. Gibson is referring to very primitive forms of meaning rather than the complex semantics of human languages. However, his point is crucial for gaining a more adequate understanding of how the functional capacity to affect and to be affected emerges in the human ability to make information available to others and to make use of the changing affordance layouts of bodies-in-interaction in human languaging (section 6). We already see aspects of this ability at work in the interactive control loop that operates between me and Pepsi.

5. Whole body sense-making: the nesting of languaging in the hierarchy of exploratory movements and optimising adjustments

In his *The Ecological Approach to Visual Perception* (1986/1979), Gibson proposes a hierarchy of moving organs of perception—body, head, eyes—and their correlative movements, i.e., locomotion, head turning, and eye movements. All of these movements, as Gibson explains, make exploratory adjustments as the organism moves in relation to and explores its environment. Gibson also proposes a hierarchy of more delicate or fine-grained movements effected by the hierarchy of eyelid, lens, pupil, and retinal cells. The second hierarchy effects what Gibson calls optimising adjustments. Gibson summarises the distinction between exploratory movements and optimising adjustments as follows:

> The body explores the surrounding environment by locomotion; the head explores the ambient array by turning; and the eyes explore the two samples of the array, the fields of view, by eye movements. These might be called *exploratory adjustments*. At the lower levels, eyelid, lens, pupil, and retinal cells make what might be called *optimizing adjustments*. Both the global structure and the fine structure of an array constitute information. The observer needs to look around, to look at, to focus sharply, and to neglect the amount of light. Perception needs to be both comprehensive and clear. The visual system *hunts* for comprehension and clarity. Exploring and optimizing seem to be the functions of the system.
>
> (Gibson, 1986/1979: 219)

Languaging is grafted onto and builds on the hierarchy of exploratory and optimising adjustments of the body's action-perception systems. The vocal tract and vocal tract actions are embedded in and extend the hierarchy of exploratory adjustments at the same time that vocal tract actions also effect fine-grained optimising adjustments. The exploratory and optimising hierarchies, respectively, are the more coarse-grained (least delicate) and the more fine-grained (most delicate) manifestations of a unitary bodily system of sense-making that is only arbitrarily carved up into different semiotic modalities. The term "bodily" does not equate

with the physical, seen as distinct from or even opposed to the "mental". The bodily and the mental are an inseparable unity. The hierarchy of exploratory movements and optimising adjustments described by Gibson is mental through and through. Above all, the mental is manifested in the way in which the hierarchy of exploratory movements and optimising adjustments is directed by subjective aim and animated by directional feeling that has its origin in the core self (Vol. II, chapter 3, sections 1–2). Arguably, the subjective aim and directionality of vocal tract gestures are further levels of development in both evolution and development that have been entrained to social and cultural dynamics (Lemke, 2000a, 2000b; Thibault, 2000, 2004a, 2004b).

Action and perception unfold in parallel. Exploratory activity elicits perceptual stimulus information that the organism can detect and make use of. Action and perception also develop in parallel from a common source in upper brain stem only to diverge at the same time that the connectivity across the two derivational trajectories (of action and perception) keeps them in phase (Brown, 2015: 20). In this way, action and perception are synchronised. Language is grafted onto and is a further outgrowth of the basic action-perception system, as shown in Figure 1.1.

As Yakovlev (1948: 320) pointed out, synergies of "pneumo-laryngo-pharyngeal and facio-glossal" movements enable human organisms to emote, i.e., to bring out and thus to actualise in expressive behaviour motives and states of arousal that are internal to the organism. By the same token, these behaviours also arouse reciprocal or responsive behaviours in the other. The other's response is also informed by arousal and motive. The reciprocity and responsivity which these gestural displays arouse or prompt in the other depend on motives which can be either intrinsic or situational, or both. The self is aroused to respond by synergies of pneumo-laryngo-pharyngeal and facio-glossal behaviours displayed by the other, not by imitating the observed action of the other, but by co-orienting with the other to the other's locus of attention and concern. Self and other entrain to each other's expressive and neural dynamics. In infants, this entrainment is driven by affect, which is functional in affiliating infant and caregiver in a functioning dyad based on attachment (Hart, 2008/2006, 2011/2006; Kinsbourne, 2005; Stern, 1984, 2002/1977; Trevarthen, 1998; Vol. I, chapter 3, sections 7–9).

Arousal, whether prompted by situational factors or by internal ones, e.g., a memory or a bodily feeling, originates in the core self as a rhythmic pulse of limbic cognition. The global constraining of pneumo-laryngo-pharyngeal and facio-glossal movements to function as an adaptive action, e.g., a linguistic utterance requesting a cup of tea or getting someone to tidy up a messy room, constitutes the synergistic cohering of constraints that are distributed across and defined across both organism and environment into a global, functionally specific task (Saltzman & Kelso, 1983: 25). Dynamical system accounts show how higher-order global parameters constrain nested structures of constraints so as to allow the limbs and other articulators to cohere into task-specific, functionally defined, special purpose action systems for getting things done (Saltzman & Kelso, 1983: 24–25).

The hierarchy of exploratory movements and optimising adjustments is a series of nested levels with the more delicate or fine-grained movements nested in the
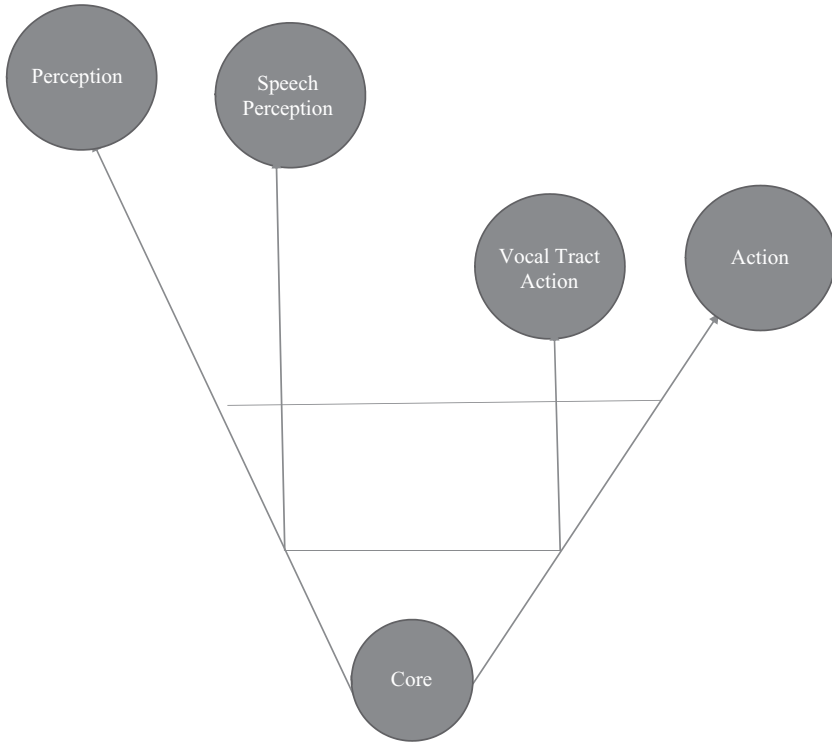
Figure 1.1 The embedding of languaging in action-perception, showing (1) the outgrowth
of the former from the latter; and (2) the horizontal linkages between them in
the form of intra- and inter-hemispheric pathways in the mind-brain space;
adapted from Brown (2015: 20)

least delicate or more coarse-grained ones. For example, the cohering of the body
into a global, functionally-specific task such as the utterance *yeah look* discussed
in Vol. I, chapter 3, section 14 is therefore a synergistic integration of a series of
increasingly articulated cycles of exploratory movements and optimising adjust-
ments that span the entire range from body movement (least delicate) to vocal
tract movement (most delicate). Here I confine my observations to the observ-
able behavioural or bodily (exophasic) dimensions of a microgenetic trajectory
that has its origins in endophasic microgenetic process that is continuous with
the observable behavioural dimension. The system of levels is intrinsically hier-
archical and, in accordance with microgenetic theory, it unfolds from within as
a series of successive levels that begin with axial and postural musculature to be
followed by distal asymmetric movement (Brown, 2015: 105). Articulated vocal
tract action is a distal movement in this sense. Moreover, vocal tract action is an
extension of and further specification of the system of exploratory movements and

optimising adjustments described by Gibson. Linguistic actions of the vocal tract are embedded in this system and are its extension.

The movement of the body relative to the environment is an articulated action in relation to the environment. Nested in the body is the head and the hand-arm system (the upper limbs). The head moves relative to the body. One can turn one's head to orient to the environment in more finely articulated ways with respect to the body. One can point and gesture with one's hands. The eyes and ears, like the vocal tract, are nested in the head. These three systems, in different ways, move relative to the environment, to each other, and to the lower levels of the head and body and upper limbs. Whereas the eyes and ears explore and sample the optical and acoustic arrays, the vocal tract, which is not a single organ, but a synergy of organs of the pneumo-laryngo-pharyngeal and facio-glossal systems, yields highly differentiated and articulated movements. Eye gaze too is an articulated action system that perceivers track, often in conjunction with actions of the pneumo-laryngo-pharyngeal and facio-glossal systems as well as hand gestures. It is clear that I have introduced a few complicating factors with respect to Gibson's hierarchy of body, head, and eyes. The arm-hand system branches off the upper torso, not the head. And yet, hand gestures and sign language are, like the vocal tract, highly articulated action systems capable of making many fine-grained sensory-kinetic discriminations.

Overall, we can see a progression from the least articulated lower levels to the most articulated higher ones. This progression has the form of a specification hierarchy in which each level imposes a further layer of constraints as the system unfolds towards the more highly specified levels without, however, transcending the less specified lower levels (Salthe, 1993: 213). The directionality of this unfolding from less specified to more specified can be explained in terms of the boundary conditions imposed on the individual body-brain system by higher-scalar ecosocial arrangements that select for coordination of individuals in complex social environments.

A complex ecosocial environment that entails both competition and cooperation selects for the highly articulated differentiations required both to interpret and to coordinate with other peoples' behaviours, intentions, feelings, and so on. Interpretation and coordination entail the concomitant need to act strategically in relation to other persons. This need creates pressures for more elaborate semantic differentiations of salient environmental factors together with more finely honed procedures for coordinating action between persons. In other words, the hierarchy of exploratory movements and optimising adjustments is modified in the direction of sociality and thus the orientation to and the exploitation of the affordances of each others' bodies. Christensen (2007: 263) mentions the action of picking up a glass without knocking it over as an example of articulated or differentiated action control, commenting that "it is helpful to be able to independently control the force and direction of arm movement" (2007: 263). Linguistic action of the vocal tract is a vastly more complex form of articulated action control than picking up a glass.

Table 1.4 and the discussion above show the ways in which the most articulated levels of bodily action are embedded in the least articulated. Rather than a combining of separate bodily modalities (gaze, pointing, vocalising, etc.), as is sometimes assumed, the unfolding in time of a task-specific, functionally defined, special purpose action such as an utterance is the unpacking across layers

Table 1.4 The embedding of the most articulated body actions of the body-head-perceptual systems in the least articulated

Anatomy	Action	Perception	Degree of Specification
body and lower limbs	locomotion	general orientation relative to ground and to environment; movement in environment; information about movement and location in environment	least articulated
head	head turning	focusing on, attending to selected aspects of environment; directing listening and looking	
eyes	gaze	pick up of visual information in optical array; tracking of gaze	
ears	cocking, tilting the ear; listening	hearing, pick up of acoustic information in acoustic array	
hands	deictic pointing; gesturing; haptic exploration; reaching; grasping	haptic, touch; tracking direction of point	
vocal tract	vocal tract gestures, the voice; expressive facial displays	hearing one's own voice; self-monitoring	most articulated
respiration; flow of air from lungs causes vibration of vocal cords	modulation of voice pitch	sensing of vibration of the vocal cords	least articulated
phonation: modulation of passage of air between the vocal folds; subglottal closure	production of voice	sensing the vibration of the vocal folds	
articulators	co-articulation of phonetic gestures	speech sounds	most articulated

of increasing articulation of a whole-body sense-making system that involves a serial emergence of the most articulated systems from the least articulated ones in which the former are nested. This is a form of embedding of parts in earlier wholes that is not unlike the embedding of dependent grammatical structures in larger wholes such as the embedding of post-modifying prepositional phrases in the structure of the nominal group. There is also recursion. Recursion is not the same as embedding. In the present case, recursion involves the controlled transformation from one posture to another (Reed, 1996: 85). This occurs on all of the levels proposed above.

Again, this has its analogues in grammatical structure. To stay with the nominal group, the pre-modification of the Head noun by deictics, numeratives classifiers, and epithets constitutes recursive modification of the Head element. In *red wine*, *red* recursively operates on *wine* to modify it by specifying the type of wine. On this interpretation, *red* functions as classifier. In *the red wine that John spilt* the defining relative clause *that John spilt* is embedded in the structure of the nominal group, which is a grammatical structure at a lower rank with respect to the clause. The defining relative clause subclassifies the Head element. Whereas the most articulated levels of bodily action are embedded in the lower, less articulated ones, there does not appear to be anything comparable to rank shift in the grammar, where higher levels can function in structures of a lower rank.

Perceptual exploration of the potentialities of an energy array is a values-realising exploratory activity (Gibson, 1950; Hodges, 2007a, 2007b). Utterances are ecological activities of human agents. Following Noë (2004), our experience of the content of an event varies according to the ways we interactively move in relationship to it. Perception is an active, exploratory process that can be refined and improved through what Gibson called the "education of attention" (section 4). Our experience of an event varies both according to how we move in relationship to it and the skilfulness of our exploratory activity. Noë argues that perceptual experience is virtual until it is actualised by skilful sensori motor exploratory activity. We explore the potentialities of the event. In so doing, we structure and organise our exploratory activity in relationship to it in order to unfold the potentialities of value and meaning that the event affords the observer.

Languaging is bodily activity that is produced by the speaker but which in all its other aspects is distributed over the various co-participants in the interaction. The concept of sensorimotor contingencies in the work of O'Regan and Noë (2001a, 2001b) is appropriate here. Sensorimotor contingencies refer to "the structure of the rules governing the changes produced by various motor actions" (2001b: 941). In speaking, the relations between sensorimotor output and sensory input are spread across several modalities (vocal tract gestures, acoustic signal, visible facial and other movements, audition, vision, proprioception, kinaesthesia). If we take vocal tract and related activities in speaking to be a form of exploratory or seeking activity *qua* motor (action) output, we can enquire into the relations between this activity output and the sensory input.

What are the lawful regularities at work in the relation between this motor output and sensory input? The motor output of the speaker is directly picked up by proprioception (Gibson): receptors in the tongue, lips, hard and soft palate, cheeks, and glottis, pick up the coordinated activity of the articulators and feedback to the speaker as self-awareness of his or her own articulatory movements (kinaeasthesia). Both speaker and listener hear the speech sounds of the former at the same time that the listener very often also sees the lip and other facial movements, etc., of the speaker. Moreover, the listener also moves in response to the perceived movements of the speaker and this movement is picked up by the speaker.

According to the theory of perception developed by Noë (2004), perception is enacted through the body's exploratory activity rather than interpreted or processed by an internal processor in the brain. Perceivers have an implicit practical knowledge of the sensorimotor activities that are required to activate perceptual content. These activities consist of various kinds of movement – of the eyes, the head, the hands, etc. – which enact what we see or hear and how the given object or event looks or sounds to us. In other words, variations in the patterns of sensorimotor actions which we use to explore the environment determine how the particular aspect of the environment that is attended to looks or sounds to the perceiver (Noë, 2004: 99). Noë (2004; see also O'Regan & Noë, 2001a, 2001b) calls these activities "sensorimotor contingencies". The information that is picked up varies in lawful ways with the sampling activity of the perceptual system. It is in this way that properties and features of the world are revealed as visual, spatial, tactile, and other kinds of content. The world acquires content for us through our active exploration of it by means of the perceptual activities of looking, listening, touching, sniffing, and so on. The perception of utterances in the flow of languaging activity is, in principle, no different.

In the following section, I turn to the question of languaging as extended action-perception.

6. Languaging as extended action-perception system

As we saw in section 2, the ecological psychologist Bert Hodges (2007a: 599) posed the question as to why language has not been regarded as a perception-action system as distinct from the usual view of language as a code-like system of form-meaning pairings. If we view language as a code-like input-output system, then meaning is the result of the correlation of a form with a meaning by a central processor in the individual's brain. In this view, the sense data of, for instance, speech sounds are passively received by the sense organs and transduced by nerve endings so that they can be sent on to the brain for decoding as a meaning. If, on the other hand, we view languaging as a form of extended action-perception in the tradition of ecological psychology established by Gibson (1983/1966, 1986/1979), then meaning is something that is not passively decoded but is actively obtained, to use Gibson's (1983/1966: 45) term. This is so because

the sense organs are not the means by which meaningless sensation is passively inputted to the brain. Instead, they are functioning parts of perceptual systems that actively orient to and obtain information from the environment by means of the body's activity. They are not passive receptors of sense data, but engage in active exploration of the environment of the perceiver. How can we extend this thinking to languaging behaviour?

Languaging is an extended action-perception system for the following three reasons. First, it is an outgrowth of and originates in the same hierarchic brain structures as action and perception (Brown, 2015: 20). Action, peception, and languaging have their origins in common brain process in upper brain stem and develop in parallel over the same hierarchic brain structures. The articulation of utterances and their comprehension are grafted onto and are a further development of this basic action-perception system. Second, in real-time dialogically coordinated languaging between persons and between persons and aspects of situations, action, perception, and languaging are not separate modalities that are "combined". Instead, there is a unified field of synergistic relations between them (Vol. II, chapter 2, section 6; see also Vol. II, chapter 14, sections 2 & 3). Languaging coordinates, directs, and extends attentional control. Third, the linguistic pattern that skilled languaging agents detect and make use of in utterances when they explore their affordance layouts and those of related body movements has the functional capacity to catalyse and to simulate virtual forms of action and perception and other forms of nonperceptual awareness.

In making the argument that languaging is extended action-perception, it is important to understand that perception is not language-like (Verbrugge, 1980: 92). Rather, languaging in fundamental ways is more than merely perception-like. It is grounded in action-perception and is an extended mode of action-perception. To understand this point, I draw attention to three important aspects of action-perception.

First, perceptual exploratory activity is the action output that generates perceptual stimulus information as the input that guides further action. One perceives how one can act by acting on the environment and obtaining information about it.

Second, perception is virtual action and is therefore proto-modal in character. The stimulus information that is obtained from the environment and which specifies that environment for the perceiver provides indications as to potential future action in the relevant environment—indications as to what is possible, desirable, necessary, and so on. The perceiver selectively attunes to the invariance structures in the flow of stimulus information that serve to guide the future action possibilities of the perceiver. Perception is prospective or anticipatory control of action and awareness in this sense (Reed, 1996: 66, 171–173).

Third, perception is not a representation of the environment, but an interactive simulation of it (section 1). Perceptual categories that are built up through reentry (section 4) serve to differentiate and thus selectively to discriminate the world of the perceiver (Gibson, 1986/1979). Perceptual categorisations are interactively

constituted and tested against the environment in action. In this way, perceptual discriminations that do not work, are in error, and are otherwise unsuccessful, are de-selected and not retained while those that are effective in the ongoing recursive self-maintenance of the perceiver are selected and retained (section 3).

Languaging extends these aspects of action-perception as follows. First, utterances are structures of action that seek responses from the relevant environment—responses that will provide the speaker with information about the environment, including other persons. In dialogically coordinated languaging between persons, one goes beyond observables by acting on other persons (to try) to see how the other sees me and how the other will act in relation to me (Vol. II, chapter 4, section 13).

Second, utterances are always fundamentally modal in character; whether overtly or covertly they always enact modal stances that provide indications of and seek to develop the future interaction potential of the relevant environment. Utterances enact interactive stances from the embodied points of view of languaging agents. These interactive stances enable persons to attune to aspects of experience that the utterance both points to and differentiates in the relevant environment. Linguistic pattern in utterances enables persons to attune to features of both the actual environment that can be perceived and to virtual environments and virtual forms of experience that are not supported by perceptual stimulus information in the current environment other than that provided by the affordance layouts of utterances and texts.

Third, the experiential semantic categories that are intrinsic to the lexicogrammar of language are not representations of the world that are matched to internal schema about the things represented. Instead, they function interactively to *differentiate* selected aspects of the environment under a semantic aspect. Construal (Halliday, 2004/1985: 168–169; Langacker, 1987) can be understood in this way (Thibault, In Press/2021). Construal is a form of simulation. Experiential semantic categories enable agents interactively to differentiate and thus to simulate aspects of the environment—both the physical environment and the virtual environments that utterances have the capacity to evoke in the imagination (Thibault, In press-a). As with perception, these simulations are interactively tested in the environment. Simulations that work and are therefore successful will be selected and retained while those that do not work will not.

Whereas linguistic theories have tended to assume that "meaning" is an abstract level of "language" that is related to the other levels (e.g., lexicogrammar, morphosyntax, phonology) by coding relationships or realisation statements in ways that vary from theory to theory, the idea of languaging as extended action-perception starts from a different premise that was first formulated by Verbrugge (1977, 1980; see also Thibault, 2014a). Meaning is not a level of linguistic organisation that is realised or expressed by other levels. It is, as Verbrugge (1980: 92) argues, an interactive-psychological relationship between a perceiver (listener, reader) and the affordance layouts—the linguistic pattern—of an utterance or text.

An utterance or text has functional capacities intrinsic to its organisation that can constrain an attunement to a particular form of experience even when there is no stimulus information available in the immediate environment to support such an experience.

Utterances and texts are culturally evolved means whereby skilled languaging agents produce, organise, and present information to others in interactively highly focused ways. The linguistic pattern that languaging agents detect in utterances is information that has the functional capacity to alter and to regulate agents' awareness of and relations to their environment when they interactively explore and make use of the affordances of utterances. There is no action, experience, perception, feeling, thought, or meaning outside of or independent of a person whose activities create the context in which action, experience, perception, feeling, thought, and meaning are constituted. The idea that meaning is something that is paired with or associated with a form is a hypostatisation that ignores or trivialises the fact that it is what people *do* with the information they detect and interact with that makes meaning. For this reason, "meaning" is an interactive-psychological relation in the sense described above. It is irreducible to positivistic pairings of forms and meanings.

The capacity to detect and make use of information in utterances is grounded in and is a further development of the prior capacity to detect ecological information and to use the information that is picked up to guide action and awareness (Reed, 1996: 171). The ability to produce, organise, and present information linguistically for others means that languaging agents are able to influence the awareness and action of others across place and time.

7. Ecological information and the extended field of languaging: an analysis

As we will now see by way of an example, my daughter can directly observe and detect ecological information about her pet hamster eating from his food stick, and she can tell me about what she observed in ways that make me aware even though I did not directly observe the event in question. It is this capacity that underscores the difference between the detection of environmental information (perception) and the selection and presentation of information to make available to others (languaging). On this view, meaning is not a level of linguistic organisation, but an interactive-psychological relationship between languaging agents and the affordance layouts of utterances and texts that functionally and selectively constrains an attunement to a particular aspect of environmental structure, actual or virtual.

A few minutes before I began typing this paragraph, my then 12-year-old daughter came to me to recount something that had occurred moments beforehand in relation to her pet hamster. Table 1.5 features a transcription of the entire episode that correlates with the frame-by-frame description below of Table 1.5.

Table 1.5 Transcription of Catherine's "Chubby" recount; italics = speech; normal font enclosed in square brackets = body movements; F = father; C = Catherine

Frame 1: 00:04.71 - 00:08.42

Frame 2: 00:08.42 - 00:11.29

Frame 3: 00:11.29 - 00:13.79

Frame 4: 00:13.79 - 00:18.00

00:00:08.425

00:00:10.375

00:00:13.776

00:00:16.615

Frame 5: 00:18.00 - 00:23.10

Frame 6: 00:23.10 - 00:26.12

Frame 7: 00:26.12 - 00:29.11

Frame 8: 00:29.11 - 00:30.30

00:00:19.760

00:00:24.783

00:00:28.351

00:00:29.230

Frame 9: 00:30.30 - 00:34.01

Frame 10: 00:34.01 - 00:40.61

00:00:31.060

00:00:35.420

Transcription of Frames in Catherine's Recount of Chubby

Frame 1:

C: *Chubby was eating with his stick* + grasps book lying on bed.

Frame 2:

C: *ah let's say this* [+ holds book up to show me as the book is transformed into the stick] *is his stick*

Frame 3:

C: *and then he was eating and I had put it like this* [+ holds book in vertical position synchronised with "this"]

Frame 4:

C: *and then it fell* [+ flips book over to synchronise with "fell" to mime the stick falling on Chubby] *on top of him*

Frame 5:

F: *yes*
C: *so he fell on his back* [+ C. falls on her back] *and he was just laying there he didn't move he just lay there.*

Frame 6:

C: *and then I took the stick away* [+ sits up]

Frame 7:

C: *and he just he was like really still* [+ holds body posture synchronised with "still"]

Frame 8:

C: *and he just* [+ two rapid sideways jerks of torso, arms and head] *moved*

Frame 9:

C: *and he went quick* [+ rapid pronounced twist of upper torso, arms & head] *he quick did like this* [+ twists upper torso, arms, and head] *and just kept on eating* + smiles at me + laughs

Frame 10:

F: *ok* [+laughs] *so he got on … he righted himself*
C: *yeah*
F: *he kept on eating right*?

The transcription associated with Table 1.5 draws attention to Catherine's speech and its synchronisation with various mimetic actions she performs with her body in order to create a virtual re-enactment of the event she has just witnessed. The hamster was eating from a food stick, which moved and caused the hamster to roll over on his back before he then rolled right side up again and resumed his eating. While recounting this event, my daughter rolled onto her back on the bed in the room where we were conversing and on which she was sitting while I was working at my desk. Through the synergistic coordination of this mimetic action and her speech, my daughter created an occasion for our mutual attunement to an experience which she had witnessed directly shortly beforehand and which she was now sharing with me. Her languaging provided the occasion for our mutual attunement to something I had not witnessed and which had already happened.

What is the meaning of the utterance I now transcribe as "Chubby was eating with his stick"? One way to answer this question would be to analyse the lexico-grammatical level in relation to the semantic level, as in Table 1.6.

My daughter directly perceived the event recounted. What is the relationship between her words and mimetic actions, as above, and her perception of the event which she recounted to me? What is my relationship to her words and the event, which I did not perceive? Is there any kind of analogy between her relationship with the perceived event and her utterance? Is there any commonality of experience and its invariants that links the perceived event and her utterance? One common answer to these questions is to say that the utterance "represents" the event. In ways that remain obscure, the words are said to "stand for" the perceived event. These claims are obscure because the relationship between the words that comprise the utterance and what they refer to rests on the assumption that the

Table 1.6 Transitivity analysis of the clause *Chubby was eating with his stick*

Actor	Process: Action	Circumstance: Means
Noun	Verbal Group	Prepositional Phrase
Chubby	was eating	with his stick

relationship between the linguistic structure and the perceived event is arbitrary or is dependent on external arbitrary conventions that serve to assign a meaning to a form in a particular context. On this view, the linguistic structure analyses the event into its component parts (*Chubby*, *was eating*, *with his stick*) and the relations between the parts. But how do the words connect us to the event? If we assume that the relation of the words to the event that they indicate is an arbitrary one, then there are no criteria intrinsic to linguistic structure for relating the linguistic pattern to the perceived event. We can only postulate external social conventions for connecting the two, e.g., the pairing of a meaning with a form through some kind of coding relationship stateable as a linguistic or other rule or convention.

Catherine's mimetic actions together with her speech serve both to demonstrate what she perceived and to elicit my attention and interest. Her recount is a temporal flow of activity during which the two of us move along together in a relation of co-attention and co-responsivity that establishes what Ames (1955) and Ingold (2016) have discussed in terms of "correspondence". I refer the reader to Vol. II, chapter 2, section 4 for detailed discussion of this term. Catherine's unfolding recount and my following of it means that in moving along together we seek to achieve a co-articulated functional fit with the experience that her recount unfolds. Catherine's recount and my attending to and responding to it are two lines-in-movement that unfold together and become inter-twined with each other as we co-participate in a joint attunement to an event that is now finished and which only one of us experienced firsthand. Catherine's mime and the speech it is co-synchronised with are not two modalities that are "combined" to create a multimodal event. Both the mime and the speech are aspects of a single bodily performance. Speech and mimetic bodily actions are under the same higher-order semantic constraints. It therefore makes little sense to say they are two separate modalities that are "combined". Instead, as microgenetic theory shows (Brown, 2015), they are further differentiations of a common more global proto-meaning that has its origins in the prelinguistic infrastructure of the self. They function together to create a greatly abbreviated and compressed enactment that is reduced to some of its essential characteristics in order that the performer—Catherine— can selectively betoken (Melser, 2009) for me the first-hand experienced which she has participated in only minutes earlier before then coming to me very excitedly to share her experience with me.

Rather, as MacNeill (2005) has shown, Catherine's speech and her mimetic actions are functioning components of the same overall phenomenon, which also provides compelling evidence for the grounding of thinking and speech in action-perception (Iverson & Thelen, 1999: 36). Iverson and Thelen use dynamics to explain that body gestures and speech are controlled by a common semantics, are tightly synchronised by temporal coupling and have a common integrative basis in cognition and action-perception. It makes little or no sense to talk of "combining" gesture and speech because this kind of explanation is externalist and based on linear causality. On this view, two modalities, which must be separate (and fully formed?) to start with if they are to be "combined" with another, are

viewed from the point of view of an external observer who is independent of the perspectives of those for whom the synchronised body movements in question are functional in guiding them to achieve an attunement to a nonperceptual awareness of aspects of environmental structure that are no longer present. The internalist view, by contrast, requires that we take into account the viewpoints of the agents involved (i.e., Catherine and me, her father) for whom the mimetic actions and speech are co-functional in the way described here. Moreover, they arise from common brain processes (Brown, 2015).

As Brown (2015: 4) points out, a prior pre-semantic whole has its origins in early brain structure. This more global, less differentiated whole transitions through a sequence of microgenetic phases consisting of whole-to-part transitions on time scales of several hundred milliseconds before reaching its endpoint as an observable and shareable bodily performance in the interpersonal space that was co-constituted by Catherine and me on the occasion in question. The concept of 'circular causality' offers a better prospect for developing an integrated explanation which involves hierarchical interactions of very large numbers of semi-autonomous components, including neurons, motives, body morphology, and environmental features. The nonlinear interaction of these components gives rise to the emergence of macroscopic populations of dynamical patterns on many scalar levels (e.g., neural, bodily, situational) that shape and modulate the whole-body sense-making of selves-in-interaction.

Noble (1993: 65) criticises Verbrugge's event-perception analysis of utterances. He refers to an example of a sentence—"may we come in"—used by Verbrugge (1985: 161) to show how linguistic pattern constrains the ways in which persons orient to events, to physical spaces, and so on. In Verbrugge's example, the postulated situation of utterance that is specified is that of two or more people who are outside an enclosure and who are seeking permission to enter from someone who is inside the enclosure (Verbrugge, 1985: 65). Noble writes of Verbrugge's analysis as follows:

> A problem with this account is that any constraint of the kind proposed can only ever be occasioned; the candidate phrase, "may we come in", does not, by itself, achieve the constraint Verbrugge assigns to it. The phrase is intelligible in a variety of contexts that have nothing to do with enclosures, externality and internality with respect to enclosures, or plurality of requesters. The phrase "may we come in" could be intelligibly heard, and as referring to fewer than two people, in the context of a game such as cards or dice, or in the occasion of a square dance, or a singing round, or a business deal (and in that case the reference might be to no person in particular). The achieved meaning of an utterance is certainly constrained, but by conventions of usage (as Gibson saw), and in defining contexts of use. Meaning is not fixed by words alone. By contrast, the acoustic features specifying disintegration as against percussion must be consistent over various contexts in order to have a specifying function at all.
>
> (Noble, 1993: 65)

'Meaning" is certainly not fixed by the words alone, as Noble correctly points out. Utterances are dialectically related to situational and other factors that interpenetrate and fuse with them in determinate situations. Verbrugge does not claim that the constraints relevant to utterances are as tight as the lawful acoustic constraints specifying disintegration as distinct from percussion. He does not reduce utterances to physical events in this way. He asks a different question: how does the *linguistic* structure that people perceive in utterances constrain the ways in which they perceive, move in, and orient to the actual and virtual environments that are indicated by utterances? Linguistic constraints in this sense are looser than the lawful constraints that specify one kind of physical event from another, but they are real and are internally, not externally, related to linguistic structure. Wordings functionally constrain an attunement to environmental structure, as we shall see presently.

Noble seeks to resolve the problem by appealing to external social conventions without seeing that utterances are themselves intrinsically convention-constituting (Vol. I, chapter 4, section 9). In this sense, conventions are precisely locally "occasioned". Utterances differentiate and thus evoke the contextual conditions that are necessary for them to operate in particular situations. The social conventions and usage conventions suggested by Noble, while not irrelevant, are global and external to utterances. On the other hand, languaging functions on the basis that the contextual conditions on which it is dependent occur locally and are thus retrievable on that basis. My daughter's initial utterance (Table 1.6) in her recount works because it is dependent on a set of contextual conditions that are locally available in the situation and which her utterance points to, differentiates, and evokes when she comes to me and tells me her little story about Chubby. The contextual conditions are not necessarily linguistic though they may well include previous talk about Chubby.

As we shall see below, the contextual conditions that my daughter's utterance serves to indicate is a time-extended continuous flow of experience that stretches into the past. It is the intertwined melodies of the histories of our interactions with that past interaction flow. Her utterance differentiates some aspect of the flow of experience that is evoked by the utterance as being locally relevant. In this sense, her utterance is dependent on the existence of an already existing experiential topology of experienced events which are locally recoverable for the two of us. If they were not so recoverable, the utterance would not succeed. The utterance operates on this particular experiential topology and activates some aspect of it as being newly, contingently relevant to present circumstances. That is, her utterance sets up the conditions for a dialogically coordinated focus on the aspect of the topology that her utterance selectively activates. *Pace* Noble (1993: 69–70), utterances do not "stand for" states of affairs in the world. In setting up the conditions for focusing on a particular aspect of the experiential topology that the utterance serves to evoke for me and my daughter, it also differentiates and thus sets up the contextual conditions that are necessary for the flow of her utterance-activity that follows her initial utterance in her recount of what she had just experienced with Chubby. In this sense, utterances are both dependent on past histories of our

interactivity with the affordances of the given experiential topology and at the same time they specify and constitute the contextual conditions on which other utterances are dependent.

Human languaging is a time-extended flow of activity that is integrated with the flows of perceptual stimulus information (optical, auditory, haptic, etc.) that are sampled and oriented to by the diverse perceptual systems in the course of our interactivity with the environment. My daughter participated in the flow of a time-extended structure of experience—her perception of what Chubby was doing. This flow is not divided into discrete segments or instants except those we arbitrarily impose on it. Instead, it has the character of a continuous unfolding melody, as Bergson and Gibson have shown. Moreover, Chubby, who lives in a glass enclosure in the living room, is a part of our everyday experience. We observe him, take care of his needs, sometimes play with him outside his cage, and talk about him. These experiences of Chubby are woven together as part of the indivisible flow and fabric of our experience of him—a flow moreover that extends from the past through the present and into the future as one time-extended field of experience. My daughter's recount of Chubby serves to evoke an experience of something which had previously occurred, and which she alone perceived. Is her recall of the event a form of retrieval from a store of memories? Is the Chubby event a discrete memory that can be retrieved and recalled at will? My daughter's perception of Chubby eating from his stick and then taking a tumble are transformations of the invariance structures of the indivisible flow of experience.

As Bergson, Gibson, and Robbins have pointed out, there are, on this view of experience, no discrete instants or moments of experience that, once they slip into the past, disappear from existence. Instead, the Chubby event is woven into a continuous and flowing field of experience that now persists in a virtual past that nonetheless has real effects on the present and the future. Given that Chubby is woven into this indivisible flow of my daughter's experience and mine, any new perception of Chubby with its own dynamic flowing structure in the present does not simply make available perceptual stimulus information that supports an experience of that unfolding event that is occurring now. It also and simultaneously supports a resonance with and an evocation of similarly structured virtual events or aspects of those events that occurred in the past.

Past events, which constitute a part of the virtual potential of a person, can be re-evoked to constitute a present experience of a past event. Instead of a lot of discrete memories or images of all the different features of these past events that must be re-combined to form a new memory image, the entire indivisible structure of the flow of experience is by definition already "naturally, intrinsically 'associated'" (Robbins, 2002: 305). In the Chubby-event described above, Chubby, the food stick, his eating it, etc., are all invariant aspects of an environmental invariance structure that are, as Robbins points out, naturally and intrinsically "associated" due to the structural roles they play in events of this sort and whose invariances define events of this sort. A Chubby-event of this kind is a 4-D multimodal invariance structure defined over time consisting of visual invariants, movement invariants, auditory invariants, olfactory invariants, and so on.

All of these invariance structures have specific and precise roles to play in a time-extended event of this kind. These structural invariants provide information that is specific to the objects undergoing a change (Chubby, the food stick). On the other hand, transformational invariants specify information that is specific to a particular type of change—eating, rolling over (Robbins, 2002: 304)—that one of these things undergoes or instigates. There is no need to retrieve the separate bits and re-assemble them into a new memory image for they are all integral components of the invariance structure of the flow of the stimulus information that is picked up by the perceiver in the course of the time-extended experience (see section 2). The fact that a current perception can support (and is supported by) an evocation of a virtual past flow of invariance structures and their transformations does not require that all of experience be recorded in the brain as separate memories that are discretely recalled.

Certainly, discrete memories can and often are recalled. For example, I can recall the last time that Chubby took food from my hand or when I observed him drinking from his water dispenser. What we have is an indivisible field of experience in the form of a virtual potential that can be reconstructed to varying degrees of abstraction and precision. My present perception of Chubby drinking from his water dispenser can evoke a precise memory of the previous time, or it may yield a more abstract evocation of the invariance structures that characterise Chubby-drinking events over many different occasions, or a still more abstract and general evocation of hamster-in-general drinking events, and so on.

In order to understand, theoretically speaking, the role of utterances in these processes we must first of all locate languaging in a broader account of action-perception and cognition—an account that is grounded in our encounters with the flow of the invariance structures that are characteristic of our experience. Gibson (1986/1979: 3, 217, 219–221) rejected the snapshot view of perception as a succession of discrete instants or images and replaced it with the flow of stimulus information (see also Verbrugge, 1980: 93). The view that perception and memory are language-like or proposition-like, or that they are like a discrete succession of images, is replaced, in the realist view developed by Gibson, by the idea that memory and perception are continuous with each other and that they both have the character of a dynamic flow of invariance structures. The linguistic pattern (e.g., wordings) that perceivers orient to and make use of in utterances are affordance layouts that have the capacity, functionally, not structurally, to activate, constrain, guide, and support flows of virtual action-perception and virtual experience in conjunction with other constraining factors such as the situation and its conventions, relevant aspects of the physical world, memory, and development.

Utterances are always articulated in relation to and as component parts of situations. They are therefore always part of the flow of the invariance structures that are constitutive of our embodied experience of the world. The probability of co-occurrence relation between linguistic pattern and context of situation that is predicted in register theory (Halliday, 1978) means that the linguistic pattern is predictive of and able to specify information about the situations with which they co-occur. For example, much of the talk between my daughter and me about

Chubby occurs when we are immersed in the flows of the invariance structures of the various kinds of Chubby events that we perceive. By the same token, we also talk about Chubby when he is not present, as in the example shown above. An utterance like "Chubby was eating with his stick" can be lifted out of the flows of the invariance structures characteristic of perceived Chubby events and uttered in a situation in which Chubby is not physically present. On the basis of our participation in the indivisible, time-extended flows of innumerable Chubby experiences, my daughter and I can evoke Chubby-type experiences simply by talking about him without his being present. In such cases, the utterance is a part of a whole experience (utterance + flow of perceptual invariance structures) that serves to evoke a virtual experience of the flow even when a part of the whole— the flow—is absent. That is, the utterance serves to redintegrate an experience of the whole.

Redintegration is a form of memory in which a part of a previously experienced whole that is experienced in the present can serve to activate a memory of the whole. A concert ticket that I find in my desk drawer can activate a memory of the wonderful concert that I attended at the Royal Festival Hall with a friend a few years ago. The ticket was a constituent part of a previous whole that serves to activate a virtual experience in memory of the prior experience. Many cultural artefacts serve to activate and to guide virtual experiences of previously experienced wholes. Such experiences are virtual flows of invariance structures that are not supported by the pick up of perceptual stimulus information about the original event. They are not a sequence of static images viewed in the mind's eye (see above). Instead, the artefact is a part of a previous whole that has the capacity to activate an attunement to an experience of the whole or some aspect of it. Linguistic pattern when disembedded from the situations with which the pattern co-occurred has the capacity to activate, constrain, guide and support an attunement to virtual flows of experience in the absence of any supporting structure from the physical environment. Attunement to structure can be modulated to varying degrees of focus, precision, concreteness, and abstraction. An utterance can modulate an attunement to a specific event that took place in a precise spationtemporal location, or it can modulate an attunement to a much vaguer abstraction.

As Verbrugge (1980: 94) points out, this means that linguistic structure plays an important role in the activation of and the control over the experiencing of virtual event series. It does so by means of the technique of redintegration. The redintegration that linguistic structure is capable of activating and supporting is grounded in the invariance flows of action-perception that are constitutive of our first-order embodied experience of the world. For this reason, it can function to activate in the imagination an attunement to virtual forms of experience of these flows and their invariance structures in the absence of direct experience of these flows. A linguistic structure such as "Chubby was eating with his stick" is not a representation of an experience of a prior flow in the sense that my hearing the utterance means that I have to match the utterance to an internal representation that is stored in my memory.

Instead, the transitivity structure of the utterance serves to direct attention to and to differentiate a particular aspect of the indivisible field of the experiential topology which the speaker of the utterance presupposes to be locally accessible in the situation that is apperceived to be currently in operation and which the utterance serves to point to and to activate. In performing this operation, the utterance functionally constrains an attunement to the particular location in the topology that is indicated by the utterance, i.e., a CHUBBY-EAT-STICK location. The small caps serve to specify that I am not referring to the utterance *Chubby was eating with his stick*, but to the previously experienced flow of invariance structures that characterise this type of event in the experiential topology and which the utterance points to and differentiates.

Meaning is not a level of linguistic organisation, but an achievement of closure of this flow—a flow that is functionally activated, constrained, guided, and modulated by linguistic pattern in utterances and texts. However, there is no structural isomorphism between these flows and linguistic pattern. Meaning is neither in linguistic structure nor is it in the mind of the perceiver. Instead, it is an emergent interactive-psychological relation resulting from the interactivity between persons, utterances/texts, situations, and cultural factors. My daughter's utterance does not express or realise a "meaning". Instead, it provides an occasion for a linguistically constrained attunement to an aspect of the currently activated experiential topology that is meaningful for the two participants—myself and my daughter—who participated in the dialogue in question.

"Meaning" is the closure of the flows of invariance structures that are activated in the imaginations that the two of us—from our respective viewpoints—achieve. Seen in this light, utterances are constitutive of situation conventions that are often highly occcasion specific. Lexical items like "Chubby" and "stick" require an attunement to very specific invariance structures, viz. the particular hamster my daughter named Chubby and the chew stick that I had brought back from a trip to Australia for Chubby a few months earlier. The linguistic pattern in my daughter's utterance thus supports a very precisely modulated attunement to the relevant flow of invariance structures in the experiential topology. Anyone who has not participated in the relevant flows of invariance structures will not be in a position to attune to the same degree of precision and may even attune to invariance structures in other flows that are not relevant to the dialogue between my daughter and myself and to the shared experiential topology which our conversation activated.

Ecological psychologists dispute the idea that our relationship with our environment is mediated by internal categories, mental representations, and internal schema that construct the phenomena of our experience. On this view, the brain is a repository of stored categories and representations that filter the sense data received from the world so that this data can be matched to an appropriate representation and interpreted. On this view, these internal categories, models and representations function as an interface that mediates our contact with the external world. Ecological psychology has a radically different view, which starts with the premise that the environment has an objective and independent existence and therefore it is not a construction of the categories of human consciousness. This

does not change the fact that the world we know is due to the activities of our action-perception, cognitive, and semiotic systems. However, these activities do not so much define the limits of our world as they provide us with the resources for interactively exploring and extending our knowledge of the world by means of our biologically grounded and technologically extended action-perception. Languaging fits into this overall conception. The brain works in a very different way according to this view.

Rather than acting as a storehouse of internal models that mediate our phenomenal experience of the world, the brain coordinates and supports our time-extended interactivity with the world by means of recursive action-perception loops and languaging that enable us to attune to structures of environmental invariances either in the flow of environmental stimulus information or the flows of virtual action and awareness that are activated in the imagination. Attunement is a selective sensitivity to environmental structure that is learned and developed in and through our participation in the exploratory activities of action-perception and languaging. In this way, we discover more and more environmental discriminations and how to make use of them. Languaging is not totally something different, but an extension and further development of these basic principles. Instead of being separated from the environment by a mediational interface, action-perception and languaging put us in direct contact with the environment.

A challenge, then, is to understand how complementary aspects of the body-brain system of persons, of linguistic and other affordances, and of the human cultural world give rise to the metastable coordination dynamics (Kelso & Tognoli, 2009) whereby persons interact with their worlds and in so doing perform perceptual, cognitive, and learning tasks that may be solo performances or undertaken in concert with others. The coordination dynamics on many time scales enable the body-brain system of the individual person to "switch flexibly from one phase relation to another" (Kelso & Tognoli, 2009: 107) thereby "causing abrupt changes in perception, attention, memory, and action" (Kelso & Tognoli, op. cit.). Kelso and Tognoli (2009) propose a new kind of brain dynamic—metastable coordination dynamics—to explain this variability of focus. In the metastable coordinative regime:

> there are no longer any stable, phase, and frequency-synchronized brain states; the individual regions of the brain are no longer fully "locked in" or interdependent.
>
> (Kelso & Tognoli, 2009: 107)

Metastability, Kelso and Tognoli point out, is a new theory of brain organisation and dynamics. Moreover, metastable coordinative dynamics naturally and intrinsically incorporate the principle of complementarity into their workings. For example, metastable coordination dynamics allow for different perceptions of an object or event, differing aspects of an event or situation, the different points of view and ideas that are generated in a conversation to be synthesised into a

dynamic synergy. Individualistic and coordinative or local and global tendencies are not seen as opposite poles of a dichotomy, but coexist with each other as complementary pairs. The result is a looser, more flexible form of organisation and function that can promote the creation of new information (Kelso & Tognoli, 2009: 108) and, by implication, new learning. No central executive controls the component processes at the same time that these component processes are not so "individualistic" or heterogeneous to the extent that they have no possibility of being coordinated as the autonomous parts of a larger, coordinated assemblage in which they function.

8. Conclusion

Languaging is an extended mode of apprehension (Gibson, 1986/1979: 258). It is grounded in and depends upon the developmentally prior constitution of the experiential topology of objects, events, causes, spatial and temporal relations, and the place of the self in relation to these. Crucially, Gibson points out that perception is awareness of persisting environmental structure (1986/1979: 258). It is neither reducible to nor explainable in terms of the stimulation of the receptors. Languaging can serve to coordinate the perception of actual environmental structure. It can also serve to activate an attunement to persisting environmental structure that is not present. Languaging is not the same as direct perception of the stimulus flux. Nevertheless, the higher-order invariants of linguistic structure in utterances—their affordance layouts—can make available to others an awareness of persisting structure in the experiential topology even when the other has had no direct perceptual experience of the environmental structures that are being talked about. In any case, these forms of non-perceptual awareness are nonetheless grounded in someone's perception of the stimulus flux. Perceiving, as Gibson (1986/1979: 260) points out, preceded predicating. Moreover, one always sees more than one can say (Gibson, 1986/1979: 261).

2   Betweenness

"... the organism is not just a structure; it is a characteristic way of interactivity which is not simultaneous, all at once but serial."

(Dewey, 1958: 292)

1. Bodily movement as the mode of being of selves finding their way in the world

Living bodies are constantly in movement. Bodily movement constitutes biologically grounded forms of experience that enable someone to view and to experience the world as I do if they were to view it from the same point of observation that I do. It is through bodily movement that the organism explores the world and in so doing constitutes perceptual experience of the world when movement generates felt kinaesthetic sensation in conjunction with perceptual stimulus information. However, bodily movement is not constitutive of perceptual experience alone; it is also the mode of being of selves and their becoming in the world. On this view, a central function of languaging is not the "representation" of either internal thoughts or an external world and their communication to other persons but the development and individuation of selves and of the practices in which selves are enacted, displayed, and oriented to by other selves. Languaging thus functions in enabling persons to sense and experience themselves and others as selves and thus to be sensitive to the sensitivity of others to the self.

In recent decades, many researchers have accepted the basic premise that persons-in-interaction make sense of their worlds on the basis of shared meanings, shared representations, mutual understanding, shared cultural worlds, shared language codes or systems, and so on. On the basis of these shared resources, mutual understanding is assumed to occur as a result of the mediation of individual persons by shared cultural resources of the kind mentioned above. On this view, the starting point for the achievement of mutual understanding is an abstract code or system that comes between people to mediate their meaning-making.

A more plausible account is glimpsed in Gibson's brief discussion of "The Problem of Public Knowledge" in his *The Ecological Approach to Visual Perception* (1986/1979: 200–201). Further development of Gibson's discussion will be undertaken below in relation to the grounding of languaging in bodily movement. Rather than shared codes that specify how forms are paired with their

meanings, Gibson proposes an account of how different perceivers perceive the same world in spite of the ways in which the perspectival appearances of the world are different for different observers:

> It is true that there is a different optic array for each point of observation and that different observers must occupy different points at any one time. But observers move, and the same path may be traveled by any observer. If a set of observers move around, the same invariants under optical transformations and occlusions will be available to all. To the extent that the invariants are detected, all observers will perceive the same world. Each will also be aware that his or her place in the world is different here and now from that of any other.
>
> <div align="right">(Gibson, 1986/1979: 200)</div>

It is only through bodily, movement-based perceptual activity that organisms move from place to place in their environment. They therefore come to perceive their environment from the viewpoints of the different places in that environment. Places afford observational perspectives. Moreover, different places and their observational perspectives can be occupied by different observers at different times as they move through their environment. In this way, the affordance layouts of the environment are perceived by different observers as they move about their environment and occupy the different places in it. In this way, observers are able to adopt the point of view of another observer because (1) they have moved around their environment and occupied different places in it and the viewpoints these places afford; (2) perceivers inhabit a world consisting of other perceivers who have moved along its perceptual pathways and occupied the different places of the world; and (3) these movement-based pathways and the perceptual exploratory activity that takes place along them give access to the places connected by these pathways. These places enable observational perspectives that constitute a world that can be perceived by all the organisms who travel along these pathways and perceive the layouts of the world from its places.

For Gibson, it is the possibility of moving from one place to another that enables living, moving, experiencing bodies to apprehend and to experience their worlds from a multiplicity of different places at different times. The possibility of understanding another person's point of view is not therefore on the basis of a shared abstract code or system, but is made possible by the fact that persons move around their worlds and occupy different places in it such that they can perceive surfaces hidden at, say, my point of view but which are "*unhidden at yours*" (Gibson, 1986/1979: 200). In other words, Gibson says that the ability to perceive something from another's point of view grounds the assumption that the world as you perceive it from the place you occupy is the same world that I perceive from the place that I occupy. This means that if you occupied the place that I am in you would see the world as I see it, and *vice versa*. Perception is not then of observables alone; it has an intrinsically reflexive intersubjective organisation: how one person perceives the world from his or her place of observation also depends on that person's perception of how the other person perceives it from his or her place of observation. In other words, the possibility of shared understanding or

co-orientation to the same aspect of the world depends on the prior capacity of persons to participate in forms of interactivity and to take up coordinated stances that allow them to achieve mutual understanding and co-orientation. As we shall see below, this has important implications for language and the stance taking that languaging affords selves.

Rather than creating shared meanings on the basis of shared codes or systems, we have the possibility of moving to and occupying different places and therefore of changing perspectives and viewpoints. For this reason, we can perceive the world as another person does. Gibson shows that the fact that we can view the world from different places and that others who inhabit the same world can do so too means that the same perceptual invariants are, potentially, available to all inhabitants of the world. Therefore, all perceivers can perceive the same world. The fact that we inhabit a shared world is what underpins and constitutes the potential for shared understanding, not shared linguistic or other codes and systems that mediate the transactions between persons. This further means that I encounter other persons who move along the same pathways and experience the world in ways similar to me and who have or are able to have similar stances on the world due to the fact that we can view the world from the places that others occupy. This capacity, in turn, is grounded in the movement of living, feeling, sentient bodies that gives rise to knowledge of the world as they move their bodies along the perceptual pathways of that world and occupy the places that afford viewpoints on it. Later we shall see how this applies to the virtual pathways, the virtual forms of movement along them, and the virtual places of observation that languaging constitutes and enables humans to experience in concert with others.

Perception takes place along what Gibson (1986/1979: 197) calls a "path of observation." A path of observation is not a sequence of discrete points but a continuous and unitary melody of movement that can be of very short duration (minutes, seconds, fractions of seconds) or very long (hours, days, weeks, months, years). A perceiver who is finding his or her way around his or her world is a body-in-movement who perceives not from fixed points of observation but from *paths* of observation along which one moves (Gibson, 1986/1979: 197). It is in this way that moving bodies establish their perspectives on their world and on the affordance layouts of that world. The fact that different perceivers can travel along the same paths of observation and therefore take up the observational stances that these pathways afford means that (1) awareness and changing awareness of the world is constituted by bodies-in-movement that travel along the paths of observation of their world; and (2) the fact of different persons moving along these pathways at different times means that they develop the capacity to experience the world in similar ways. The trajectories that are forged by their movements become intertwined with and enfolded in the trajectories of others in relations of reciprocity and community that provide the foundation for reciprocal understanding and the coordination of perspectives to arise (Stuart & Thibault, 2015; Thibault, 2018a: 59–66).

Crucially, a place in Gibson's conception is not a fixed point of observation. A place constitutes what Gibson calls a "vista" (1986/1979: 198):

A vista is what is seen from here, with the proviso that "here" is not a point but an extended region. Vistas are serially connected since at the end of an alley the next alley opens up; at the edge of the doorway the next room opens up; at the corner of the street the next street opens up; at the brow of the hill the next valley opens up. To go from one place to another involves the opening up of the vistas ahead and closing in of the vistas behind.

<div align="right">(Gibson, 1986/1979: 198)</div>

Persons learn to orient to the places in the environment that have affordances for them. They learn how to travel along the paths of observation that take them from one place to another. They develop the skills of wayfinding along with the skills of indicating or pointing to the places of their environment; they develop the capacity "to indicate their direction from here through the walls or other surfaces that hide them" (Gibson, 1986/1979: 198). This capacity to point to places and to coordinate this pointing or indicating with others in order to show them the way depends on the capacity of persons to co-orient their bodies along the same paths of observation and the places encountered along those paths together with the vistas that places open up as people move along the pathways that take them from place to place. Finger pointing and indicating are forms of stance-taking that aligns bodies and bodily awareness along paths of observation and the vistas that are opened up when one moves or is moved to move (e.g., by another person) along the path of observation that the point gesture reveals to those who participate in the coordinated field of relations established by the point. A pointing gesture is a simplex act that enables the persons who co-orient to whatever is indicated by the point to grasp a complex field of relations, its paths of observation, and its places in a global way that assists in their way-finding (Berthoz, 2012/2009: 108) relative to the vista that constitutes the "here" of the current locus of observation and co-orientation. Sociality is constituted and enacted not through the mediation of shared codes or systems, but by simplex stance taking selves who coordinate their stances in order to find their way in their worlds, in the process laying down paths for others to follow.

2. Selves as simplex structure generating complex process: the underpinning of languaging as skilled behaviour of selves on the move in their worlds

Our sensitivity to the sensitivity of others lays down the foundations of our capacity to attend to, to observe, and follow what others do (Vol. I, chapter 3). We learn by placing our own bodies in the places occupied by the bodies of more skilled others and bringing our own bodily movements into alignment with the movements of their bodies. In this way, we align our perceptions and actions with those of the more skilled person whose actions we are following. Our teachers set up situations that draw attention to (e.g., through showing and telling) those aspects of situations, artefacts, tools, perceptions, feelings, bodily movements, and so on that are worth while attending to, focusing on, imitating, remembering,

and so on (Reed, 1996: 149–151). The learner's sensitivity to the sensitivity of the teacher's bodily movements and actions attunes and trains the learner's perceptual and action systems to attend to those aspects of the interactivity between learner and environment that make salient particular bodily skills in relation to specific aspects of the environment relevant to the exercise and further honing and development of those skills. In this way, learners develop the skills that sensitise them to specific aspects of their bodily capacities in relation to specific features of the world.

The world that is explored and discovered, initially under the guidance of more skilled others (Ingold, 2011), and later more autonomously, is the outcome of the picking up and discrimination of environmental information by the learner's perceptual systems. The pick-up and discrimination of environmental information occurs in concert with the perceiver's awareness of the perceiver's own body moving along the pathways of observation in the world in the course of perceptual activity. The two forms of (self-)awareness are complementary (Gibson, 1986/1979: 207). Gibson makes an important distinction between "an unoccupied point of observation in the medium and an occupied one" (1986/1979: 207). The former is a place that might be occupied by a perceiver; the latter a place that *is* occupied by a perceiver. Gibson further explains:

> whenever a point of observation is occupied, the occupier is uniquely specified, whether adult or child, monkey or dog.

> An observer perceives the position of *here* relative to the environment and also his body as *being* here. His limbs protrude into the field of vision, and even his nose is a sort of protuberance into the field.
>
> (Gibson, 1986/1979: 208)

The perceiver's perception of the place of observation he or she currently occupies relative to the environment together with the perceiver's perception of his or her body as "*being* here" means that the perceiver perceives his or her body in relation to the perceiver's movement along a pathway of observation and the places that the perceiver encounters along that pathway. The capacity to place ourselves in the places occupied by others and hence to attend to, to observe, and to act as the other does obviates the requirement that complex structures of information, whether in the form of genetic information or cultural information, are copied into organisms at the outset of the life process (Ingold, 2013: 17) as the set of possible environmental outcomes through a simple process of replication. Against this "complex structure, simple process" model of accounting for the reproduction of biological and cultural forms, Ingold (2013: 17–18), following Rubin (1988; see also Ingold, 2011: 159), argues for an alternative and ecologically more plausible "simple structure, complex process" approach. The latter approach is in accordance with Berthoz's (2012/2009) concept of "simplexity" discussed in Vol. II, chapter 1, section 3.

We can account for selves in the same terms, using what I will call a "simplex structure, complex process" approach (Thibault, 2019). Selves encounter, interact with, and sample other selves from a variety of different paths of observation and the diverse places they traverse and occupy along these paths. As Gibson showed, when a person occupies a particular place of observation, the person perceives both the position of *being* here relative to the environment as well as his or her body as *being* here (Gibson, 1986/1979: 208). It does not take much effort to stretch Gibson's observation from perception to languaging and to see the fundamental link between the two. The psychologist of language, Karl Bühler, took exactly this step in the 1930s. In the deictic field of language identified by Bühler, selves are deictically located or positioned in the singularity of their embodied I-here-now subjective orientational framework (Bühler, 1990/1934: 117–118; see also Harré, 2001). This deictic framework functions like a place that selves occupy as they traverse the pathways laid down by their own and others' languaging. The self's location at such a deictically framed and coordinated place in languaging is, dually, a way of specifying both the embodied self as being here (occupying that place) and a way of specifying the environment in relation to the self who apprehends it from that place (see Bühler, 1990/1934: 108–110). In occupying a particular place in languaging, a self is thus revealed as a locus of action and accountability by virtue of being in that place and thereby displaying the self in the way that that place enables and reveals.

3. Gibson's two poles of awareness: the co-articulation of self and world

In chapter 1 (Vol. II), I showed that languaging extends the self into the perceived environment of the self. In the perspective of ecological psychology, perception faces two ways: (1) perception is outwardly directed at the organism's active exploration and pick up of information that specifies the environment and its affordances (exteroception); and (2) perception is inwardly directed to the self because the perception of the environment also involves the perception of one's self (Gibson, 1986/1979: chap. 7). Van Lier comments on the relevance of this duality of awareness to identity development in second language learning:

> This combination of self-knowledge (consciousness) and other-knowledge (awareness) is the key to the role of language awareness and of explicitness in learning. It may involve the raising to consciousness of existing or emergent knowledge, skills, attitudes and other internal states, and it may involve becoming aware of attributes of objects, persons and events in the environment. Self-awareness as it relates to world-awareness is the source of identity development in the new language and culture. Effective functioning in the second language presupposes the development of such a new L2 and C2 identity, not one that replaces L1/C1 identities, or stands independently beside them, but one that is bicultural and bilingual, i.e., the "third place" that Bhabha talks about. (see Kramsch 1993)
>
> (Van Lier, 2004a: 91)

The two poles of attention and awareness provide a basis for articulating and differentiating the self from the non-self. Proprioception is perceptual information that specifies the self. Proprioceptive awareness is an immediate, unreflective awareness of the embodied self on the move in its world as the self goes about participating in activities, extending parts of its own body such as the limbs into the environment, and interacting with and manipulating the affordances of its environment. Gibson argues that the perception of the self and the perception of the environment are complementary poles of awareness that go together in any act of perception:

> The optical information to specify the self, including the head, body, arms, and hands, *accompanies* the optical information to specify the environment. The two sources of information coexist. The one could not exist without the other. When a man sees the world, he sees his nose at the same time; or rather, the world and his nose are both specified and his awareness can shift. Which of the two he notices depends on his attitude; what needs emphasis now is that information is available for both.

> The supposedly separate realms of the subjective and the objective are actually only poles of attention. The dualism of observer and environment is unnecessary. The information for the perception of "here" is of the same kind as the information for the perception of "there," and a continuous layout of surfaces extends from one to the other.
>
> (Gibson, 1986/1979: 116)

A focus on one or the other of the two poles of awareness is a shift in "attitude" or perspective. A focus on the multimodal perceptual information that specifies the self gives rise to an awareness of the self as the deictic source of actions performed by the body and extended into the world. The body is experienced as the deictic source of actions that extend from the "here" of egocentric space to the "there" of allocentric space. However, the continuous layout of surfaces that extends from one to the other means that bodily actions are experienced as originating in an egocentric frame of reference since they extend from the egocentric frame of reference ("here") to the allocentric frame of reference ("there") along a continuous layout of surfaces that links the two.

Gibson (1986/1979: 120–121) discusses how the limbs and outer extremities of the body extend into the self's field of view. These bodily extremities are what Gibson calls "semiobjects" or "subjective objects" that make the distinction between subjective and objective problematic. These semiobjects extend from the egocentric frame of reference of the body of the self along a continuous layout of surfaces in order to grasp and manipulate external objects. External objects can be either incorporated or assimilated into the self as an experience generated by the body's own movement, or they can serve as external tools that extend the capacities and powers of the body. Deictic *this* may often accompany a hand gesture that extends beyond the body in order to grasp and manipulate an object that is made

available for immediate prehension (Vol. I, chapter 4, section 4.3.3; Thibault, In press-a). Kegan (1982: 76) points out that an object, as the etymology of the term suggests, is that which is "thrown from" the subject by an action or movement of the subject. The root morpheme *-ject* means to throw and together with the prefix *ob-*, the word *object* means a throwing from. An object is the result of such an act of "throwing from" and thus being made separate from the subject.

The self, not a given body part, is perceived as the deictic source of these actions. Furthermore, the self-as-source of the action in relation to the continuous layout of surfaces that connects this source to the object of the action performed by the self is the basis for the self's ability to take up particular stances on the world from the perspective of self-as-source of its actions.

The self in Gibson's ecological theory of perception is an active, mobile self; it is a self-in-movement in its environment. Proprioception specifies information about the situated or deictic character of the embodied self as its own movement generates its embodied experience of the world. Gibson (1986/1979: 122) discusses locomotion in an uncluttered open environment as a flow of the array of stimulus information. Rest, on the other hand, is nonflow. Gibson writes: "The flow is a change in perspective structure, a change in the perspectives of the ground if outdoors and of the floor, walls, and ceiling, if indoors" (1986/1979: 122). The changing pattern of the flow of the changing perspective structure is superimposed on the invariant structures of the persisting world:

> The flow pattern shifts as the observer changes direction, now in one direction and then another, and reverses when the direction is reversed, but the invariants of structure and texture never shift. They specify the unmoving terrain, whereas the flow pattern specifies the observer's locomotion with reference to the terrain.
>
> (Gibson, 1986/1979: 122)

Gibson's discussion of the changing perspectival flow of locomotion serves to establish a more basic and general point. Proprioceptive self-awareness is not a series of discrete temporal instants, but a time-extended optical flow of an ambient array in which the moving self and the unmoving stationary world through which the self moves are "reciprocal aspects of the same perception" (Gibson, 1986/1979: 123). The self experiences the flow of the array as kinaesthesis, or self-motion, not motion of the array. This self-motion and the self-awareness of this self-motion provide a sense of the continuity of the self's movement. When one moves, something in the environment comes into view just as something goes out of view. The same applies to head turns and other body movements in addition to locomotion:

> The edges of the field of view occlude the outer environment, and, as the head turns, the occlusion changes, revealing what was concealed and concealing what was revealed. The same thing happens with locomotion as with head turning. The rule is, whatever goes out of sight comes into sight, and

whatever comes into sight goes out of sight. Thus it is that a stationary and permanent environment is specified along with a moving observer, one who looks around, moves about, and does things with his hands and feet.

Three types of movement have been distinguished—head turning relative to the body, limb movement relative to the body, and locomotion relative to the environment. Each has a unique type of optical information to specify it: the sweeping of the field of view over the ambient array in the case of head turning; the protrusion of special shapes into the field of view in the case of limb movement (especially manipulation); and the flow of the ambient array in the case of locomotion. The pickup of this information, I propose, should in all cases be called *visual kinesthesis*.

(Gibson, 1986/1979: 126)

The coming into view of something and the going out of view of something means that the sense of the continuity of experience that is generated by self-movement is constrained by what comes into and what goes out of view in the changing flow pattern of the array. The self is aware of the changing flow pattern that is generated by its self-motion. The self has a sense of its continuity that is provided by the changing flow of what comes into view and goes out of view as the moving self looks around, moves through, and manipulates things with the hands in a stationary environment.

The moving self's awareness of the changing flow pattern that is generated by its self-movement provides a basis for the self's sense of the capacities and skills that enable it to move through its world (Roth, 2014). The self thus knows that turning the head or moving the body one way will, for example, bring something into view at the same time that something else goes out of view. The self is a locus of capacities and skills that it collects as a result of its cascading movement in its world. Skilled bodily actions and awareness of them mean that the self knows in some implicit sense that turning the head one way or moving the body from one point of observation to another will bring about both a change in the self's awareness of its environment and a change in the self's awareness of the self's own embodied experience of its movement in the world.

This duality of awareness is the basis for the co-articulation of self to world and thus of the obtaining of a functional fit between self and world (Heft, 2001). In the next section, I develop this idea in relation to Keith Russell's (2015) analysis of the functional fit between the human hand and a designed artefact, the Franz Schneider Brakel (FSB) door handle originally designed by Johannes Potente.

4. Grammars of relationality: Keith Russell's analysis of the tale told by the Johannes Potente (FSB) door handle

Keith Russell (2015) has discussed the Franz Schneider Brakel (FSB) door handle in relation to the issues that the designers of artefacts have to deal with when seeking to design artefacts that afford a good fit between person and artefact. Russell shows that the co-articulation of this fit in the act of gripping the door handle

with the hand and manipulating the handle to open the door has an unfolding narrative-like structure. Russell describes this unfolding structure as the "tale" that is told by the co-articulation of door opener and door handle. It is, to borrow Dewey's term in the quotation at the head of this chapter, "a characteristic way of interactivity which is not simultaneous, all at once but serial" (Dewey, 1958: 292). Russell refers to a discussion that took place in Johannes Potente's old studio in June 1985 when the serial nature of this characteristic way of interactivity with the door handle is first made explicit in a discussion between colleagues who had worked with Johannes Potente. This discussion, which is quoted in Russell, goes as follows:

> The door handle making firm, SFB (already mentioned above) bothered to give just such an account of what goes on, beyond the proposition approach, when we approach the tales of door handles. In an interview, conducted by W. O. Geberzahn, Jürgen W. Braun reported: One day we were sitting in Johannes Potente's old studio—it must have been June 1985—and Aicher asked: "What makes the products of Johannes Potente different from other door handles?" We all looked at one another. Somebody said: "They feel good in the hand." We started to describe what "feeling good in the hand" might be. I said something like, "the thumb finds its stop, the index finger its indentation, the roundness, the volume . . ." and after quarter of an hour we had defined the four laws of grip. Otl Aicher wrote them down immediately: 1. thumb stop, 2. index finger indentation, 3. roundness, 4. grip volume—and did a drawing to go with them. That led to a poster. Although here in the company, people were initially embarrassed.[1]
>
> (Russell, 2015: 7–8)

Russell comments on the discussion referred to above as follows:

> The embarrassment is, in part, a recognition of the associated affects of giving oneself over to the door handle in order to experience the tale, the telling that the handle and the hand formed. The thumb is found in a relationship with a place for the thumb just as the thumb might be found in its spot in the shaking of another's hand. I have a hand and the door handle has a spot for my thumb to rest. The handle tells my thumb. The same applies to the indentation for the location of the index finger. In terms of the grip volume, the tale is a little different in terms of the double nature of apprehension: in order to take hold I am also taken hold of. When I grip the handle, the handle forms (informs) my gripping. If there is a reciprocal response in terms of the grip volume being just right, then the tale of my grip is given to me. In terms of the roundness, the telling is perhaps more a muted and aesthetic tale. That is, I enjoy the awareness of roundness that is given to me when I give over to the roundness of the handle. To experience this as a pleasure, I have to be literally and cognitively intimate with the handle.
>
> (Russell, 2015: 8)

This telling example and Russell's revealing analysis of it shows that the co-articulated tale of the door handle and door opener is one of fit or congruence—co-articulation—between the two. In both the interview cited by Russell and in his own analysis, we see the "grammar" of this tale unfolded. As I shall explain below, this is a grammar of relationality that enables the co-articulation of hand and handle. The door opener's grip must co-articulate with the tale told by the door handle when the opener encounters the door handle. This encounter takes form in a series of co-articulated hand movements in relation to different aspects of the affordance layout of the door handle. Bodily skills and capacities must fit with the affordance potentials—the tale—told by the door handle. The door opener reaches for, grasps, and explores the handle, in the process fitting herself to it. A good fit is a good co-articulation that feels right. A good fit gives pleasure in the act of self-consummation/self-consumption of the tale of the mutual in-forming of the hand of the door opener and the door handle.

Table 2.1 sets out my attempt to describe the narrative-like structure of the grammar of the fit of door opener to door handle in this tale. As I discuss below, it is a grammar of "betweenness", based on the idea that the co-artic-ulation of hand and handle involves dynamical and temporal coordination of the actions of the hand with the affordance layouts of the handle. This gram-mar co-articulates the relationality of the encounter between the door opener's hand and the affordances of the door handle in order to achieve a functional fit between them.

The resulting fit between the two is the reciprocal completion of the one by the other when the hand action and the handle co-constitute a coupled Person-Door Handle Interaction System. The grammar of "betweenness" does not medi-ate between two separate entities—hand and handle—but lays down in action the pathways that enable the assembling of a single coherent extended door open-ing system. The grammar of betweenness, in relating hand and handle, does not extend either. Instead, it is the *action* enabled by the co-articulation of the two that is extended, not the two "entities" *per se*.

We are living beings in many intrinsically connected inter-relations with other living beings and with many different kinds of objects and events. Our encounters with, our experiences of, and our knowledge of the world are charac-terised by what Iain McGilchrist (2012/2009: 95–97) calls "betweenness". The term "betweenness" speaks to the fundamentally intersubjective nature of our encounters with the world. It is the intertwining of and enfolding into each other of the trajectories of human and non-human beings with objects and events in felt relations of community and reciprocity that I described in Vol. I, chapter 3. Experience, perception, and knowledge only occur *between* things. In addition to serving as an elegant and powerful metaphor of this point, Keith Russell's discus-sion of the "grammar" of the encounter between door opener and door handle is also a revealing example of the grammar of betweenness in action. A "grammar", I submit, co-articulates a relation of betweenness or of betweenness potential that enables and guides the co-articulation of selves and the aspects of their worlds that they encounter on a particular occasion.

Table 2.1 Narrative phases of the tale told by the co-articulated relationship between door opener and door handle

Narrative Phase	Meaning
The Encounter	The self is perturbed by the encounter with the door handle, giving rise to an initial affect that is generated by the feeling of difference between the two.
New Possibilities	New possibilities are generated as a result of the encounter and its affects; one senses the immanent virtualities of the encounter.
New Event: Assimilation and Oneness	A new event emerges from the new possibilities generated and is co-articulated as the thumb finds its stop, the index finger finds its indentation, etc.; the door opener assimilates herself to the door handle. The difference between opener and handle is annulled as they momentarily become a single interlocking mechanism as hand grips handle in the functional (utilitarian) task of opening the door.
Good Grip: Surplus Pleasure and Self-consummation	The "just right" feeling of the door opener's achieving a good fit yields an erotic surplus pleasure to be enjoyed and consummated in the awareness of the difference (not oneness) between door opener and door handle—a difference that is *not* functional in the utilitarian task of achieving the goal of opening the door; instead, it disrupts and interrogates it.
Opening Up and Transformation: Accessing new possibilities as one affordance set leads to others beyond the door	The good fit between door opener and door handle and the surplus pleasure it yields is not functional in the re-production of the utilitarian order. The closed utilitarian order is disrupted and opened up to give rise to an awareness of the dialogical possibilities that are immanent in the things we encounter in intersubjective action-perception when utilitarian closure is transformed into surplus pleasure and dialogical openness when we are responsive to the inner life and the affects inherent in the things we encounter.

Consider in this regard the "grammar" of the encounter between door opener and door handle that is discussed and formulated in the interview cited by Russell and in Russell's analysis of the interview cited above. The door handle is a part of objective reality. The fact that it is a designed artefact does not change that. The door handle prompts and animates the self's "feeling in" of its "object" (*Gegenstand*). As the German word for "object" *Gegenstand* suggests, the object "stands against" the self as a source of perturbation that elicits a response. In accordance with Lipp's (1903) phenomenology of *Einfühling* ("feeling in"), selves participate in an affectively charged tension with the objects (*Gegenstand*) they relate to and which are "thrown from" selves in dynamical relations of co-constitution of self and its objects (see Vol. II, chapter 3, section 1). Selves thus

live in a condition of felt, affectively charged proto-modal friction or tension with their objects—a friction or tension moreover that shapes and is incorporated into the dynamics of the co-articulated relationality of the fit of hand to handle.

The interview cited by Russell makes it clear that the designers of the door handle designed it with the door opener's embodied experience of the door handle in mind. However, the door handle is not conceived of as an inert material object that exists "out there" together with the other material objects that furnish our world. Instead, the door handle is conceived as something that we undergo as a lived experience when the door opener's hand actions are co-articulated with the affordance layouts of the door handle. The encounter between door opener and door handle is a living encounter. The "grammar" of this encounter is not an inter-face that mediates between the two. It is, rather, the intersubjective "betweenness" whereby the door opener's hand and the door handle are connected to fit together as a larger functioning whole. The co-articulated relationality that is forged between door opener and the door handle is not a linear causal chain of events of the sort: INTENTION TO OPEN DOOR >GRASP HANDLE >TURN IT, etc. Rather, it is a co-articulated experience *with*, not of, the door handle that gives rise to our own "inner feeling" that we are changed by the encounter.

The designers of the door handle and the grammar they write, as described in the discussion in the interview above, show their awareness of the intrinsic inter-subjectivity of the encounter. We are not initially separated from the world and then need to learn how to "interact" with it. Rather, our first primordial encoun-ters with the world show that our being with the world is from the beginning intersubjective. This primordial intersubjectivity is the ground on which all the more complexly articulated forms of intersubjectivity arise as we forge relations of community and reciprocity with other selves, with other beings, and with the objects and events of the human ecology (Vol. II, chapter 3, section 2). The door handle is made with care; it has been designed with a keen feel for its intrinsic relationality with the human hand and for the embodied experiences of potential users.

As the little grammar I outlined in Table 2.1 shows, the hand's movement towards and the hand's grasping of the door handle describe a vector of action and attention that extends along a continuous series of surface layouts extending beyond the contours of the body to the door handle. The hand's movement is a movement away from the body (Leader, 2017/2016: 23) that extends the body's agency into the transitional zone—the in-between space that is neither you nor me—that opens up new possibilities. The hand is what Gibson (1986/1979: 120–121) referred to as a "semiobject" that problematises the distinction between the subjective and the objective when it extends into the transitional zone between the two. The co-articulated fit of hand to handle enacts a structure of action and atten-tion that (1) is deictically situated at an embodied agent as the source of the action and its perspectives; (2) is a structure of action that operates on and explores the affordance layouts of the door handle, in the process changing the quality of the self's experience of the handle; and (3) through its exploratory activity the self focuses and modulates attention in relation to aspects of the affordance layout that

are experienced as the specific qualities and feelings discussed above. The three aspects of the co-articulated fit of hand to handle have implications for all forms of action, including languaging, as we shall see below.

The grammar that I outlined above is in important respects a prototype of the forms of co-articulated relationality that characterise the fit between self and some aspects of its world. It is a prototype of what we might consider as the intrinsic relationality of all grammars. A grammar (or grammars) of this intrinsic relationality would be founded on the pre-reflective grounding of the self in our experience of the living, feeling, animate body in a world of embodied actions that are enfolded with and directed towards the world of the nonself. A relational grammar is grounded in the co-articulation of betweenness. It is not however a grammar that "mediates" between the supposed separateness of self and nonself. The term mediation presupposes that there is a gap and that something needs to fill or bridge the gap. "Representation" often fulfils this function in many linguistic, semiotic, and cognitive accounts. For example, a sentence or an image is said to serve as a "representation" that mediates the supposed gap between represented experience and the self who interprets that experience by means of a given representation.

A grammar of relationality recognises the intrinsic intersubjectivity of lived experience and the implicit enkinaesthesia that underpins it (Vol. I, chapter 3). Grammars of relationality, which include languaging, but which extend to all aspects of our experience do not function as representational stand-ins or mediators between self and nonself. Instead, grammars of relationality lay down pathways that enable us to pay attention to things, to be sensitive to their movements, and to enfold our dynamics with theirs so that we can move along with them and harness and direct the flows of energy and materials and to bring form to them and to the varied ways in which we co-articulate our bodies with them.

Tim Ingold (2016) has used the term "correspondence" in relation to the ways we move along with each other and with other beings and objects in the world we live in. Adelbert Ames Jr. (1955) also writes about "correspondence" in ways that are similar to Ingold's notion when formulating the relationship between stimulus pattern, environmental situation, and the personal contribution of the perceiver in explaining the perceiver's awareness of the environment. Ames draws on the "ambiguity" of the dictionary (Webster) definition of the term "correspondence" to make the following remarkable observations:

> This term has been used to denote the relation between perceptual awareness and the "objective" environmental situation. The word "correspond" has two quite different denotations. It can denote either to "match" (Webster), to be identical, or "to answer (to something else)" in fitness, function, to hold intercourse, to commune with." In conditions of "no correspondence" between perceptual awareness and the environmental situation, the content of the observer's awareness is not in the environment, and must be referred to him as its source and seat.
>
> In conditions of "correspondence" between the observer's perceptual awareness and the environmental situation, the content of the observer's

awareness and the aspects of the environmental situation it refers to are iden-
tical. Such "objective" characteristics as brightness, size, distance and motion
occur as such "out there" and in the awareness of the observer.

The divergence between no correspondence and correspondence is the
beginning of the irreducible philosophic dualism of traditional philosophy.
The dualism is, however, liquidated if we take the word "correspond" to
mean "to answer something in fitness, function, etc.," "to have intercourse,
communion with." (*Webster*)

Now the problem becomes: What is the nature of the environmental situ-
ation with which the observer's perceptual awareness holds "communion"?
What do the "fitness," "function" and importance of the communion refer to?

Suppose we postulate. *First*: That the observer communes only with those
aspects of his surroundings that carry significances to him where he is, as
he is. *Second*: These significances are processes of sustaining, extending or
varying the satisfaction of his needs, wants and the like, as these take shape
in ideomotor action.

"Correspond" could then signalize the two postulates. It would point to
the transactions between a perceiver and his surroundings as these focus on
him as both the seat and the content of his "values." "Values" here denote
anything he might care for, and plan, work, fight to keep going and growing.
"Correspondence" would denote the transactions by which values are main-
tained in existence.

Such transactions are not merely instant; as processes they embrace past and
future. Many of the difficulties in understanding perception are due to our
ignoring this temporality, and expecting to discern the relationships between
our perceptual awareness and the environmental situation in the instant pre-
sent of the perceptual event, without taking into consideration also the inter-
est of the perceiver with its selectivity, emphasis and action pattern. The
solipsisms, mechanic determinisms and dualisms of tradition are continuing
consequences of the fragmented interpretation of perception.

(Ames, 1955: 71–72)

Perception is an intersubjective transaction between perceiver and the aspect of
the environment that the perceiver attends to and therefore cares about on a given
occasion in relation to the perceiver's own desires, needs, and wants. Perception,
and, as we shall see, languaging (Vol. II, chapter 3, sections 6–7), are informed
by inner motives that seek fulfilment as action structures that are extended from
self into the world. "Correspondence", as Ames shows, is a necessarily temporal
relation that is established and sustained by the perceiver's transactions with the
relevant aspect of the environment in the process of seeking to achieve a co-
articulated functional fit—a relationship of "correspondence"—between self and
the aspect of the environment that is the locus of the self's interest or concern
on a given occasion. In this way, the self's values extend into the world (section
8). "Correspondence" thus refers to the transactional character of the perceiver's

relationship to the environmental aspect that is the current locus of concern. Perceiver and environmental aspect "answer" or "respond to" each other in the effort to achieve a functional fit or congruence between them over the temporal duration of their transaction. A grammar of relationality and therefore of betweenness is founded on this premise.

A grammar of relationality is both a guide to our participation in the living of human life in the human ecology and a way of doing so. It is not so much about a world that is separate from us. It *is* in many ways the world that we live in. When I say to the greengrocer, "Can I have three bananas, please?", I am not trying to bridge a gap that separates us. Rather, I am taking an interactive stance that joins me and the greengrocer to the flows of the world and enables us to hitch a ride on them in the service of the little project that my utterance initiates (Vol. II, chapter 4, section 2).

Ingold's account of correspondence shows that human social life consists of many entangled lines that are joined with each other in the ongoing living of life (Ingold, 2016: 12). For example, a person's encounter with and engagement with the door handle is in relation to the product of another person's artefact-making activity. The grammar of relationality joins the lines of (1) the door opener's embodied, time-extended exploratory movement of his or her hands and fingers; and (2) the lines of movement that are pre-figured in the process of designing the door handle. The door handle is an artefact that affords, in Gibson's sense, a relation of correspondence between designer, door handle, and door opener. Ingold's term "correspondence" enables us to think more clearly about the ways in which the affordances of the door handle join designer with door opener. The door opener's hand follows the lines and contours of the handle, responds to it, and is affected by it in ways that join handle and hand. This does not mean that the door opener's responses equate with the activities of the designer. Rather, it shows that the designer anticipated them in her design of the artefact.

The door handle is a spatially arranged artefact positioned on a door. The door handle affords its necessarily temporal exploration by means of visual scanning, reaching for it, grasping it, haptic exploration, movement, and so on. These activities take place in time. The door handle qua designed artefact is both a repository of betweenness potential and a record of the designer's movements—a record that the door opener follows and explores with his or her own hand movements. Door opener and designer co-participate in a form of relationality that is woven together from the diverse threads of their movements in a way that is more like counterpoint in music or the figuration of a dance than a linear sequencing of separate acts or turns by the respective participants. As Ingold puts it, participants co-respond as they move along with each other (2016: 14). Correspondence is the process by which producers and perceivers of artefacts and texts respond to each other over time. In producing the door handle, the designer orients to and anticipates relations of co-responsivity with prospective door openers whom the designer most probably will never know. The door handle affords the possibility of an occasion for the creation of such an experience of "correspondence" when a door opener responds to it and moves along with its affordances in the co-articulation of a

functional fit between the two. The occasion is created when the diverse lines of movement of designer, door handle, and door handle are joined together in what Ingold (2016: 14) calls "forging a concordance". In Ingold's words, such an occasion is a process of *going along* (2016: 14). The door opener co-articulates hand to handle and goes along with its movements. The tale moves forwards.

Similarly, when I read a handwritten letter sent from a distant family member, I quite literally go along the graphic traces that the letter writer has inscribed on the surface of the letter paper. I go along with the graphic traces inscribed on the letter paper in accordance with potentialities afforded by its spatial arrangement and social and cultural conventions of perception, reading paths, and so on. I go along with the lines of the handwriting. I may be responsive to its many tiny rhythmic inflections and modulations that nonetheless leave their mark in the writer's handwriting. In doing so, I weave the lines of my own movement—my reading—with those of the letter writer. The letter affords this going along whereby the correspondence between me and family member is created in time and across time and place. This correspondence—this co-responsivity—is created and sustained not by my extracting "meanings" that are already "in" the graphic traces of the other person's handwriting. Instead, my going along—my time-extended moving along with, my exploration of, and my attending to the affordances of these traces—enables letter writer and me, the reader, to engender and thus to bring forth experiences that join letter writer and reader with each other (or perhaps at times dis-join them too when relationships rupture, break down, and so on).

5. The normativity of the self and error: an example

In his *Experience and Nature* (1958), John Dewey identifies the anticipatory dynamic that is involved in the detection and correction of error. Dewey's is an interactivist perspective. The detection and correction of error is grounded in our interactivity with the world and the ways in which the world responds rather than in some ideal of pre-existent truths (see Dewey, 1958: 288). Any such notion of an ideal pre-existent truth is itself embedded in a system of judgments and related social practices of truth determination. Dewey explains as follows:

> Error involves a possibility of detection and corrections because it refers to things, but the possibility has an eventual, not a backward reference. It denotes the possibility of acts yet to be undertaken. Like the criterion of perfect efficiency in respect to machines, the notion of a complete judgment in which errors exist only as a rectified constituent of a perfect truth, is part examination and invention. Action and reaction are equal, to a hundred per cent of equality; but this formal "law" does not guarantee that in any particular system of action—reaction there is contained perfect efficiency. Similarly the objective reference of meanings is complete; it is a hundred percent affair; but it takes errors as well as truth to make up the hundred percent, as it takes waste as well as efficiency to make up the perfect equality of action and reaction.
>
> (Dewey, 1958: 288–289)

Consider the following example relative to the voice data obtained from the Cockpit Voice Recorder (CVR) of the Boeing 737-400 that crashed on 8 January 1989 on the west embankment of the M1 motorway just short of East Midlands Airport in England during the final phase of an attempted emergency landing after a fan blade in the No 1 (left) engine fractured while the aircraft was climbing through 23,888 feet after leaving Heathrow Airport on a flight that was bound for Belfast. The following is from *Aircraft Accident Report No: 4/90* of the Department of Transport Air Accidents Investigation Branch:

> From the CVR it was apparent that the first indication of any problem with the aircraft as it approached its cleared flight level when, for a brief period, sounds of "vibration" or "rattling" could be heard on the flight deck. There was an exclamation and the first officer commented that they had "GOT A FIRE". The autopilot disconnect audio warning was then heard, and the first officer stated "ITS A FIRE COMING THROUGH". The commander then asked "WHICH ONE IS IT?", to which the first officer replied, "ITS THE LE—ITS (sic) THE RIGHT ONE". The commander then said "OKAY, THROTTLE IT BACK."
>
> London ATC was then called by the first officer, advising them of an emergency, after which the commander asked for the engine to be shut down. The first officer began to read the checklist for "Engine Failure and Shutdown" but was interrupted by ATC calls and the commander's own calls to the operating company during which the decision was made to divert to East Midlands. Approximately two minutes after the initial "vibration" the final command was given to shut down the engine. The first officer then recommenced the checklist and 2 minutes 7 seconds after the initial engine problem he moved the start lever of the No 2 engine to "OFF". He then started the APU. Throughout this period no fire audio warning was heard.
>
> (*Aircraft Accident Report 4/90*, 1990: pp. 27–28)

In actual fact, the first officer erroneously indicated to the flight commander that the right (No 2) engine was on fire when in fact it was the left (No 1) engine that was on fire. The initial error on the part of the first officer in indicating that the right engine was the source of the problem shows the normative operative power of his utterance to the flight commander, "Its the le—its the right one". The first officer incorrectly differentiates the right engine as their joint focus of concern, leading to the following chain of events and contributing factors that result in the crash of the aircraft near Kegworth, England[2]:

1. The combination of heavy engine vibration, noise, shuddering and an associated smell of fire outside their training and experience.
2. They reacted to the initial engine problem prematurely and in a way that was contrary to their training.

3. They did not assimilate the indications on the engine instrument display before they throttled back the No 2 engine.
4. As the No 2 engine was throttled back, the noise and shuddering associated with the surging of the No 1 engine ceased, persuading them that they had correctly identified the defective engine.
5. They were not informed of flames which had emanated from the No 1 engine and which had been observed by many on board, including 3 cabin attendants in the aft cabin.

(*Aircraft Accident Report 4/90*, 1990: p. 2)

The distinction between "arbitrary" and "motivated" in discussions of the linguistic sign misses the more fundamental way in which words qua differentiators are motivated by an internal relationship between word and the region of experience that is *normatively* differentiated by the word in some social activity or practice. As I pointed out in Vol. I, chapter 3, words are animated and underpinned by sensory-kinetic experience. Moreover, the linguistic differentiators "right one [engine]" and "left one [engine]" in the above example non-arbitrarily relate to the body as the origin of the deictic field in terms of which all experience is organised. In his book *Essays in Radical Empiricism*, William James referred to the body as "the storm centre" of experience in this sense:

> The individualized self, which I believe to be the only thing properly called self, is a part of the content of the world experienced. The world experienced (otherwise called the "field of consciousness") comes at all times with our body as its centre, centre of vision, centre of action, centre of interest. Where the body is "here"; when the body acts is "now"; what the body touches is "this"; all other things are "there" and "then" and "that." These words of emphasized position imply a systematization of things with reference to a focus of action and interest which lies in the body; and the systematization is now so instinctive (was it ever not so?) that no developed or active experience exists for us at all except in that ordered form. So far as "thoughts" and "feelings" can be active, their activity terminates in "the activity of the body," and only through first arousing its activities can they begin to change those of the rest of the world. [Cf. also A Pluralistic Universe, p. 344, note 8. Ed.] The body is the storm centre, the origin of co-ordinates, the constant place of stress in all that experience-train. Everything circles round it, and is felt from its point of view. The word "I," then, is primarily a noun of position, just like "this" and "here." Activities attached to "this" position have prerogative emphasis, and, if activities have feelings, must be felt in a peculiar way.

(James, William, 2010/1912: 227–228)

The differentiators "right one" and "left one" are deictic terms of position with reference to the bodies of the two pilots and how they experience and orient

to the environment with which they must co-articulate their actions in order to achieve a functional fit with that environment. There is an intrinsic functional relation between the term and the aspect of experience that the term selectively differentiates with reference to the "storm centre" of the body. The term "storm centre" is particularly apt with respect to the mounting pressures on the pilots as they respond to the situation in the context of the multiple and distributed errors referred to above.

The relevant distinction is between the correct application of this normative power—Dewey's "objective reference of meaning" in the above citation—and its misapplication. The structuralist, *langue*-based premises on which Saussure's sign theory is founded cannot address the normative basis of words and languaging more generally in human practices.[3] The normative basis of languaging is grounded in an intrinsic telos of human action that is deictically sourced at a self. It cannot be reduced to individual interest or motivation. The relationship between the intrinsic functional organisation of utterances and the environments they co-articulate with is motivated by the intrinsic telos of words as (components of) human activity and practice. The intrinsic functional organisation of utterances is motivated, not arbitrary, in the sense that this intrinsic organisation functionally, not structurally, enables and constrains the internal relationship of co-articulation between self, utterance, and aspect of environment that I discussed above.

In the accident report on the aeroplane crash discussed here, the detection and correction of error is embedded in a learning system that involves, as Dewey puts it, "the art of examination and invention". The learning system, involving accident investigations and their findings, the airline industry, aircraft manufacturers, regulatory bodies, aviation law, flight and cabin crew, and passengers, is necessarily anticipatory, or future-oriented. There is no "formal law" that can guarantee one hundred percent the perfect efficiency of either aircraft or the flight crew's interactivity with it. Similarly, Dewey's "objective reference of meanings", or the normativity that is intrinsic to human languaging and its relations to the world, is a hundred percent affair. The co-pilot's utterance "it's the right one" is embedded in such a system of objective reference, but, as Dewey points out, it takes errors as well as truth to make up that hundred per cent. The co-pilot's action—his utterance—and the reaction of both flight commander and aircraft constitute a domain of the objective reference of meanings that is complete at the same time that it is distinct from other domains e.g., literature, in which cognitive reference is suspended.

6. The unitary field of action-perception and languaging: an analysis

Action-perception and languaging constitute a unitary field (Thibault, 2019: 56–58). This means that languaging cannot be seen as separate from intersubjective action-perception. Language is not a symbolic order of signs or form/meaning pairings that sits above and is unrelated to intersubjective action-perception.

Action-perception and languaging co-determine each other just as they co-develop in the life of the individual. Rosenthal (2004: 229) has drawn attention to the dually expressive and conative aspects of percepts that both the Gestaltists and the early theorists of microgenesis such as Heinz Werner (1957/1940) identified with the term "physiognomic perception." Perception is expressive in the sense that percepts have dynamic, expressive qualities; they have an inner life or vitality of their own that affects the perceiver. Perception is conative in the sense that perceptual experience has a "demand" quality that readies the perceiver for action. The perceived properties of percepts thus urge the perceiver to act in relation to them. The conative dimension has clear affinities with Gibson's (1986/1979) theory of affordances though the expressive dimension is not focused on in Gibson's account. The human world is a unitary field of action, perception, and expression that is saturated with cultural values and norms. Languaging plays a crucial role in shaping and transforming action-perception. The world we experience is a world that is replete with objects, practices, actions, perceptions, and events, etc., that are saturated with the values of languaging.

The following example serves to demonstrate the unitary field of action-perception and languaging. The example is transcribed from a reality TV show concerning the life of a family in Sydney (Australia). The two interactants, Laurie and Noeleen, who are husband and wife, argue about Laurie's inability to make any of the pens he is trying to write with work. The exchange takes place around a bar in the kitchen-dining room area of their Sydney home.

The five phases of the unfolding activity that I have identified in the above analysis and associated transcription and their respective subphases can be schematized as a recursive series of action-perception cycles, as follows:

Phase 1: 1-1: The Probe: Noeleen tests a pen;
Phase 1: 2-3: Result of Probe: Noeleen Shows Laurie the pen works;
Phase 2: 1-2: Noeleen searches for another pen to try and selects the one laurie had used before; Laurie is not persuaded; his frustration grows;
Phase 3: 1-3: Noeleen shows Laurie the pen he had used before;
Phase 4: 1-3: New probe: Noeleen tests the second pen she has selected from the pen rack and shows that it works; Laurie forcefully reasserts his previous problem with the pen and questions whether Noeleen has understood him. His frustration grows;
Phase 5: 1-2: Result of New probe: Noeleen shows Laurie that the second pen works.[4]

The dominant affective tone of the episode is the frustration that is provoked in Laurie, in particular by his inability to get any of the pens to write. Frustration, like other emotion displays, is a semantically complex structure of feeling and meaning (Lemke, 2015) that I propose to analyse as a modal structure, as shown in the Inset:

The Semantic Structure of an Emotion: Frustration

1. INCLINATION: The Subject wants to be/do/have something, i.e., the positively valued goal;
2. EXPECTATION: The Subject expects to be able to be/do/have it and therefore has a positive evaluation of his or her self-capacity;

   The means and the resources to attain the desired goal are not available or are no longer within reach. The deployment of these means and resources is regulated by social norms concerning: (1) the use of these resources to release the Subject's agentive capacities and powers; (2) the Subject's agentive capacities and powers; (3) the Subject's self-image in relation to others.
3. COUNTER-EXPECTATION: A modality of counter-expectation arises. The Subject encounters material/semiotic friction or resistance that blocks achievement of the desired goal. This development gives rise to the Subject's negative evaluation of the following factors and associated bodily feelings:

   -ve evaluation of source of resistance;
   -ve evaluation of self's incapacity to overcome resistance;
   -ve performance: loss of control;
   -ve evaluation of self-image in the eyes of the social group.

4. INCAPACITY: The Subject feels incapacitated and unable to achieve the desire goal;
5. NEGATIVE FEELINGS: The Subject feels bad (e.g., stress, tension, loss of power) and has a negative evaluation of his or her body feelings;
6. FRUSTRATION DISPLAY/ACTING OUT: The Subject vents and acts out his or her frustration both to the source of frustration (e.g., the pens) and to the social group and its expectations and values.
7. GENERAL CHARACTERISTICS AND SOCIAL DYNAMICS:

   Frustration means that the Subject's (self)image as a capable social agent is temporarily impaired. The acting out of or the display of frustration can potentially offend the social group and provoke negative evaluations of the offender on account of the negative behaviour (e.g., swearing, aggression, loss of control) that the feeling of frustration may provoke. The social group also recognises the group's values and the need for the frustrated individual to be reintegrated with these, as shown by Noeleen's handling of the situation.

   The acting out of frustration can involve infantile displays of rage and aggression and a form of regression to a childish state through temporary loss of power and consequent feeling of inadequacy. This is tantamount to the recognition of incapacity together with the desire to

> be reintegrated to the social norms of the group after one's temporary lapse of (self)-control. The acting out of frustration, while annoying and difficult for others, indicates a desire on the part of the Subject to continue to be recognised as a capable social agent and therefore to enjoy the rights and responsibilities associated with the agent role that is temporarily impaired by the frustration episode.
>
> Frustration has implicatures of inadequacy and powerlessness along with the Subject's appeal to be protected and/or placated as part of his or her reintegration to the group and its norms.

The transcribed episode is a nexus in Whitehead's sense of the kind that I will call Activity. Whitehead (1967/1933: 197–198) points out: "When the unity of the nexus is of dominating importance, nexus of different types emerge, which may be respectively termed Regions, Societies, Persons, Enduring Objects, Corporal Substances, Living Organisms, Events, with other analogous terms for the various shades of complexity of which Nature is capable."

In the many kinds of social activities in which languaging occurs, the languaging is just one strand of movement and process that is immanent in an occasion of experience. Languaging, understood in this sense, is immanent in the other strands of the Activity just as the other strands of movement and Activity are immanent in the languaging. The episode transcribed here is an Activity that is constituted by the two participants'—Laurie and Noeleen—reception of certain objects such as the pens that are the source of Laurie's frustration. The pens are already given objects the reception of which is in part constitutive of the occasion that is transcribed below. The Activity is, in Whitehead's terminology, a nexus of objects, bodies and movements.

The unity of an Activity like the one transcribed here is not simply the outcome of the reception of objects referred to above. It is above all the working together or the mode of functioning of the different strands of movement that are immanent in it. These strands of movement include body movements, hand gestures, haptic exploration and manipulation of objects, head movements (e.g., nodding and shaking the head), looking (adjusting gaze vectors), and vocalising.

As discussed above, Ingold has developed the idea of *correspondence* in order to account for remarkably similar concerns to these. As Ingold puts it, participants co-respond as they move along with each other (2016: 14). In an Activity nexus, bodily movements such as vocalisations and the grasping and manipulation of objects are forms of correspondence in Ingold's sense. In the transcribed Activity, the two persons are at times in correspondence with each other; at other times they are in co-articulated correspondence with aspects of the situation such as the pens and the writing tasks they perform while testing the effectiveness of the pens.

Tables 2.2 and 2.3 present the transcription of the activity to be analysed below. The two Tables should be read conjointly. The analysis below of the various phases of the activity is further cross-referenced to the transcription in Tables 2.2 and 2.3.

Table 2.2 Screenshots of the "Pens" episode transcribed in Table 1.8; [Source: *Sylvania Waters*, Episode 1, ABC Television, Australia, July 1992; https://www.youtube.com/watch?v=0CqguwJ2B4g].

Phase 1-1

00:00:15.893

Phase1-2

00:00:15.900

Phase1-3

00:00:16.700

Phase 2-1

00:00:17.710

Phase 2-2

00:00:19.840

Phase 3-1

00:00:20.490

Phase 3-2

00:00:20.890

Phase 3-3

00:00:21.660

Phase 4-1

00:00:23.241

Phase 4-2

00:00:24.130

Phase 4-3

00:00:25.170

Phase 5-1

00:00:26.490

Phase 5-2

00:00:28.350

Table 2.3 Transcription of "Pens" episode with Noleen and Laurie: action-perception and its integration with languaging; [Source: *Sylvania Waters*, Episode 1, ABC Television, Australia, July 1992; https://www.youtube.com/watch?v=0Cq guwJ2B4g].

	Phase 1
	Phase 1-1; Video Coded Time: 15.00–15.70; Duration: 0.7 s
Action	N: writes with pen on paper (RH)
	L: writes on paper
Gaze	N: gaze focus on her act of writing
	L: gaze focus on his act of writing
Body posture	N: leans over table to extend hand-arm-pen action and gaze to the locus of perceptual processing (her act of writing on the paper)
	L: sits at table; body posture tilted towards his writing
Vocal	None
	Phase 1-2; Video Coded Time: 15.70–15.90; Duration 0.2 s
Action	N: stops writing, sees that the pen works, and begins to retract hand from paper
	L: continues writing
Gaze-Head	N: gaze focus on her act of writing
	L: gaze focus on his act of writing
Body Posture	N: leans over table to extend hand-arm-pen action and gaze to the locus of perceptual processing (her act of writing on the paper)
	L: sits at table; body posture tilted towards his writing
Vocal	N: *there's ...*
	Phase 1-3: Video Coded Time: 15.90–16.70; Duration 0.8 s
Action	N: turns left to put pen back on pen rack to her left
	L: continues writing as before
Gaze-Head	N: head turn towards pen rack; gaze to pen rack
	L: As before, until 16.70 when he looks towards pen rack (continues in Phase 2)
Body Posture	N: turns towards and leans in direction of pen rack as she extends her right arm-hand towards it while holding the pen
	L: As before
Vocal	N: *... nothing wrong with that one*
	L: *the ...* (synchronised and overlapping with N's *one* (16.49)
	Phase 2
	Phase 2-1; Video Coded Time: 16.70–18.70; Duration: 2.0 s
Action	N: searches amongst the pens in pen rack with her right hand and grasps one
	L: ceases writing
Gaze-Head	N: head-gaze directed towards pen rack
	L: gaze directed at N's hand exploring pen rack (16.70–17.95); several rapid micro shakes of head on *same* (17.50–17.90) + gaze directed to N [*that's what I'm saying to you*]
Body Posture	N: turns towards and leans in direction of pen rack as she extends her right arm-hand towards it while holding the pen
	L: Slightly more upright that before
Vocal	L: *... one of the ones I just used was the same* (16.70–17.95)
	That's [right hand holding pen flips to right and back in direction of rack] *what I'm saying to you* (17.95–18.60)

(*Continued*)

Table 2.3 Continued

	Phase 2-2; Video Coded Time: 18.70–19.90; Duration: 1.2 s
Action	N: retracts hand-arm from rack holding a pen she has selected
Gaze-Head	N: turns head and reorients gaze to L;
	L: Head and gaze oriented to pen rack
Body Posture	N: raises body and begins to turn right
	L: As before
Vocal	L: *I didn't say it for fun*
	Phase 3
	Phase 3-1; Video Recorded Time: 19.90–20.40; Duration: 0.5 s
Action	N: turns to L. to show him pen she has taken from rack; holds it in front of L
Gaze-Head	N: head turns to L; gaze reoriented to L;
	L: As before
Body Posture	N: leans across table towards L;
	L: As before
Vocal	N: *yeah*
	Phase 3-2; Video Recorded Time: 20.40–20.90; Duration: 0.5 s
Action	N: brings hand with pen to table, writes on paper;
	L: observes N write
Gaze-Head	N: head and gaze directed at her writing;
	L: micro downward tilt of head to attend to N's writing
Body Posture	N: leans across table towards L. to position herself for writing task;
	L: As before
Vocal	N: *look*
	L: *one of those …*
	Phase 3-3; Video Recorded Time: 20.90–22.20; Duration: 1.3 s
Action	N: raises right hand and holds pen in front of L;
	L: observes N
Body Posture	N: As before
	L: As before
Gaze-Head	N & L: interpersonal coordination of gaze; their heads directly face each other
Vocal	N: *this is the one you had*
	L: *… I picked up first*
	Phase 4
	Phase 4-1; Video Coded Time: 22.20–23.60; Duration: 1.4 s
Action	N: writes on paper;
	L: picks up pen from rack with right hand; strong down beat of right hand-arm
Body Posture	N: As before;
	L: As above
Head-Gaze	N: head and gaze directed to her writing on table;
	L: head-gaze directed at N
Vocal	L: *so I picked up one of those first*
	N: *right*
	Phase 4-2; Video Recorded Time: 23.60–24.50; Duration: 0.9 s
Action	N: takes pen on table in her right hand;
	L: holding pen in right hand he raises his arm followed by a forceful down beat
Body Posture	N: As before;
	L: leans slightly to right in conjunction with arm-hand downbeat

(*Continued*)

Table 2.3 Continued

Head-Gaze	N: head-gaze directed at pen she picks up from table;
	L: head tilted to right in conjunction with upper body posture; gaze directed at N
Vocal	L: *and I said that's the third one*
	Phase 4-3; Video Coded Time: 24.50–25.50; Duration: 1.0 s
Action	L: puts pen he was holding back on rack
	N: holding pen in right hand observes L. putting pen on rack
Body Posture	L: Upright as before
	N: As before
Head-Gaze	L: rapid head turn towards rack then towards L (synchronised with *say that*)
	N: head turn and gaze directed towards L's hand replacing pen in rack
Vocal	L *didn't ya hear me say that*?
	Phase 5
	Phase 5-1; Video Coded Time: 25.50–27.00; Duration: 1.5 s
Action	N: leans towards pen rack to select the pen L has just put back there;
	L: picks up another pen beside him on the table and writes
Body Posture	N: upper body leans towards pen rack
	L: upright as before
Head-Gaze	N: head-gaze directed at pen rack;
	L: head tilted downwards + gaze directed towards his writing
Vocal	N: *there's nothing wrong with that one*
	Phase 5-2; Video Coded Time: 27.00–28.40; Duration: 1.4 s
Action	N: turns from rack, pen in hand, and leans towards L + writes on paper
	L: writes on paper
Body Posture	N: shifts to new position, leans across table towards L;
	L: As above
Head-Gaze	N: head and gaze oriented to her writing on paper on table;
	L: writes on same writing paper
Vocal	N: *look*

Analysis of the Transcribed Episode

Phase 1

Phase 1-1; Video Coded Time: 15.00–15.70; Duration: 0.7 s

Both Noeleen and Laurie write with their respective pens on the same piece of paper that is on the table in front of Laurie. Noeleen leans over the table to extend her hand-arm-pen action and gaze to the locus of perceptual processing (her act of writing on the paper).

Laurie sits at the table. His body posture is tilted towards his writing. Throughout this segment both participants sustain their respective postures. The two simultaneous acts of writing to test the pens together with the gaze vectors of the two participants constitute the maintenance across the temporal span of Phase 1-1 of the jointly coordinated postural orientations of the two participants. Their respective activities of writing on the same piece of paper are immanent both in each other and in the overall Activity nexus. No talk occurs in Phase 1-1.

Phase 1-2; Video Coded Time: 15.70–15.90; Duration 0.2 s

Noeleen stops writing when she sees that the pen works and begins to retract her hand holding the pen from the paper she was writing on. Laurie continues writing. The gaze vectors of both Noeleen and Laurie are focused on their respective acts of writing. The body postures of both participants are sustained from Phase 1-1. In Phase 1-2, lasting just 0.2 s, Noeleen begins the vocalisation with "there's" that continues into Phase 1-3. In spite of the continuity of postural orientation and gaze from Phase 1-1, I have prefered to identify a new Phase 1-2 because it is the point where Noeleen initiates the vocalisation that transitions to Phase 1-3.

Phase 1-3; Video Coded Time: 15.90–16.70; Duration 0.8 s

Noeleen's vocalisation ("nothing wrong with that one") is a movement of her vocal tract that is immanent in the movement of her body as she: (1) finishes writing on the paper to test whether the pen works; and (2) she moves her head and upper body from an initial focus on her writing with the pen to the pen rack on her left as she returns the pen to the rack. The two movements—head/upper body and vocalisation—are immanent in and inseparable from each other. They are not two separate movements that are "combined" with each other or that are parallel with each other. Instead, they are each constitutive of the unity of the Activity nexus that the transcription focuses on.

No less immanent in the whole Activity nexus is the movement strand of Laurie's activity of writing with another pen on the piece of paper on the table in front of him. The Activity nexus is an entangled meshwork of lines of growth, movement, and becoming that are interwoven with and are immanent in each other in the living of human social life. The different movement strands referred to here together, not separately, constitute and enact a particular quantum of the unfolding Activity.

Noeleen's writing on the paper, turning to and leaning towards the pen rack to replace the pen, and her vocalisation are all strands of movement that are immanent in each other just as they are immanent in the larger Activity that they in part constitute. They are immanent in and all play a role in the process of exploration and discovery that consists in trying out the pen, determining that it works, and replacing it in the pen rack once that determination has been made. Laurie's writing with another pen is not a separate movement strand but it too is immanent in Noeleen's movement and hers in his in the process of figuring out the problem Laurie has encountered with the pens.

Phase 2

Phase 2-1; Video Coded Time: 16.70–18.70; Duration: 2.0 s

For the entire duration of Phase 2-1 Noeleen searches with her right hand amongst the pens in the pen rack and selects a new pen. Laurie ceases writing and directs his gaze to Noeleen's hand during Noeleen's search (16.70–17.95). Laurie's vocalisation "one of the ones I just used was the same" is synchronised with this temporal span. Several rapid micro shakes of his head

are synchronised with and prosodically extend over "same" (17.50–17.95). These function to negate the point of Noeleen's search amongst the pens (They are the same as the one's that previously did not work for him). Laurie's vocalisation "that's what I'm saying to you" (17.95–18.60) is a metalinguistic operator that aims to clarify what he had previously meant. During this vocalisation, Laurie directs his gaze at Noeleen. His right hand, holding a pen, flips to the right to point in the direction of the pen rack. This gesture is precisely synchronised with "that" and indicates the pen rack as the locus of concern for the point he is making here. His speech is rapid and forceful. The tone is one of mounting frustration.

Phase 2-2; Video Coded Time: 18.70–19.90; Duration: 1.2 s

Noeleen withdraws her hand from the pen rack and holds a new pen which she has selected. She shifts postural orientation to reorient her gaze and upper body towards Laurie. Laurie's body posture is as before. His vocalisation "I didn't say it for fun" extends over the duration of Phase 2-2 and serves to further emphasise the attitudinal stance of the prior metalinguistic operator. Initially, his gaze ("I didn't") is directed at Noeleen, but shifts to Noeleen's hand as it takes the new pen from the rack ("say it for fun"). This rapid micro-shift of Laurie's gaze indicates the rapidly shifting foci of attention in play, specifically the past problem posed by the pens, on the one hand, and Noeleen's current effort to try them out. Laurie's voice dynamics and tone are as noted in Phase 2-1.

Phase 3

Phase 3-1; Video Recorded Time: 19.90–20.40; Duration: 0.5 s

Noeleen adjusts her posture to reorient to Laurie in order to show him the new pen she has removed from the rack. Her head and gaze orient to Laurie as she holds the pen in her right hand to show him while leaning across the table. She utters "yeah". The utterance serves at the opening move in a claim on Laurie's attention (Phase 3-2 below). Laurie's body posture is as before. His gaze is directed at the rack. His right hand, holding the same pen as before, moves along the table towards the rack.

Phase 3-2; Video Recorded Time: 20.40–20.90; Duration: 0.5 s

Noeleen leans across the table to position herself in anticipation of the writing task. She places her right hand, holding the pen, and upper arm on the table. She writes on the paper in front of Laurie. Laurie observes her writing; his gaze tracks her downward hand movement as it moves towards the paper. The gaze vectors of both Noeleen and Laurie are then directed at Noeleen's act of writing. Noeleen utters "look" while she moves her hand downwards and begins to write. Laurie's vocalisation "one of those" is synchronised with Noeleen's downward hand movement, her writing on the paper, and her vocalisation "look".

Phase 3-3; Video Recorded Time: 20.90–22.20; Duration: 1.3 s

On finishing writing on the paper (Phase 3-2), Noeleen raises her right hand, holding the pen, and holds the pen in front of Laurie. Laurie re-directs his gaze from the rack to the pen in Noeleen's hand while uttering "I picked up" (20.90–21.30). He completes his vocalisation with "first" in synchrony with the first word ("this") of Noeleen's utterance. Noeleen's vocalisation "this is the one you had" (21.29–22.20) is synchronised with her holding the pen in front of Laurie. Initially, her gaze is directed at Laurie to establish interpersonal coordination with him. At the end of her vocalisation ("this is the one you had"), Noeleen then re-orients her gaze downwards to the pen she is holding in anticipation of her moving her hand downward in Phase 4-1 below. Laurie's gaze is directed at Noeleen throughout until he nods once in synchrony with "had" at the same time that he moves his right arm-hand towards the rack.

Phase 4

Phase 4-1; Video Coded Time: 22.20–23.60; Duration: 1.4 s

Noeleen moves her arm down to the paper and writes on it. In synchrony with Noeleen's action, Laurie picks up a pen from the rack with his right hand, raises his hand holding the pen in synchrony with his vocalisation "so I picked up" (22.30–22.70). The continuation of his vocalisation ("one of") is synchronised with the hand holding the pen reaching its maximum height (roughly level with Laurie's eyes) while he looks intensely at Noeleen (22.70–23.00). Laurie then performs a rapid, strongly accented downbeat of his right hand while saying "those first". Noeleen's vocalisation "right" is synchronised with the "first" at the end of Laurie's vocalisation (23.40–23.60). In the same time interval, she also briefly directs her gaze to Laurie before re-directing her gaze to her act of writing.

Phase 4-2; Video Recorded Time: 23.60–24.50; Duration: 0.9 s

While vocalising "and I said that's", Laurie raises his right hand holding the pen he picked up in Phase 4-1 and holds it while looking directly at Noeleen (23.50–24.00). His head and upper body are tilted slightly to his right. In this time interval, Noeleen, while leaning across the table, moves her right hand and the pen she is holding towards the paper in preparation for writing on it. Her gaze is directed at the incipient writing task. Laurie then performs a strongly accented down beat of his right arm-hand that is synchronised with the remainder of his vocalisation, "the third one" (24.00-24.50). The culmination of the downbeat coincides with the tonic syllable "one" at the conclusion of his vocalisation.

Phase 4-3; Video Coded Time: 24.50–25.50; Duration: 1.0 s

In synchrony with a micro head turn towards the rack, Laurie extends his right arm-hand to the rack and puts the pen he was holding back on the rack while vocalising "didn't ya hear me say that?". Noeleen stops writing and

re-directs her gaze from her writing to Laurie's action. In synchrony with "that" (25.10–25.30), Laurie's shifts his gaze back to Noeleen.

Phase 5

Phase 5-1; Video Coded Time: 25.50–27.00; Duration: 1.5 s

Noeleen turns her head and gaze and upper body in the direction of the rack and leans towards it while extending her right arm-hand in order to select the pen Laurie has just put back (25.50–26.60). Her vocalisation "there's nothing wrong with that one" with reference to the pen Laurie has just put back on the rack is synchronised with this movement. Laurie withdraws his right hand-arm from the rack and returns it to his side. In synchrony with this hand-arm movement, Laurie's gaze orients to the rack while his hand-arm is extended to it. His gaze then reorients back to the new writing task he now initiates when he then picks up another pen lying on the table beside him (26.35) and writes with it until 27.00. On concluding her vocalisation (see above), Noeleen then redirects her gaze to Laurie (26.60–27.00) while retaining the prior posture of her upper body and right hand-arm.

Phase 5-2; Video Coded Time: 27.00–28.40; Duration: 1.4 s

Noeleen turns from the rack and redirects her gaze to the anticipated writing task as she takes the pen Laurie had placed back on the rack with her right hand and moves the hand holding the pen in position to begin writing at the conclusion of this time interval on the same paper that Laurie is writing on (26.70–28.10). In the same time interval, Laurie continues writing, his gaze directed at his own writing. Noeleen writes with the pen she has taken from the rack while saying "look" (28.00–28.40). Laurie maintains the same posture as before and continues writing.

7. The face formation as locus of co-exploratory and co-performative body movements in talk

So-called "face-to-face" interaction—more accurately whole bodies-in-interaction-takes place "in" and constitutes what Scheflen and Ashcraft refer to as "a more extensive and often a more lasting field of relations of movement and other behaviour" (1976: 5). Minimally, face-to-face interaction consists of two or more persons-in-interaction who "tend to co-orient and use parallel or congruent postures" (Scheflen & Ashcraft, 1976: 97). A number of people may cluster together, but do not co-orient such that they do not engage in face-to-face communication even if the fact of their clustering may be communicative to an outside observer (e.g., a number of individuals standing in a queue or a crowd of individuals all attending to the same phenomenon (Scheflen & Ashcraft, 1976: 102)). On the other hand, persons-in-interaction co-act, are mutually involved, and therefore are in some kind of relationship of co-affiliation or co-involvement (Scheflen & Ashcraft, 1976: 103). Whenever people come together and face each other, they form what Scheflen and Ashcraft call a "face formation" (1976: 107). A face

formation is constituted when people come together and take up locations in the space that is so constituted.

A face formation is, then, the higher-scalar organisation within which face-to-face communication is embedded. A face formation is constituted when two or more persons (1) co-orient; (2) take up congruent postures; (3) take up locations or positions in the space of the formation; (4) use the space so constituted to form relations of co-action and co-affiliation of various kinds and to varying degrees; and (5) they and the elements of the face formation are coupled to interactively significant environmental affordances such as relevant objects, artefacts, physical settings, designed spaces, and so on.

Face-to-face communication is embedded in this higher-scalar arrangement as a dialogic matrix in which the whole body posture-movement system of each individual participant is deployed to accomplish the co-enacted exploratory and performatory activities—the terms are Gibson (1983/1966: 45–46)—whereby the dialogical matrix is established and maintained. In turn, the dialogic matrix is grounded in the capacities of each individual for self-initiated movement and other forms of exploratory and performatory activity so that they can couple with each other in interactively and cognitively salient ways. The whole-body posture-movement system makes use of postures and movements of the body and can itself be divided into a number of different regions. These are: (1) the head-face system; (2) the torso and upper limbs system; and (3) the lower limbs-torso-head system.

The analysis in section 6 above focused on the co-exploratory and co-performatory activities of Noeleen's and Laurie's movements and postures. Noeleen's movements and postures constitute a nested system of a number of action systems that unfold in relation to and are entangled with those of Laurie and with other aspects of the situation (e.g., the pens, the writing paper). For the purposes of the present discussion, I shall refer to the following body units: (1) the head, including gaze and vocal tract activity; (2) the torso; and (3) the upper limbs. Consider for example Transcription Phase 3: 1-2 and Transcription Phase 3: 3. The two phases coincide with two postural units and their associated movement transformations, which we may label as Postural Orientation 1 and Postural Orientation 2, respectively. These are as follows: Postural Orientation 1 (Transcription Phase 3: 1-2) and Postural Orientation 2 (Transcription Phase 3: 3).

The two postural orientations are analysed and discussed with reference to the transcription in Tables 2.2 and 2.3 and the analysis and discussion in section 6 above. I refer the reader to Tables 2.2 and 2.3 and the analysis above for the relevant detail pertaining to Postural Orientations 1 and 2. The analysis can also be cross-referenced to the analysis of the pico scale voice dynamics of the same fragment in Example 1 in Vol. I, chapter 3, section 14, which also focuses on Transcription Phases 3: 1-2 and 3 in the analysis above.

Reed observes that "movements are nested within postures in the sense that a movement involves not only a change of state from one posture to another but always the maintenance of some postural orientation as well" (1996: 85). Languaging is the result of the global order produced by many diverse local

interacting components that are spread across brain, body, and environment. The observable bodily dynamics of articulation and prosody in vocal tract gestures, along with the neural processes that coordinate vocal tract activity, and relevant environmental factors (e.g., addressing someone in an angry tone to show disapproval of their behaviour), constitute a coupled system in the sense that some parameters of each system involved are functions of state variables of the other systems involved. The observed vocal tract behaviour is not, then, under the control of a central processor in the CNS which sends commands or issues instructions to the body to behave in a certain way. Instead, vocal tract behaviour is the result of the mutual influence and modulation of neural, bodily and environmental/situational factors that interact on and are distributed over diverse time scales.

As Reed (1996: 85) points out, there are various levels of postures and nestings of these as well as controlled transformations from one posture to another (movement). A movement is both a change of state from one posture to another at the same time that it is the maintenance of some postural orientation. For example, in Postural Orientation 1, the overall postural orientation of the head and torso is maintained whereas the right upper arm-hand-pen system undergoes a controlled transformation as it is lowered from the showing position to the writing position. Furthermore, the movement from one state to another is synchronised with the two vocalisations. The first of these ("yeah") serves to call Laurie's attention to the overall shift in attention that Noeleen is asking Laurie to undertake (i.e., attend to what I am showing you). The second ("look") directs Laurie's attention to Noeleen's writing with the pen on the paper.

All of the action systems referred to here (head, gaze, torso, upper arm-hand-(pen), and vocalisations) are fully interactive. They are other-directed, other-sensitive, and other-calibrated. They therefore play their role in creating or sustaining a relationship between Noeleen and Laurie that is based on many levels of reflexivity in addition to the observables of the situation. At the same time, all of these action systems act on and transform the situation and its conventions through the cognitive and semiotic work done by the mutual management and assessment of each others' behaviour in order to bring about perception-action transformations in the other. In this sense, each action system is oriented to the seeking of values. Thus, the action of moving the arm-hand-(pen) from the raised to the lowered position, as described above, seeks to move Laurie to a new perception and understanding of the status of the pens.

Languaging can be defined in the first instance as repertoires of vocal tract and other actions and techniques that have the capacity normatively to affect and direct the experience of the selves who participate in dialogically coordinated languaging. Languaging is an extended form of *perçaction*. Languaging is vocal tract activity in the form of phonetic (and related) gestures that catalyse, guide, and support flows of simulated or virtual experience (action-perception) that are enabled and constrained by linguistic structure. Linguistic structures do not encode abstract representations in, for example, the transitivity structure of the clause. If they did, this would amount to saying that there is a structural isomorphism between the transitivity structure of the clause and what is purportedly represented

by it. Instead, linguistic structure *functionally*, not structurally, evokes, constrains, and guides an attunement to flows of environmental invariance structures and their transformations—both actual and virtual—in ways that modulate action, awareness, and experience. Linguistically structured vocal tract actions support and guide these processes as well as coordinate the activities and experiences of the diverse social agents who participate in dialogically coordinated languaging.

8. Values, affordances, and occasions of experience

Whitehead's idea of an occasion of experience is relevant to our understanding of the transcribed episode. In defining an occasion of experience, Whitehead (1967/1933: 175–176) emphasises that the Subject-Object relation, which is usually thought of as the relation of knower to known, is too abstract for explaining occasions of experience. An occasion of experience has its basis in emotion and in the affective tone that originates from the object that provokes a particular experience. Whitehead reformulates the Subject-Object relation in terms of the subject's concernful relation to the object, as follows:

> The subject-object relation can be conceived as Recipient and Provoker, where the fact provoked is an affective tone about the status of the provoker in the provoked experience. Also the total provoked occasion is a totality involving many such examples of provocation. Again this phraseology is unfortunate; for the word 'recipient' suggests a passivity which is erroneous.
>
> (Whitehead, 1967/1933: 176)

Whitehead's more detailed, "more formal" explanation of an occasion of experience is worth quoting at length:

> An occasion of experience is an activity analysable into modes of functioning which jointly constitute its process of becoming. Each mode is anlysable (sic) into the total experience as active subject, and into the thing or object with which the special activity is concerned. This thing is a datum, that is to say, is describable without reference to its entertainment in that occasion. An object is anything performing this function of a datum provoking some special activity of the occasion in question. Thus subject and object are relative terms. An occasion is a subject in respect to its special activity concerning an object; and anything is an object in respect of its provocation of some special activity within a subject. Such a mode of activity is termed a "prehension". Thus a prehension involves three factors. There is the occasion of experience within which the prehension is a detail of activity; there is the datum whose relevance provokes the origination of this prehension; this datum is the prehended object; there is the subjective form, which is the affective tone determining the effectiveness of that prehension in that occasion of experience.
>
> (Whitehead, 1967/1933: 176)

What Whitehead refers to as an object's "provocation of some special activity within a subject" is the object's capacity both to affect the subject and to be affected by it. The object has these capacities by virtue of its existence; it has value in this sense. The subject is a locus of attention and concern on the other hand that has modal capacities and dispositions that enable the subject to release the object's capacities—to be provoked by them—relative to the particular space-time scales on which the subject functions. In this sense, the subject–object relation is world constituting. Subject and object are not separate entities that contingently interact, but the two poles of a nondualistic world-constituting relation. The object is not part of a mind-independent reality because it can only be known in relation to the viewpoints of the subject. By the same token, the object is experienced as existing "out there" as part of a common world that can be shared with other subjects. As I have said previously, we do not simply live "in" and we are not simply contained "in" an external environment that pre-exists the subject. We live in a world—the human ecology—that is populated with subjects together with the objects that they have constituted with respect to the viewpoints and possibilities for action that their embodiment affords them. In the human world, countless subject–object transactions that have accumulated over cultural-historical time scales are pooled as the collective meta-experience of a particular society of selves. The prefix "meta-" is used to indicate that this experience, while grounded in and originating in individual experience, also transcends it and becomes part of a culture's collective knowledge and wisdom. This knowledge is not fixed and unchangeable. Nevertheless, it transcends individual viewpoint and specific times and places. It is cultural-historical and can, in theory, be accessed by countless selves in different times and places in, for example, specific acts of languaging.

Whitehead (1967/1933: 179) further pointed out that the process of experiencing is constituted by the "reception of objects into the unity of that complex occasion which is the process itself." In the episode analysed and transcribed here, the pens serve as the objects that provoke both an affective tone and the activities which Laurie and Noeleen carry out in relation to them. Moreover, the pens were not created by the activity in question. They pre-existed it and can be independently described without reference to the occasion of experience that Laurie's and Noeleen's interactivity with them provokes. Their perception of the pens is decidedly conative: the pens "demand" that something be done about them. Laurie's problem with the pens—his inability to get them to write—also provokes the predominant affective tone, which operates as an affective-semantic prosody that is interwoven throughout the episode and which varies in intensity as the episode unfolds at the same time that the affective tone pervades the whole episode (Greimas & Fontanille, 1991; Louw, 2008; Thibault, 2002).

Affordances like the pens exist in the world. They pre-exist any particular occasion of experience. An occasion of experience is always constituted through the agent's selective and exploratory interactivity with particular affordances. Affordances have values that organisms with the appropriate capacities and skills can discover through their exploratory activity. The mere fact of the existence of something means it has value. The world does not consist of value-less neutral

facts waiting to be discovered and to have value assigned to them. The fact that something exists means that it has intrinsic value by virtue of the fact that it exists rather than something else. Everything that exists is an orientation, a discrimination, a value. On the ecological scale, objects and events—both animate and inanimate—have sensuous qualities of colour, texture, solidity, elasticity, viscosity, fluidity, lustre, dispositional capacities and powers, and so on. These qualities are values by virtue of the existence of the given object or event. Perception, as Gibson showed, gives us immediate access to these qualities. Our perception of objects and events such as the pens in the episode analysed above constitutes a discrimination, a focus of interest, that is necessarily selective.

The thing that I attend to in the field of ambient stimulus information is not a valueless "entity"—a lump of inert matter—that I then confer value on. Instead, my selectively differentiating it, focusing on it, and thereby making it salient and hence valued as a locus of perceptual processing in my field of perception means that my interest in it however fleeting and momentary is in that moment an extension of my desire and interest. To select one thing for attention rather than some other in a field of competing possibilities is to distribute some of my own intrinsic feeling and evaluation into that object (Brown, 2005: 29). Subjective feeling flows into the object as it is constituted as an object of my perception and experience. However, this should not be confused with the value that is intrinsic to the object by virtue of its existence. Instead, when we focus our attention on one thing rather than another the object of our attention is constituted as an object of perception that grows out of the self. In this way, the object is an extension of the self and the values that are intrinsic to the self on account of the self's existence in the world. When the self attends to and thus constitutes something as its "object" of perception, the subjective pole of the self and the objective pole of the objects in the world that the self constitutes in its own brain/mind process are the two poles of a two-way flow of value between self and its objects.

This does not mean that the world beyond the self is merely a solipsistic projection of the self's own mental categories. The world is not simply a construction of the mind. Instead, self and its objects mutually constrain one another. Whilst it is clearly true that we can only perceive and know the world through our own consciousness, consciousness is both constrained and enabled by the feedback loops from the world that enable us to hone action and perception and to correct error so that better approximations of the world can be achieved and pooled as a community's collective meta-experience. The crucial point, however, is that mental life is an intentional striving beyond the self that is directed at the self's objects (Vol. II, chapter 3, section 1). Consciousness is directed towards and constitutes a world that exists beyond the self and which the self can explore and experience relative to the viewpoints and possibilities of action afforded by its embodiment. It is the awareness of this gap between self and non-self together with the striving to "mind the gap" that yields the self–object relation. Once this threshold is crossed, and with it the awareness that the world 'out there' is one that can be shared with other selves, there arises the motivation to coordinate one's own viewpoints with

those of other selves. By the same token, this gives rise to the awareness that others may view the world differently from oneself.

Languaging builds on and extends these processes. An utterance is a selection, a discrimination, and the enacting of a locus of attention and interest. The selection of a particular semantic category rather than some other to differentiate a particular aspect of the environment—real or virtual—functions to set up forms of co-attending and co-orienting to a current locus of concern—what the speaker cares about now, as specified by that utterance. In Vol. II, chapter 4, section 2.3, I discuss what I call the caring function of languaging in these terms. What I indicate through my utterance to be the current locus of attention and concern is not then the projection of the semantic categories of languaging onto a meaningless and valueless external world. Languaging does not impose form, meaning, and value on the world. The category generates a locus of concern with respect to some aspect of a multidimensional sensory continuum of possibilities that compete for one's attention. They have this capacity to compete for and perhaps claim our attention precisely because they are not valueless, but have intrinsic value due to their existence.

My selective differentiation of a particular aspect such as the pens in the episode analysed above by means of a particular semantic category means both (1) that my attention is momentarily captured by a particular value of something that exists in the world of competing paradigmatic possibilities (Vol. I, chapter 4, section 5) and (2) the selection of one semantic category rather than some other from competing sets of paradigmatic possibilities intrinsic to languistic pattern imports something of my own value stream—my own desires, evaluations, interests, judgments, preferences, into the object. The encounter between the values intrinsic to the things that exist in the world and the values that exist as aspects of the core self and its affects yields an occasion of experiencing. The world that we live in is a dynamic world of process that is alive and shimmering with value and value gradients that attract and repel us in innumerable ways when we seek its values and tap into its value gradients (Vol. I, chapter 1).

9. Languaging, redintegration, and the cueing and modulation of non-perceptual awareness in the imagination

After ploughing through the analysis above a restful break might be in order. Now take a good lie down in a quiet place and close your eyes. Recall a walk that you took recently or imagine that you are walking through a landscape. In both cases, you will activate in your imagination a flow of information about the walk that you simulate in your imagination. Your eyes are closed and you are not moving but lying down. And yet, you have the ability to either recollect a walk you undertook through a familiar landscape or to imagine a walk through an unfamiliar landscape. In both cases, to varying degrees of accuracy, clarity, and vividness you will experience in the flow of your imagination imagined events and objects that you encounter during your simulated walk. The walk and the things you see and hear, etc., are not perceived, but you are aware of them. During an actual

walk, I have perceptual awareness of the things I see and hear, etc. Perceptual awareness is enabled and supported by the environmental invariances that I pick up as perceptual stimulus information as I move around the environment. In the imagined environment that I am now entertaining, I am nonetheless able to be aware of the things that I encounter. This is non-perceptual awareness, but it is still a form of awareness. Moreover, the non-perceptual awareness that I create of my walk is a flow of mental process that occurs in time as is the walk through the real landscape.

Traditional accounts of the imagination have viewed it in terms of static inner images that are seen "in the mind's eye". Gibson's ecological account argues that both perceptual awareness and non-perceptual awareness are defined by abstract and dynamic invariances. On this view, languaging enables and constrains attunement to dynamic structure, i.e., time-extended patterns of environmental invariances (Vol. II, chapter 1, section 1). Gibson explains non-perceptual forms of awareness such as, for example, remembering, expecting, anticipating, planning, imaginative creation, daydreaming, dreaming and imagining wishfully, as follows:

> a perceptual system that has become sensitized to certain invariants and can extract them from the stimulus flux can also operate without the constraints of the stimulus flux. Information becomes further detached from stimulation.
>
> (Gibson, 1986/1979: 256)

Gibson shows that the various forms of non-perceptual awareness, including the imagination, constitute an "autonomous animation system" (Verbrugge, 1980: 94). Imagination is enabled and constrained by factors such as the following: (1) the perception of time-extended linguistic invariances—linguistic pattern in utterances—that are embedded in non-linguistic aspects of experience in ontogenesis; (2) the social context of the utterance; (3) the modulatory persisting influence of prior contexts that are not so much stored in memory as static items to be recalled when required, but which act as boundary conditions on the perception of current events (Bransford et al., 1977: 434–435); and (4) the anticipation of future interactive potentialities in the input flow of the interaction.

Linguistic pattern or structure in utterance-activity is experienced as recurrent covariates of aspects of the events and situations in which they are embedded. It is in this way that specific classes or types of linguistic utterances come to be experienced and learned as specific to particular classes or types of situations and events. On Saussure's (1971/1915: 97–103) account, the association of a particular signifier with its signified is a reification of this fact. In other words, the high-order invariance relations that are detected as linguistic pattern in utterances are structures of information—the linguistic affordances of utterances— that have the functional capacity to specify aspects of situations and events which the particular linguistic pattern served to indicate or to evoke in the prior experience of the individual person.

Non-perceptual awareness depends on prior experience of perception of environmental invariances. You can neither recall nor imagine walking through a wooded landscape if you have not had prior experience of the perceptual invariances of trees, of the activity of walking, etc. that you encounter as you walk through a wood. Your capacity to experience non-perceptual awareness in this way is based on the prior development of the capacity to attune to the invariance structures of the things and events perceived in the world and thus to discriminate them. Once this is accomplished, you can develop the capacity to attune to the invariance structures of things without the support of perceptual stimulus information. With this capacity, you have the ability to attune to and to have non-perceptual awareness of things that are activated in the imagination. Non-perceptual awareness is every bit as real as perceptual awareness. It builds upon perceptual awareness but depends on the ability to attune to and activate invariance structures without the support of the stimulus flux of perceptual information.

Now read the following short text:

> As they reached the cool shade of the first trees Harry tried to catch Hermione's eye, walking into the Forest without wands seemed to him to be more foolhardy than anything else they had done so far this evening. She, however, merely gave Umbridge a contemptuous glance and plunged straight into the trees, moving at such a pace that Umbridge, with her shorter legs, had difficulty in keeping up.
>
> (J. K. Rowling, *Harry Potter and the Order of the Phoenix* (2014/2003), p. 692)

As you read the text, you move along with the reading pathway that is laid down by its graphological and spatial organisation. The linguistic pattern—the wordings—that you detect makes available information that functionally constrains an attunement to dynamical invariance structures such as the information that the transitivity structure of the clause and more delicate lexical selections specify. For example, the first clause, *they reached the cool shade of the first trees*, specifies an action of locomotion over terrain that is performed by the persons—Harry Potter and his companions—indicated by the pronoun *they*. The verb *reached* indicates that an action has now been successfully completed after the effort of prior activity (walking). The nominal group *the cool shade of the first trees* evokes a complex experience involving "cool", "shade", "first", and "trees". The action *reached* and the words in this nominal group functionally constrain an attunement to invariance structures that are not physically present for the reader. That is, they are not supported by perceptual stimulus information providing information about the invariance structures of temperature (cool), luminosity (shade), sequential order (first), and trees. The linguistic terms and the specific linguistic structures that they function in support forms of non-perceptual awareness that is activated in the imagination.

We do not associate a meaning /COOL/ with the graphic signifier *cool*. The words and the written utterance as a whole work on the imagination of the reader

when the reader interactively explores the linguistic affordances of the text, e.g., its patterns of wordings.. To do so, the reader needs to have had prior first-order ecological (perceptual) awareness and knowledge of the 4-D multimodal invariance structures of "cool", "shade", and so on. Such experience is of course obtained from and is grounded in perception. Words are non-arbitrarily grounded in sensory-kinetic experience (Bolinger, 1949; Vol. II, chapter 1, section 1). Furthermore, words like *cool*, *shade*, *tree*, and *reached* are typically encountered in the course of one's development in situations in which the words functionally assimilate in systematic ways with the invariance structures of multimodal sensory-kinetic experience of the world. These relations may be fuzzy or precise to varying degrees. Saussure's principle of the arbitrariness of the linguistic sign (Saussure, 1971/1915: 100–102; 1993/1907, 1910–11: 285–290) contrasts with the recent findings of scientists from the Max Planck Institute (2014, 2016) who have established in a survey of two-thirds of the 6,000 plus languages spoken around the world that the relationship between sound and meaning is far less arbitrary than what the linguistics textbooks have claimed for many decades. Sensory-kinetic experience is fundamental to the sense-making that languaging enables and supports. I discuss this question in more detail in Thibault (In press-a).

The point is that the word functions to differentiate one kind of environmental invariance structure from others, e.g., "cool, not warm", "shade, not sun", "tree, not cactus", and so on. The linguistic terms are typological-categorial semantic distinctions that compress 4-D multimodal information about the environmental invariance structures that the word differentiates. The word is a potential structure of action that points to and indicates to varying degrees of fuzziness and/or precision where in the currently active experiential topology the given invariance structure is located. Provided the reader has the requisite knowledge and skills, he or she, in interacting with the affordance potential of the word, is able to activate in the imagination a non-perceptual awareness of the invariance structures that specify coolness, shade, trees, the action of reaching a destination after the prior action of traversing terrain, and so on. J. K. Rowling's text relies on a common ground of ecological experience that readers can also draw on at least in part on the basis of their own first-order embodied experience of the invariance structures of these things.

In this way, readers use the affordance potentials of words to activate in their imagination a non-perceptual awareness of the category of invariance structure that the word differentiates. The words themselves are structures of action that have the functional capacity—the affordance potential—to affect readers provided that readers are in possession of the requisite capacities, knowledge, and skills to be so affected. In directing the reader's attention to a particular domain of experience in this way, the word has the capacity, as I have argued elsewhere (Thibault, 2011b, 2011c), to catalyse forms of experience, actual and virtual, perceptual and non-perceptual, by activating and stimulating the reader's imagination. Words and utterances *qua* structures of action functionally constrain an attunement to and thus induce or catalyse an awareness of the invariance structures and combinations of these that we experience in the human ecology.

In accordance with Gibson's thesis of animal-environment complementarity, meaning is a psychological relation between the individual person and his or her environment. Meaning is neither something "out there" in the external world nor is it something internal to the person that is simply added to meaningless sensations.[5] Linguistic meaning thus inheres in the relationship between a languaging agent, someone's utterance activity and the relevant aspects of the environment (actual or virtual) that are indicated by the utterance (Verbrugge, 1980: 92). Meaning is not contained in or transmitted by words; nor does it exist in people's minds. Verbrugge (1980: 93) argues that language function and the forms of cognition it gives rise to is based on the perception of *nonarbitrary invariance* and that a better understanding of linguistic cognition will be developed "when we have a better understanding, within the realist framework, of such psychological functions as imagination and recollection" (1980: 93). To quote Verbrugge:

> We know that language leads us to experience events, to view them from fixed and moving points of observation, to move about in social and geographic environments. These imaginal experiences are similar in quality to experiences we have in nonimaginal contexts. This mode of experience will be called *virtual perception* (*action*), on rough analogy to the virtual images of optics; in each case, the relation between the experiencer and the event is largely preserved as one moves from the real to the virtual.
>
> (Verbrugge, 1980: 93)

Without doing a detailed analysis here, note also that in the short text from Harry Potter the characters are not stationary. Having reached the first trees of the Forbidden Forest, they then move into it. The text simulates and therefore provides information about experience as seen from the moving points of observation of the textual participants as Harry and his companions move further into the forest. The progression from one action to another in the sequence of clauses provides information that enables the reader to move along in his or her imagination with the simulated virtual movement of the characters as they move in the virtual environment that the affordances of the text enable the reader to activate in the imagination. Our reading of the text is a flow in time that organises and simulates a functionally constrained flow of imagined experience. In this way, readers move in imaginary places and times and view things from the imaginary points of observation of the characters as they move along with and interact with and activate the affordance potentials of the information that the text makes available.

Wordings are higher-order semantic invariants—second-order affordance potentials—that selectively operate on and activate the environmental invariance structures of first-order embodied experience in ways that can catalyse flows of non-perceptual awareness and virtual action-perception. 4-D multimodal ecological experience is compressed in the typological-categorial semantic distinctions of lexicogrammar. In their interactivity with the affordances of utterances and texts, people do not decode a meaning that is encoded in linguistic structure. Instead, linguistic structure has the functional capacity to catalyse flows of linguistically

constituted actual and virtual experience when we interact with the affordance potentials of linguistic pattern in utterances and texts. The flows of experience so catalysed are themselves multimodal. The cultural-semantic information that is compressed in linguistic structure can be selectively activated in ways that constrain, direct, enable, guide, stimulate, and sustain these flows. Figure 2.1 maps the cycle of processes whereby languaging enables and constrains attunement to dynamic structure—time-extended patterns of ecological invariance structures.

The modulatory capacities of utterances are naturalistically (non-arbitrarily) grounded in the patterns of invariances—linguistic pattern—that languaging agents learn to detect in utterances and use in the course of their embodied experience of the world. Moreover, human agents experience these invariances as interpenetrating aspects of the situations in which utterances are embedded and which they in part constitute. There is a long tradition in learning theory that argues that a covariate can afford attunement to the event or event-type with which it covaries, including in the absence from the immediate situation of the covarying event (Bolles, 1975). I return to the notion of a covariate below. Verbrugge (1980: 94) observes that the so-called "symbolic" function of language can be understood in terms of the theory of redintegration that was developed in associationist theories of memory (see, for example ,Claparède, 1903; Hamilton, 1861). I discussed aspects of redintegration in Vol. II, chapter 1, section 7. In the following paragraphs, I further develop the discussion initiated there.
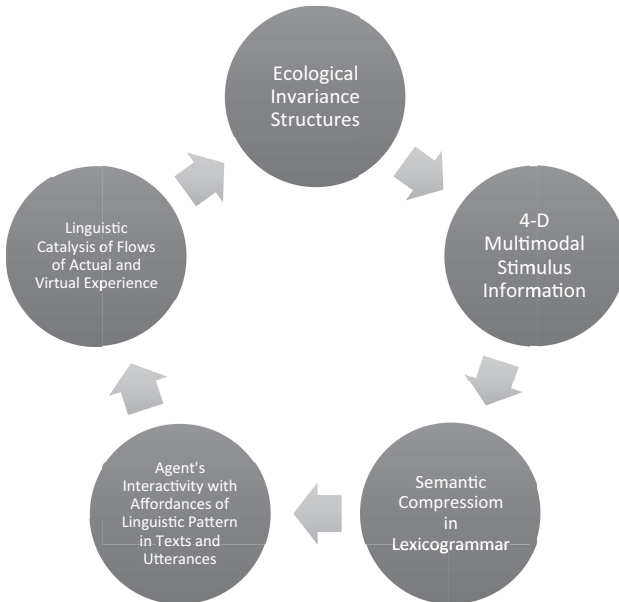
Figure 2.1 The cycle from 4-D multimodal ecological invariance structures to the linguistic catalysis of flows of actual and virtual experience

Sir William Hamilton, Bart provides a clear definition of redintegration based on associationist theories of memory prevalent in the nineteenth century in his *Lectures on Metaphysics and Logic, Volume II*. Hamilton draws a distinction between the two laws of Simultaneity and Affinity, as follows: "the circumstances which constitute between thoughts a bond of association—a principle of mutual suggestion … and distills this principle of suggestion into two laws—the law of Simultaneity, and the law of Affinity" (1861: 239). According to the former, objects which are coexistent or immediately consequent in time are associated. The latter stipulates that "things which stand in a mutual affinity to each other, either objectively and in themselves, or subjectively, through the modes under which the mind conceives them, are in like manner reciprocally suggestive" (1861: 239). On this basis, Hamilton formulates his higher-order Law of Redintegration, as follows:

> These two laws, I further showed you, might themselves be carried up into one supreme principle of Association, which I called the law of Redintegration or of Totality; and according to which thoughts or mental activities, having once formed parts of the same total thought or mental activity, tend ever after immediately to suggest each other. Out of this universal law every special law of Association may easily be evolved, as they are all only so many modified expressions of this common principle—so many applications of it to cases more or less particular.
>
> (Hamilton, 1861: 239–240)

Redintegration is the process whereby the experiencing of a part of some previously experienced whole has the capacity to evoke a memory of the previously experienced whole (Verbrugge, 1980: 94). For example, hearing a rustling sound in the grass or the forest litter as I walk through the wood may evoke recollections of my boyhood days catching lizards in the Australian bush. The rustling sound was frequently part of those past events in which the sound was reliably associated with the movement of a lizard. The rustling sound that I hear on my walk through the wood in the present in faraway Norway triggers a recollection of those earlier events in which rustling sounds often indexed the presence of a lizard. The recollection is a virtual experience of a prior whole event that is activated by a component part—the rustling sound—that the prior event(s) and the present one have in common.

If we take utterances and the environmental events or experiences with which they "covary" to be intrinsically and constitutively related to each other as component parts of the one overall event, then utterances and their linguistic patterning can be seen as the commonality that events and situations of the same type share across different occasions. Utterances and events are co-constraining. Regular relations of co-occurrence between linguistic patterns and situational features are experienced as recurrent constituents of the experiences of the developing child. In ontogenesis, these relations function to constrain perceptual experience, actions, evaluative orientations, beliefs, and so on.

The idea of a covariate in psychology or of a co-occurrence relation in linguistics has strong positivistic connotations that need to be resisted. According to the positivistic worldview, the world consists of separate atomistic units that exist independently of each other (see Ratner, 1997: 15–26 for a useful critical discussion). Ratner points out: "The notion of a variable implies that phenomena have intrinsic, independent, invariant, uniform, and simple natures. A separate, autonomous variable has an intrinsic character because it is not derived from other phenomena. The character must be self-contained because it is impervious to external qualitative influences." (Ratner, 1997: 15.)

Utterances and environmental structures do not covary in the positivist sense. They do not have an independent existence. Instead, they dialectically interpenetrate with each other in the constitution of experience. Utterances are structures of actions that assimilate to the world and its structures. Utterances are qualitatively affected by the world just as the world is affected by utterances. Utterances and environmental structures are complex configurations of interpenetrating processes that derive from social activities and practices, relationships, experience, and so on.

Whereas classical sensory empiricism proposed various kinds of association of sensory inputs such that sensory inputs are transduced into sensory representations in order to support the representations that are based on them, a modern theory of redintegration must eschew any notion of a transduction of factual input into a representation. Utterances are affordances in Gibson's sense that set up potentialities for future interaction. Agents do not passively receive meaningless inputs from the external world, including the utterances they encounter. Instead, they interact with the affordances of their world in accordance with (1) processes going on in the organism; and (2) events and processes occurring in the environment. It is through their interactivity with their environment that agents access the multiple potentialities of their environment (Thibault, In Press/2021).[6]

On this view, redintegration is an active process rather than a passive transduction of sensory inputs into sensory representations. Utterances and the linguistic pattern that persons detect in them through their interactivity with the affordances of the utterance have the capacity to induce a functional attunement to previously experienced wholes to varying degrees of precision, specificity, and abstraction. In other words, utterances can activate and modulate a virtual experiencing of the previous experience or class of experience even when that experience is no longer available to immediate perception.

Languaging agents intentionally and selectively discriminate and attune to environmental potentialities. In the flow of their languaging activity, languaging agents orient to and detect recognisable linguistic pattern in utterances and their relations with environmental structures and experiences. However, the detection of this pattern is not the input to the transduction of the detected pattern in to encoded representations. Instead, the redintegration of a prior covariance relation between linguistic pattern and class of experience in a given situation *anticipates* the presence of presupposed situational conditions that may or may not be supported by the current situation. Detected linguistic pattern in utterances plays a

role in guiding the processes of meaning anticipation, but they are not in themselves encoded representations of anything. Instead, they are structures of action that actively and positively differentiate present and future interaction potentialities in the process of redintegrating past experience to the present situation.

Redintegration, rather than being the products of associations of sensations, are seen to be processes that stimulate and guide cognitive, perceptual, and semiotic processes that are not reducible to causal psychological explanation (Wettersten, 2019: 402). Instead, they are self-directed thought processes in which creative thinking and the imagination play a leading role. Moreover, these thought processes, under the guidance of linguistic pattern, are social processes that have social implications and consequences.

10. The co-articulation of self with environment: enskilled betweenness and intrinsic telos in an action-based alternative to the associationistic view of the sign

Selves, in real-time, dynamically couple with the changing affordances of their world, notice them, and are affected by what they notice. In being so affected, affective experiences and ideas are generated that draw on the embodied skills and experiences of persons in ways that "resonate" with the material properties of the world and with cultural-historical patterns, norms and values. This means quite simply that we produce ourselves and others in and through our concerted activities with them in the relational matrices in which all human life is embedded. The regularities of these patterns that people observe, describe, orient to, and often seek to emulate are not pre-existing mental structures in the individual's brain which serve as the template or the system stored in each individual and to which material instantiations are matched. As we saw above, the presumed internal template or system then functions as the explanation for observed instances of actual behaviour, as in Saussure's account of *la langue*. Observed behaviours are treated as the manifestations of hidden mechanisms that are the real locus of causal explanation. Organisms on this account are passive and do not act until they are either stimulated by an external event or by some command from the CNS (see Reed, 1996: 70–71, for critical discussion of associationistic psychology and its modern variants such as computationalism). In contrast to this view, the real locus of explanation is embodied selves-in-interaction. The bodily activities of languaging agents are not the manifestations of hidden mechanisms. They just are consciousness-in-action. They are the means of being with and affecting others.

The developmental biologist Stanley Salthe (1993) has shown that, contrary to the Darwinian view of the world, human evolution and human development are deeply intertwined with each other rather than taking place on completely disparate time scales. We contribute to our evolution and development and to that of others in the course of the unfolding relational dynamics of everyday living. Our constant efforts after meaning and value, to echo a Gibsonian turn of phrase, mean quite simply but crucially that we are the makers of our own and others' lives

and of our own and others' selves. We notice and are affected by the affordance potentials of our environment and in doing so we are constantly co-articulating, re-articulating, and disarticulating the fit or congruence between self and environment in response to changing conditions and circumstances.

The point is that it is through active participation with more skilled others in processes of guided observation, education of attention, discovery and growth that one grows into the action potentials for co-articulating with the world and its flows (Vol. I, chapter 2). It is by means of our participation in these processes that one sculpts and forms one's body in the course of development in accordance with the tasks and requirements that the environment places before us. We learn to shape and grow our bodies into the tasks that the environment calls forth. In this way, our bodies are co-articulated with our environment in ways that achieve the congruence or fit between self and environment that I referred to earlier.

Linguistic pattern provides guidelines for shaping and articulating aspects of bodily activities such as the vocal tract in order to fit ourselves to the environment. We entrain and shape our bodies to fit these patterns so that the self can co-articulate itself with its environment. Seen in this way, these patterns are not abstract forms with which meanings are associated, but techniques that we develop and that our bodies grow into through our guided participation in languaging with more skilled others. It is in this way that the body becomes enlanguaged (Vol. II, chapter 3, section 4). We grow our bodies and our bodily skills and capacities. In doing so, we build up more and more refined layers of bodily capacities and skills for co-articulating ourselves with an increasing diversity of physical and virtual environments. Languaging is the orchestration of bodily skills that we enact in concert with other persons, with texts, with artefacts, with tools, and with technologies. In all cases, it is a co-articulation *with* rather than an articulation of. These skills just like the bodies that enact them in particular social practices and activities are neither static nor unchanging just as selves and the societies that selves build together are neither static nor unchanging.

What we call "meaning" is the phenomenological awareness from the viewpoint of a self of the achieved fit or congruence of self to environment. The successful co-articulation of a signifier—a bodily act—*with* some aspect of the physical or cultural environment gives rise to a feeling of fit or congruence between self and environment. The accrual over time of perceived regularities of fit or congruence arises as the self achieves more and more layers of self-control over the co-articulation of self to an increasingly wider range of environments. Over time, the responses of the environment to one's actions in different situations becomes more predictable. The self knows that shaping one's body to yield an utterance that I transcribe orthographically as "Can I have three bananas, please?" that is addressed to the greengrocer in a fruit-&-vegetable shop anticipates a certain kind of response and outcome. It is the regularity of fit between signifier and normatively anticipated outcome that sets up a future-oriented dynamic that may or may not be supported by the given environment (Bickhard, 2004a, 2004b). Signifiers, so defined, are not the covariates of the signified with which they are said to be associated (e.g., Adami, 2019: 39), but linguistically structured vocal tract and

other bodily activity—linguistic actions—that extend self into the world in the process of co-articulating a functional fit between self and the particular aspect of the world that is indicated by the utterance.

The signifier—my bodily act—can be perceived linguistically as an utterance rather than a random noise emitted from my mouth. The perception of this affordance layout makes available information that others such as the green grocer can use provided that the green grocer is in possession of the requisite capacities and skills for doing so. This implies the anticipation on the part of the speaker of a fit between the affordances of the utterance and the skills and capacities of the greengrocer in relation to the situation that both, from their respective points of view, perceive to be in operation. This last point is crucial. The utterance "Can I have three bananas, please?" is embedded in an activity or practice, Buying-and-Selling Bananas, that both participants understand to be in operation from their respective and different viewpoints. Actions cannot be reduced to or explained in terms of the desires, intentions, interests and motivations of selves. Actions have an intrinsic telos. They are directed towards a goal that is intrinsic to the action itself whether a given execution of an action is successful or not. Desires, intentions, interests, and motivations have to be explained in terms of the intrinsic telos of actions rather than serving as the explanation of the action or as their purported causes (Campbell, 2011: 92).

Having a common understanding of a particular action in this sense does not negate in any way the fact that the different participants can have different viewpoints on the situation or different agendas in relation to it. The action has an intrinsic telos that both participants understand. In other words, the aim or telos of the action—the utterance cited in the previous paragraph—is the transaction of the purchase of a certain quantity of bananas. This telos is an objective and constitutive feature of the activity irrespective of the divergent viewpoints, interests, desires, and motivations of the two participants. The buyer wants to acquire bananas. The seller wants to make a sale and hence to make a profit. Social semioticians claim that signs are motivated by the interests of the sign-maker (Bezemer & Jewitt, 2009; Kress, 1993). However, the interests of sign-makers are secondary to the intrinsic telos of the activity—the social practice of transacting the purchase of bananas in my example—which in any case involves more than just the "sign-maker". It also involves the active and interested participation of the green grocer, who will have her own aims, desires, interests, and motivations for attending to the utterance, being affected by it, and responding to it.

The personal agendas, aims, desires, interests, and motivations of buyer and seller may well differ, but they have a common understanding that a certain kind of activity and situation is in operation. The buyer's action selection—the utterance—is motivated in the sense that the lexicogrammatical and phonological patterning—the wording—are oriented to the co-articulation of a fit between self and situation in the way described above. The point is that the intrinsic telos that I referred to above is socially constituted. The prospective buyer of the bananas is in possession of certain structural capacities and powers, including the capacity to pay for the fruit, by virtue of her social positioning in the relations of production.

The buyer has an interest in buying bananas. The buyer's interest in buying the fruit is a function of what the buyer can realistically expect to get—what the buyer's structural capacities via-à-vis her positioning in the social structure permit. The ability of the buyer to realise her interest in possessing the desired bananas depends on the structural capacity to pay for it. The question of motivation is not then about the relationship between signifier and signified in the sign relation. It is about the processes of selection of one action rather than some other. Why was the utterance "Can I have three bananas, please?" selected rather than some other?

Languaging is an action system for operating on social realities. Intrinsic functional constraints specify which operations can be performed, when, in what order, and so on (Vol. II, chapter 4, section 2). The possibilities for the self's participating in structures of (linguistic) action and interaction are intrinsically constrained by the functional character of the action systems themselves, including languaging. The utterance does not "represent" a given state of affairs. Instead, it sets up an interactive stance on the particular aspect of the local experiential topology that the utterance differentiates (not represents). The experiential semantic differentiators that are internal to the utterance—its lexicogrammatical structure *qua* intrinsic functional constraints—functionally constrain an interactive focus on the "I' as the prospective owner of the desired quantity of bananas. The utterance selectively focuses on and differentiates the local environment in order to set up appropriate indications of future interaction potential. The intrinsic functional organisation of the utterance *qua* structure of action provides indications as to how the relevant aspect of the currently operative experiential topology is to be modified in the future development of the interaction to hand. That is, the prospective buyer is not yet in possession of the bananas but expects to have possession of them once the sales transaction is successfully completed in the normatively appropriate way and provided that the buyer's current interest in buying the bananas is aligned with her capacity to pay for it.

It goes without saying that the buyer has an interest in obtaining bananas, but the word *banana* and its function in the overall utterance is surely not motivated by the buyer's interest. The utterance makes sense and is motivated in relation to the telos of the activity that is apperceived to be taking place.[7] This is so even if the buyer were bluffing and had no interest in buying bananas. The would-be buyer's personal agenda does not change the fact that the intrinsic telos of the activity of Buying and Selling Bananas is as the name of the activity suggests. The point here is that the motivation for the intrinsic functional organisation of the utterance has normative value that still holds even if the would-be buyer turned out to be an impostor who had no intention of going through with the sales transaction. Likewise, the word *banana* has normative value. It too has an intrinsic telos. It too is a unit of action or potential action. The word *banana* normatively directs attention to a specific region of experience that is differentiated by the word. The word thus serves to coordinate joint attention between diverse selves to that particular region of experience. If the would-be buyer is, in the course of things, revealed to be an impostor, or the word *banana* is mistakenly used to indicate something different, it does not change the fact that the intrinsic telos of both the utterance and

the word are what they are. This is a social fact. The word *banana* is a compression of, and is internally related to, banana-related social practices with which the word achieves a functional fit.

Notes

1 See also Rathgeb's (2007) study of the place of Otl Aicher in the history of design.
2 Thirty-nine passengers died at the crash site. Eight passengers died in hospital in the weeks following the accident due to injuries sustained in the crash. Seventy-nine passengers and crew survived (*Aircraft Accident Report 4/90*, 1990: p. 53).
3 For example, in his *Principes de Grammaire Générale* (1928), Hjelmslev makes a clear distinction between "grammatical correction as something artificial, the privilege of a minority of speaking subjects" and the "state of the language [*l'état de langue*] which it [grammatical correction, PJT] represents [and which] is always by definition different from that of the 'speaking mass' [*masse parlant*]", to use an excellent term coined by Saussure. Hjelmslev further comments: "This kind of grammatical correction is not the concern of empirical and scientific grammar; it is the domain of normative grammar, which is external to linguistics strictly speaking." (Hjelmslev, 1928: 241; my translation.) Following in Hjelmslev's footsteps, linguists often argued that they were doing scientific descriptive grammar as opposed to normative prescriptive grammar. However, this distinction fails to account for the normativity that is intrinsic to the mode of functioning of languaging and how it relates to the world.
4 The numbering here refers to the phases and subphases that I have identified in the episode. For example, Phase 1: 1-1 refers to Phase 1; Subphase 1. The same notation also applies in Tables 2.2 and 2.3 below in relation to the same episode.
5 See Bergson (1911/1896: 57–69) for a sustained critique of sensation-based theories of perception.
6 Bergson (1911/1896: 67) pertinently remarks that action is the basis of perception: "we start from *action*, that is to say from our faculty of effecting changes in things, a faculty attested by consciousness and towards which all the powers of the organized body are seen to converge."
7 Linguistic patterns are grounded in apperception. William James (1916/1899) defined apperception as follows:

It is the fate of every impression thus to fall into a mind preoccupied with memories, ideas, and interests, and by these it is taken in. Educated as we already are, we never get an experience that remains for us completely nondescript: it always *reminds* of something similar in quality, or of some context that might have surrounded it before, and which it now in some way suggests. This mental escort which the mind supplies is drawn, of course, from the mind's ready-made stock. We *conceive* the impression in some definite way. We dispose of it according to our acquired possibilities, be they few or many, in the way of "ideas." This way of taking in the object is the process of apperception.
(James, 1916/1899: 157–158).

Utterances depend on apperception for their functioning: they have the power to induce apperceptions of previously experienced (and remembered) events with which the utterance is dialectically co-constituted (Verbrugge, 1980: 94).

3   Self

You will not find out the limits of the soul by going, even if you travel over every way, so deep is its report.

Heraclitus, Fragment XXXV, *The Art and Thought of Heraclitus*, Charles H. Kahn, (Ed. and Trans.), 1979, p. 45

Corporate loyalists in the courts treat corporations as people and people as noisome impediments to corporate profit.

Chris Hedges, *America: The Farewell Tour*, 2018, p. 72

The chief error of psychologists: they regard the more indistinct idea as inferior in *nature* to the clear; but that which keeps itself remote from our consciousness and which is thus *obscure, may* on that very account be quite clear in itself. *The fact that a thing becomes obscure is a question of the perspective of consciousness*. The "thing which is obscure" is a result of the perspectives of consciousness, and *need* not be something inherently "obscure".

Friedrich Nietzsche, Consciousness (528), Book III, Part I: The Will to Power as Knowledge, *The Will to Power*, 2017, pp. 306–307; italics in original

1. The endophasic and exophasic poles of the self's generation of its mental life

Selves are grounded in a universal human biology that is open to and which makes human sociality in its many forms possible. By the same token, human biology exercises its own constraints on human sociality. The self is a diachronic emergence under many layers of constraints—biological, social, cultural (Gibson, Eleanor, 1993). It emerges over time as the outcome of its participation in both developmental and individuation dynamics. A self appears when, over time, the subject pole articulates into a self-concept *and* its inner objects (its feelings, intentions, beliefs, values, etc.). The following progression takes place:

1. An initial primordial unity of subject and object;
2. The partitioning of subject into its subject and object poles;
3. The internal partitioning within the subject pole of a self and its internal objects;
4. The articulation of the world of the self into its objects on the basis of the self's internal objects.

The internal partitioning of a self and its internal objects is the basis for the intrapsychic life of the self. However, only a small proportion of the self's intrapsychic life is actualised in the form of observable actions and percepts in the phenomenal world. The phenomenal world that we perceive and act on is a construction of endogenous brain processes. The brain constructs internal simulations and emulations of the world that it then tries out in the world (Berthoz, 2017/2013: 40–43). These constructions are the outcomes of the mainly unconscious endogenous processes from which they derive. The term *endophasia* refers to mental acts, including, for example, inner speech and visual imagery, that do not externalise as objects of perception in the outer world. The term "mental" does not refer to a private domain that is disconnected from the external world. All mental life is normative and is, in some way, related to the world, including, for example, dreams even if the connection with the world is often obscure.

The term *exophasia*, on the other hand, refers to the public or externalised aspects of mental acts when the initial endogenous phases of their construction terminate as perceivable acts and objects in the external world. The point is that the world that we perceive and the actions that we perform in the world are the end points of endogenous microgenetic construction processes whose obscure origins lie in the unconscious core self (Brown, 2015). However, this does not mean that the term endophasia refers to interior mental acts that do not relate to the world whereas exophasia refers to exterior acts that do. Endophasia and exophasia are two interrelated poles of the self's mental acts. They pertain to the "inner" and "outer" aspects of the microgenetic development of all mental acts—mental acts that may or may not transition to and terminate as exophasic end products that occur in and are perceivable in the external world, e.g., bodily actions, perceived objects, and utterances. Dreams, mental imagery, and inner speech, for instance, are not normally experienced as occurring in the phenomenal world "out there", but in "inner" or "private" endophasic space. In contrast, perceived objects and the actions of self and others are experienced as occurring in the phenomenal world "out there."

Bergounioux (2001: 106) defines endophasia in terms of inner speech—*la parole intérieure*—that lacks a perceptible acoustic signal and is experienced as verbal imagery in endophasic space. More broadly, endophasia includes beliefs, intentions, thoughts, mental and verbal imagery, experiential memories, and feeling tone as the self's inner objects. They are the objects of the self's intrapsychic life. This does not mean that the endophasic objects of inner mental life are unrelated to the external world. In the microgenetic derivation of an object, e.g., a perceived object or event in the external world or an utterance, the endophasic

(inner) aspects of this derivational process are constitutive of the formation of the mental object at all stages of its derivation. We do not construct representations of objects after we perceive them.

When we look at something with our eyes, we tend to assume that there is a world "out there" and that light rays that travel from the things we look at to our eyes are converted into retinal images that are the basis of our vision. Adelbert Ames Jr. (1955: 20) points out that while the world "out there" does in some way contribute to our visual awareness of the world, there is less understanding of how our own neurophysiology contributes to and helps to construct that awareness. Contrary to the sensualist doctrine of experience that informs empiricism, sensation is not converted and elaborated by internal psychological processes as "representations" or "models" of outer objects. Instead, sensation serves to prompt and to guide largely endogenous processes of object construction. These processes of object construction serve to simulate and to emulate an internal world of virtual actions and perceptions (Berthoz, 2017/2013: 40–43). Endophasic imagery, thoughts, feelings, etc., are intrinsic components of the derivational processes that leave their trace in the final object. This derivational process originates in the core self and extends into its objects through the various phases of the derivational process theorised in microgenetic accounts of cognition, including languaging (Brown, 2015: 49).

The difference between the endophasic and the exophasic poles is one of degree, not kind. The often intense auditory, visual, and other imagery of a dream is generated by the same endogenous processes that generate perceived objects in the phenomenal world. In the case of dream imagery, the end point of the construction process occurred in endophasic space rather than transitioning to the construction of a percept of an object in the exophasic space of the phenomenal world experienced as existing "out there." The utterances that we hear and respond to are the end points of endogenous processes of microgenetic construction that originate in the unconscious core self. Before their actualisation at their end point in extra-bodily space as an utterance, they transition through various phases of brain process and neuroanatomical organisation as a virtual utterance-in-becoming. This means that the phenomenal world that we experience as real and in relation to which we act out our daily lives is in some sense dream-like: it draws on unconscious affects, imagery, and memories that inform the endogenous processes of its construction.

Mental objects of all kinds, including utterances, are the outcomes of endogenous construction processes of object development. These construction processes unfold on time scales of several hundred milliseconds of brain time as the construction process traverses the various phases of its microgenetic derivation. During the microgenetic construction process, the derivational trajectory is progressively unpacked as a series of phases through which an utterance-in-becoming transitions in the movement—its "throwing out"—towards its final actualisation in exophasic space. At all phases of this derivational process, utterances-in-becoming (and other mental acts) are constrained by both endophasic and exophasic factors that progressively adapt them to external circumstances.

Dream imagery and verbal imagery, for example, are mental objects that have not transitioned to an objectified end point in exophasic space, but have terminated in endophasic space at any earlier stage of their derivation (Brown, 2015: 54; Llewellyn, 2011; Werner & Kaplan, 1984/1963). On the other hand, those objects that are "thrown out" (Vol. II, chapter 2, section 3) into the exophasic space of the phenomenal world as bodily actions and percepts are internal simulations and emulations of the world that are tested against the world (Berthoz, 2017/2013: 40–43). The brain creates—Berthoz's term is "emulate"—an internal mental environment where actions and perceptions are simulated in a virtual "inner" environment before they are tried out in the outer world. However, there is no dichotomy of 'inner' and "outer"; they are continuous with one another as two poles of awareness and attention (Vol. I, chapter 2; Vol. II, chapter 2, section 3).

Mental and verbal imagery are forms of internal emulation that create an internal reality that I have elsewhere referred to as the virtual internal ecology of the self (Thibault, 2019). Their enactment in the world gives rise to responses and feedback loops that enable internal simulations and emulations to be tried and tested for their accuracy, appropriateness, correctness, effectiveness, truthfulness, and so on. Perceptual stimulus information that is picked up by the receptors plays a role in the shaping and directing of these endogenous processes of object construction. It constrains and shapes endogenous process rather than playing the role of sensations that are converted into "representations" by internal psychological processes.

The "complex movement from the first vague emergence of a thought to its completion in a verbal formulation" (Vygotsky, 1987/1934: 249) is an internally generated process of this kind. Its completion as a "verbal formulation" (an utterance) in exophasic space enables the thought to be tested, honed, and ratified and or rejected in the exophasic space of other persons' verbally completed thoughts in speech. Verbal imagery (inner speech) are vaguer, less complete internally generated emulations that play a role in the self's internal creation of its models of the world. These emulations are then tried out in the world as actualised speech in dialogically coordinated languaging with others who may be running on different internally generated emulations. The heteroglossic clash of viewpoints that occurs in dialogue enables initially vague thoughts that originate in endophasic space to be formulated and completed as utterances in exophasic space. In this way, selves participate with other selves in dialogically coordinated languaging practices that enable verbally formulated and completed thinking to be refined and improved.

Those constructions that fail the test will, over time, be de-selected and not retained whilst those that are effective will be selected and retained as constructions that succeed and are therefore more likely to succeed in the future. The phenomenal world that individuals construct may have its idiosyncratic aspects but it is also a world that is constructed and experienced in similar ways by others. This is so because of both intrinsic biological constraints and because perceivers can move along the same pathways of observation in the environment that is common to all, often in relations of "correspondence" with others. They learn to occupy the

places of observation that others can also occupy and therefore they learn how to view things as others do (Vol. II, chapter 2, section 1).

The self-category and the languaging processes that the self participates in with other selves effect a metastable compromise between subjective (endophasic) and social (exophasic) process. The self's engagements with its internally emulated other-categories is always a dialogically enacted emotional drama (Vygotsky) that affects and transforms the self (Vol. II, chapter 4, section 13). This is why a co-articulated self-utterance-situation relation is always a co-orchestration of experiential memory, feeling, emotion, imagery, concepts, and action that are transformed and resolved by languaging activity into dialogically oriented and coordinated utterances under social and cuiltural constraints. This does not mean that all these dimensions are overtly formulated in utterances. Rather, as the accumulated potentialities of the sculpting of a microgenetic trajectory, they inform it as a shadowy penumbra of feeling, motive, and tone that is apprehended as part of the implicit, connotative dimension of the meaning potential of an utterance.

It is through the dialogic clash—the drama—of selves and their categories, their points of view, and their values, etc., that subjective, intra-psychic dynamics are transformed by social dynamics that enable the growth and development of selves (see also Larraín, 2015: 148; Vol. II, chapter 4, section 13). Vygotsky's (1994a, 1998) idea of *perezhivanie* ("emotional experience") brings together and inter-relates the social environment of the person, on the one hand, and how the person experiences that environment as an indissoluble unity of emotional experience, on the other. Both inner speech (endophasia) and languaging (exophasia) (Bergounioux, 2010) are constitutive of relations between the self and its objects in which the subjective, intra-psychic (endophasic) and the inter subjective, situational and social (exophasic) aspects are always co-articulated as a unity in the way perceived by Vygotsky.[1]

The conflict between the self's ideologically saturated intra-psychic processes (endophasia) and the requirements of the social world (exophasia) are individuated as an actualised utterance. In the actualised utterance, the ideological clash of beliefs, viewpoints, and values is narrowed down to a more determinate encounter between diverse social voices that are accommodated to successive layers of cultural and linguistic constraints that progressively adapt the endophasic construction process to the social and physical environment (Vološinov, 1983). The actualisation of an utterance in the exophasic space of social relations is an act of dialogic resolution and simplexification that occurs at the boundary "between" the self's intra-psychic processes and the empirical self's moment-by-moment enactment and self-presentation in social life. It is important, therefore, to point out that the intra-psychic, subjective dimension that is focused on by the term endophasia does not entail an opposition between an "inner" subjective life and "external" social factors and influences.

Vygotsky (1998: 198) identified the problem inherent in thinking of the environment as something that is external to the child and that affects the child "without reference to the child" (Vygotsky, 1998: 198). Languaging is a mode of interactive stance taking that sets up self-utterance-environment relations that

necessarily make reference to the self. Vygotsky also points out that in the course of its development and individuation the child appropriates "from the social reality as from the basic source of development, the path along which the social becomes individual." (Vygotsky, 1998: 198). Social reality is the "source" of the meaning potentials that the child appropriates and transforms with reference to the self and its perspectives in the course of its development (Veresov, 2019: 67–68).

Social reality is the ontological ground of the recursive self-maintenance and self-individuation of selves. The social is not an external causal factor or a variable that exerts an external influence on the child. Subjectivity is richly social and informed by social life in ways that constitute what I have elsewhere referred to as the virtual internal ecology of the self (Thibault, 2019). Seen in this way, subjectivity is the virtual potential that the self has developed through its dialogic appropriations of social life along its life trajectory. Subjectivity as discussed here does not reduce to a mentalistic or subjectivistic interpretation in which the objective physical world and the social world disappear. The physical and social world affects the self just as the self affects the physical and social affordances of its environment (see also Wohlwill, 1973: 167).

The self is extended into its objects in ways that individuate the self *and* its objects. Endogenous processes of microgenetic construction both create the self's objects (differentiation) and relate the self to its objects (integration) through a ceaseless dialectic of differentiation-integration that goes on throughout the life process (Kegan, 1982: 77; Werner & Kaplan, 1984/1963: 242). Objects do not therefore simply exist "out there" but are, as I showed in Vol. II, chapter 2, section 3, "thrown from" the subject. Subject-object relations emerge in the life of the self through a constant process of co-articulation and re-articulation of the two poles of this relation. In this way, the self that emerges from a subject and co-articulates its relations with its objects qualitatively expands its grip on and its functional fit with an expanding world of diverse objects that the self is related to.

Subject-object relations in this sense create categories of experience (differentiation) and relate them to the subject (integration) in an ongoing dialectic in which the two poles mutually inter-penetrate and affect each other in different ways and to different degrees in different phases of the self's development and in different kinds of situations. This constant dialectic of differentiation-integration is grounded in feeling and in the feeling of the real that stabilises the self's relationship to the world. The self's objects are differentiated both from the self and from each other not simply because they exist as distinct objects among other objects "in" the world, but because of *how* the self differentiates its objects and integrates them (relates them) to itself and its perspectives.

In early dyadic inter subjectivity, the newborn infant is a subject that has biosocial agency. For example, the infant can orient to, act on, and respond to external objects such as the mother's breast, her facial expressions, her vocalisations, etc. However, the inner objects which the self articulates and differentiates in endophasia are necessary for the agency of the self and hence the self's ability to act in its world. The inner objects that the self generates not only define and individuate the self, but are also necessary for the self-reflexive mental simulation and

rehearsal that give direction and guidance to intentional action, including human languaging (see also Bergounioux, 2001, 2010; Bottineau, 2012: 15).

Selfhood, as distinct from subjecthood, emerges with languaging and depends on the endophasic co-articulation of self and its (inner) objects. Whereas the exophasic subject-object relation articulates the subject's relation to its outer objects and in so doing sets limits on the subject's actions in the world, the endophasic co-articulation of a self and its inner objects means that the self is defined, enabled, and constrained by its internal objects. Beliefs are sources of, reasons for, and motivators of action; values are constraints on the self and its actions; and concepts define the aims of intentional thought.

Dialogic stance-taking is only possible for a self that is co-articulated in relation to its inner objects. The self's inner objects are thus the means of its felt sense of agency. They give it form, directionality, and value. The feeling of agency and the bodily movements that are associated with it arise in and are felt as intrinsic to the inner mental life of the self. The self's ability to operate on external objects derives from and is dependent on this.

In section 2, below, I develop the idea of a progression through Knowing Levels first discussed in Vol. I, chapter 4. I show the developmental emergence of increasingly complex layers upon layers of more complexly differentiated articulations of the self-action/utterance-environment relational system.

2. Self comes to world

Languaging behaviour is one means whereby persons can vary how they contribute to their own condition of self-maintenant becoming-in-the-world. Language evolved above all as a further extension and augmentation of the possibilities afforded by the emergence of consciousness in many living species, i.e., the optimisation and management of the life process of the self and the self's responses to its environment (Damasio, 2010: 267). Damasio makes the following pertinent observation concerning the internal images that provide more precise information about the environment of the self:

> The lion's share of the advantage, I suspect, comes from the fact that in a conscious mind the processing of environmental images is *oriented* by a particular set of internal images, those of the subject's living organism as represented in the self. The self focuses the mind process, it imbues the adventure of encountering other objects and events with a motivation, it infuses the exploration of the world outside the brain with a *concern* for the first and foremost problem facing the organism: the successful regulation of life. That concern is naturally generated by the self process, whose foundation lies in bodily feelings, primordial and modified. The spontaneously, intrinsically feeling self signals directly, as a result of the valence and intensity of its affective states, the degree of concern and need that are present at every moment.
>
> (Damasio, 2010: 267–268; italics in original)

Languaging is a socially distributed and culturally organised resource for maintaining the dynamic bio-social equilibrium of individual selves and social groups. Many theories of language emphasise above all its relationship to "mind." In his book, *Self Comes to Mind: Constructing the conscious brain* (2010), from which the above quotation is taken, neurobiologist Antonio Damasio examines the self and its role in focusing the mind process. In doing so, he draws attention to the ways in which consciousness orients selves in their worlds in value-weighted ways.

I argued above that lexicogrammatical differentiators are normative, value-weighted patterns that attract first-order languaging dynamics to their basins of attraction. They enable selves to orient to normative cultural objects, events, etc.—actual and virtual—that are productively differentiated by lexicogrammatical differentiators. By the same token, they also relate selves and their actions to norms. Linguistic norms therefore have to do with the relationship of the norm both to the self and to the self's objects (see Macherey, 2009: 74). In Vol. II, chapter 2, I referred to the co-articulated relationship of betweenness that is forged between self and its world. In this section, I draw on the theory of knowing levels proposed by Campbell & Bickhard (1986) to examine aspects of the diachronic developmental emergence of how the self comes to the world. As we shall see below, this has important implications for how we understand languaging as a multimodal action system that co-articulates the betweenness of the self's relations to its world.

The ontology of human selfhood is not reducible to languaging or to any given social reality just as sociality cannot float free of or transcend completely the organic basis of life (Ingold, 2013; Thibault, 2019; Vol. I, chapter 2). Instead, the developmental emergence out of earlier forms of intersubjective action-perception of the ability to constitute semantic topics by means of expressive gestures means that the gestures of early stages of development can function as the basis for the emergence of a new level of knowing (Campbell & Bickhard, 1986). The emergent ability to constitute semantic topics by means of vocal and other gestures is at least partially independent of the prior level(s) of knowing. The prior levels, as I now show, are constituted by earlier forms of non-linguistic triadic intersubjectivity in which the (implicit) knowing level is, say, an attentional vector linking two or more participants to some "external" environmental event.

Knowing Level 1: Proto-self and the feeling of what happens; 0.0–0.3 months: primary intersubjectivity

Knowing Level 1 is characterised by time-locked and continuously changing bodily dynamics in early infant-caregiver dyads. Infant and caregiver participate in episodes of affective attunement to the other when they co-synchronise their neural and bodily dynamics. Bråten (2007), Trevarthen (1998), Stern (2002/1977), Cowley et al (2004), and others have further shown that synchronised interactivity between infant and caregiver gives rise to joint motivation and attention. The mutual regulation of arousal between infant and caregiver also results in

physiobiological and psychobiological attunement between them (Stern, 1984). As Hart (2011/2006: 49) points out, caregiver and infant modulate each other's energy states through their mutual attunement and the interpersonal routines in which this attunement is embedded. The co-synchronisation of affective-interactive control loops serves to co-regulate the flow of affect and emotion between infant and caregiver.

The early development of perception and interaction skills therefore takes place in cycles of interactivity that are grounded in affective communion and contact-based intimacy. The detection and synchronisation of body rhythms, body movements, postures, and vocalisations, etc., are crucial components of these early forms of dialogic communion between primary caregiver and infant. These forms of synchronisation facilitate the coordination of attention, the establishment of reciprocity, and interactive loops characterised by internal cyclicity or phasing (Reed, 1996: 131). The awareness of these regularities leads to the increasing predictability of interactions founded on rhythmic periodicities of bodily movements. Change and dynamics are the key factors here. Infant and caregiver affectively attune to each other. Affective dynamics can induce in the infant proto-self an emotional response that "alters the master interoceptive maps, a modification of the proto-self ensues thus altering the primordial feelings" (Damasio, 2010: 205). Damasio continues as follows:

> Likewise, the sensory portal components of the protoself change when an object engages a perceptual system. As a consequence, the regions involved in making images of the body are inevitably changed at protoself sites—brain stem, insular cortex, and somatosensory cortices. These varied events generate microsequences of images that are introduced into the mind process, by which I mean that they are introduced into the image workspace of the early sensory cortices and of select regions of the brain stem, those in which feeling states are generated and modified. The microsequences of images succeed each other like beats in a pulse, irregularly but dependably, for as long as events continue to happen and the wakefulness level is maintained above threshold.
>
> (Damasio, 2010: 205–206)

Continuously varying affective dynamics alter the "sensory portal components of the protoself" (Damasio, 2010: 205). The resulting micro-sequences of images that are fed into the mind process have a first-person feel (see also Cowley, 2006, 2007, 2008: 331, 333), which Damasio has designated as "the feeling of what happens" (Damasio, 1999). Damasio stresses the likely central role played by timing as continuously varying dynamics instigate changes in the infant proto-self, as follows:

> Timing is likely to play a role here too, when the causative object begins to be processed and changes in the protoself begin to occur. These steps take place in close temporal proximity, in the form of a narrative sequence imposed by

real-time occurrences. The first level of connection between modified proto-self and object would emerge naturally out of the time sequence with which the respective images are generated and incorporated into the cortege of the mind. In brief, the protoself needs to be open for business—awake enough to produce the primordial feeling of existence born out of its dialogue with the body. Then the processing of the object has to modify the varied aspects of the protoself, and these events have to be connected to each other.

(Damasio, 2010: 207)

The recursive generation of micro-sequences of images operates on the emerging though entirely implicit first-person "feeling of what happens" and modifies it. The "feeling of what happens" is a feeling that the organism has been changed by its encounter with the object. This feeling of change is primordial affect. This hazy dawn of awareness of change that is experienced as affect is the beginning of the experience of something that exists "beyond" the organism yet in relationship to it as an affect. The feeling of what happens, the feeling of change that the organism undergoes, amounts to an implicit, proto-awareness that is the ground of all later forms of perceiving, attending to, talking about, and so on (see also A, Russell, 2005; K. Russell, 2015: 5).

   This initial affect constitutes the first partition of subject into object that is the basis of further differentiations that occur on the basis of a deeper unity of the two (section 1). Initially, the protoself is a subject without a self. The intrinsic biological openness to dialogicality and sociality that characterises the newborn infant is the ontological ground of the diachronic emergence of its selfhood. However, a subject and its affects precede a self (Brown, 2005: 76). The newborn infant is a subject without a self. The ontological openness of the subject articulates a world consisting of the subject's objects—the micro-sequences of mental images in Damasio's account—at the same time that the world of the caretaker-infant dyad is necessary for the individuation of the subject. Initially, the object-world of the newborn infant is a global Gestalt that expands the bodily space of the infant in the dyad enacted by its two participating members.

   In the infant-caregiver dyad, one agent's dynamics affect (amplify or inhibit) how the other perceives, acts, and orients. The other modifies his or her responses on the basis of experience-based sensitivity to aspects of events as they unfold in a narrative-like sequence that is imposed by the time-locked character of the unfolding dynamics. This establishes a first-level connection between the protoself and the flows of affect between infant and caregiver. Felt experience is narrative-like. Schögler and Trevarthen (2007: 291) have shown how the changing dynamics of inter-individual movement patterns, consisting of coupled shifts in posture, orientation, and vocalisations, engage participants and observers with temporally and interpersonally coherent and intentionally modulated mimetic displays that elicit proto-narrative interpretation.

   As agents modify the environment of each other's actions through their inter-individual dynamics, they sense and feel what their affective communion means as these dynamics continuously modify aspects of the protoself in core

consciousness. For example, vocal dynamics continually perturb core consciousness. The resulting modifications of the proto-self's primordial feeling states "now become differentiated feelings of knowing relative to the engaging objects" (Damasio, 2010: 209.). Damasio does not say so but the "engaging objects" are salient aspects of the primary caregiver and the other persons who participate in these early infant-caregiver dyads. These salient aspects include the caregiver's face and vocalisations. The infant interacts with other persons long before there is a turn to the world beyond the dyad (Knowing Level 3 below).

In becoming "differentiated feelings of knowing" with respect to the dynamics and their relations to aspects of the other persons with whom the infant interacts, the "objects of knowing" are made salient and are assigned values at the same time that they are placed in the felt self-perspective of the agent in core consciousness. These early affective dynamics therefore bias action and perception in self and other in ways that are value-weighted. The "differentiated feelings of knowing" on the first level can be assumed to affect the protoself in ways that have value for it. The protoself constructs internal processes and forms of organisation—the protoself's internal objects in the form of what Stein Bråten (1992, 2007) has termed the virtual other—that satisfy the newly constructed value. With the progression to Knowing Level 2, the virtual other is actualised by an increasingly diverse number of actual others.

Knowing Level 2: Other oriented interactions; 0.3–0.9 months: secondary intersubjectivity

The bodily space of the infant gradually expands and differentiates. In parallel, the object pole (the virtual other) embodied by the mother (or other caregiver) in early dyadic intersubjectivity also expands and differentiates (Trevarthen, 1978, 1987). The object pole begins to be more and more populated by an increasingly diverse number of other persons with whom the infant interacts. The subject (the protoself) is the whole of the subjective pole (Brown, 2005: 78). The protoself (the subject) of Knowing Level 2 is an agent with increasing capacities recursively to act on and to affect other persons (and objects) in an expanding repertoire of dyadic interactions with an increasing diversity of actual others. This expanded repertoire of interactions goes hand-in-glove with an expanding range of capacities to be affected by others at the same time as having an expanding range of capacities and skills to affect them.

Knowing Level 2 is characterised by other- and object-oriented interactions as infants extend their perceptual capacities through reaching, grasping, and mouthing as they explore the affordance layouts of objects. Infants learn to exploit the agency of others as co-agents who can provide access to affordances. In structuring and anticipating their interactivity with others through the use of proto-imperative gestures they learn to structure the field of co-agency and the expectations associated with it (Reed, 1996: 133). Infants learn to elicit interactions from others using gaze, smiling, and vocalisations. They also learn to regulate their own behaviour in response to the interactive context: proto-dialogue emerges,

including increased control of vocalisations and the ability to structure interactive frames with others.

For example, directing someone's attention to, or having one's own attention directed to, an object of interest by means of a hand point is the satisfaction of a particular value for the infant. However, the construction of the second level expressive gesture "about" the first level value makes the formerly implicit values of the first level more explicit and therefore able to be reflected on from diverse points of view. The new level both abstracts properties of the first level and takes on new properties that can be a source of reflection and self-stimulation in their own right (see Campbell & Bickhard, 1986; Thibault, 2018a: 75–82). Moreover, values can only be realised in practice if there exists an available field of culturally promoted actions and resources that will support the development of the particular values and thus the growth and development of selves who will seek after and want to realise the values in question.

Knowing Level 2 is characterised by how infants know the world of the infant-caregiver dyad through their embodied interactivity with it. The knowledge they develop is entirely implicit and procedural (Campbell et al, 2002: 802). They know how to do things, but they do not know that they know. Whereas Knowing Level 1 knowledge was implicit in the functional patterns of the infant's affect-driven interactivity with the caregiver, Knowing Level 2 implicit knowledge is differentiated into interpersonal role relations and role playing. The child begins to develop an implicit knowledge of the proto-self as the source of actions and perspectives on the world whose regularities can be tapped into and controlled. The child begins to learn that the world is populated by a diversity of other selves who are independent sources of action and points of view that may differ from and even conflict with those of one's self.

Knowing Level 2 is characterised by the infant's expanding ability to indicate a topic of interest by means of proto-linguistic vocalisations and other gestures. The infant selectively points to or indicates objects, events, persons, etc., of interest in his or her environment as a focus of concern and interest. Moreover, the infant's participation in an increasingly diverse number of activities such as games and family routines in which objects are embedded, along with other persons, means that the infant learns to control and influence the regularities of these interactions from the point of view of the infant's embodied participation in them.

In other words, role playing in diverse interaction routines and the ability to indicate aspects of the environment by means of proto-linguistic gestures from an embodied point of view differentiate as different facets of the one overall activity. The infant gains control over interaction that is focused on the caregiver and interaction that is directed at the environment beyond the infant-caregiver dyad. For example, infants use proto-imperative vocalisations and gestures in order to get others to bring about changes in the environment in accordance with their desires and needs. The increased orientation to aspects of situations beyond the dyad goes hand-in-glove with increased intensity and duration of interactions about selected aspects of the environment that interest the child.

Knowing Level 3: Triadic proto-self-other-world interactions; 0.9–12 months: tertiary intersubjectivity

Knowing Level 3 is characterised by the increasing enfolding of the environment of "any and all" with the environment of "you & me". The first typifications of interactive roles emerge as the infant recursively takes up and enacts normative positions in interaction routines with others together with the proto-dialogical stances and the principles of reciprocity that are intrinsic to such role playing. The proto-self is able to indicate its own perspectives to others on objects and events in the environment of any and all. The proto-self learns to attend to and explore objects, etc., in the environment and to share this experience with others from the perspectives of self and other. Proto-declarative gestures serve to make information available to others and thus to take up proto-modal stances about the environment from these perspectives.

Knowing Level 3 is the phase of triadic intersubjectivity involving self-world-other coordinations. Proto-linguistic vocal and other gestures serve to indicate a focus of attention and interest and to coordinate this focus with the other. In this way, the self begins to share experiences of objects and events in one's surrounds with others. The self also learns that other selves have desires and intentions in relation to world-side objects and events. The coordination of the other's vectors of attention and interest with those of the self by means of deictic gestures provides the basis on which the self begins to attribute desires and intentions to others and thus to interpret their motives.

The ability to apprehend the other's desire or intention on the basis of observable bodily gestures in relation to situational factors, the ability to track gaze vectors that enable one to interpret the other's focus of interest or attention, and the ability to coordinate attention with the other in relation to some environmental object or event prepare the ground for the subsequent linguistic ability to articulate an increasing diversity of semantic stances on particular topics.

Knowing Level 4: Infant proto-languaging to languaging; 1–4 years

Knowing Level 4 marks the transition from proto-languaging to languaging and thus the capacity to operate on social conventions and to take stances on them through one's languaging. The recursivity of these operations—languaging operating on social realities—generates an increasingly complex social life together with the increasing historical depth of the social and increasingly cultural ontologies that children in Knowing Level 4 operate on through their languaging. The child is now a social person recursively anchored to a deictics of responsibility and narrative accountability in relation to others in the local interpersonal moral orders (Harré, 1983) in which the child participates.

Building on these abilities, which originate in triadic intersubjectivity, the self's interpretative turn to other selves means that the self learns that other selves have layers of not always transparent complexity and reflexivity that we think of in folk-ideological terms and attribute to others as mental states, and that the self can take modalised stances on them and reflect on them "offline" in the imagination.

As a social person, the child, through his or her languaging, in Knowing Level 4 is characterised by the enhanced ability to predict and interpret self and others and their relations to the affordances of their social worlds. The child is able to negotiate a diversity of viewpoints and thus to entertain the arguability of propositions and the (non)-compliability with proposals.

As the author of his or her own actions, the child develops increasing powers of selection in relation to interests and dispositions. There is increasing awareness of the sociality of interactions as the child becomes a social person in a world of other social persons, each with his or her projects and interactive stances. The child *qua* social person is itself a convention that is to a large extent though by no means exclusively constituted through dialogically coordinated practices of languaging. Languaging recursively operates on the child and transforms the child and the child's relations to the social realities in which it participates.

Knowing Level 4 enables selves to constitute semantic topics with the resources of lexicogrammar and to provide an increasing variety of interactive stances on them. This capability presents new possibilities not present in the Knowing Level 3 system, which was limited to intersubjectively coordinated deictic stances (e.g., proto-linguistic vocalisations, gestures, points, and gaze vectors) on non-linguistic aspects of local situations selected as the locus of attention and interest. These capabilities can serve as the basis for enhanced self-reflexivity regarding the self's relation not only to the third knowing level, but also to the relationship of the first level to the second level, and so on. Expressive gestures thus become the means for undertaking processes of explicit self-reflection and self-stimulation. They also function to articulate an increasing range of evaluative stances that selves can take up in relation to the situations in which they encounter other selves and seek to coordinate with them.

Knowing Level 4 thus allows for (implicit) comparisons between present and past uses of gestures, the situations they are embedded in, and the interaction outcomes of particular gestures in particular situations. It would, therefore, foster an increased sensitivity to the typical and the usual, or what is expected in particular situations and when deviations from expectations occur. It would also enable selves to constitute and to entertain topics and specific viewpoints on these topics by others who are not necessarily present in the social situation. Indeed, these others may be entirely absent from the situation, or they may be entirely imaginary. Knowing Level 4 also opens up the possibility for selves to fashion a relationship with their own past and future, as well as the past and futures of the other selves with whom they interact. Languaging as distinct from triadic intersubjectivity *per se* therefore becomes a powerful means for persons to articulate, elaborate, and constitute their selfhood and its histories and its sense of continuity and identity in time.

Knowing Level 4 is characterised by the languaging of recursive stance taking. Unlike the proto-languaging of the early periods in which proto-linguistic vocalisations and gestures served to indicate a focus of dialogically coordinated attention, recursive stance taking is characterised by the ability to articulate *linguistically* constituted stances on topics of interest. Words and wordings serve recursively to modify other words and wordings in the construction of interactive stances from the perspective of the self. The child is more and more a self with

independent agentive capacities and powers to select and shape the child's inter-action with others and his or her linguistically guided exploration of the mean-ings and values of the world. Recursive stance taking means that the child can both initiate and sustain conversation from a determinate point of view. The child discovers more and more that the environment of the child is populated by others with points of view and desires and needs that often contrast sharply with those of the child (Reed, 1996: 166–167). The child's utterances will therefore often clash with those of others who will on occasions direct the child to do something she doesn't want to do, disapprove of what the child has said or done, question the child, and so on.

As Reed explains, there is increased pressure on the child to produce utter-ances that will fit in with the group and that will "produce desirable effects" (Reed, 1996: 167). Reed refers to this discovery and the development of the abilities that it fosters as a "cognitive milestone" (1996: 167). The child responds to the selection pressures in the populated environment to transcend one's own point of view and to view things as others do. Once this occurs, the child is more and more oriented to (1) the recursive construction of stances that draw on second-order lexicogrammatical pattern (words and wordings) in order to co-articulate and negotiate with others an increasing variety of self-other stances and relations; and (2) participation in and orientation to the intrinsic telos of culturally normative activities and practices in which languaging is embedded and which it to varying degrees constitutes (Vol. II, chapter 2, sec-tion 5). Motivation of action selection in terms of interests is thus integrated to and reorganised by the intrinsic telos of the activities and practices in which the child participates. Intrinsic functional constraints on languaging as (inter)action system thus organise and guide the self's participation in normative languaging practices (Vol. II, chapter 4, section 2).

Knowing Level 5: The Narrative Self and Autobiographical Memory; 4 years and onwards

From around the age of four, children develop autobiographical memory (Nelson, 1992; Nelson & Fivush, 2004). The developing ability to entertain an explicit self-referential relationship to the past and the future and to situate the self in a timeline of actions and events that involves other selves goes hand-in-hand with increased selection pressures, as Reed (1996: 167) pointed out, for the self to interpret the diverse, at times sharply conflicting viewpoints of other selves. The self is made more and more aware that others may have different, even conflict-ing and contrasting points of view from one's self. The self also learns that other selves are internally complex in ways that are relevant to how we interpret and interact with them. The self learns to track other selves over time and to situate the self in relation to other selves along the self's narrative trajectory.

The movement to Knowing Level 5 means that the child develops the ability to know aspects of Level 4 knowing. On Knowing Level 5, the self develops the abil-ity to have meta-values about which Knowing Level 4 values to have. Knowing Level 5 is the level on which the self is self-awarefully aware of itself. The self is

able to make decisions as to the kind of self that it wants to be and which values to seek after in order to become that self. Knowing Level 5 is the level of evaluations about the actions of the self (and other selves) and whether these actions are desirable, worthy, and so on. Knowing Level 5 is the level that enables selves to articulate the kind of self they are or aspire to become. It is the level where moral decisions are typically made and life decisions are made explicit.

Knowing Level 5 arises on the basis of the skills developed on Knowing Level 4. Level 5 is the self-reflexive turn to one's own mental objects, which is a further developmental emergence that follows in later childhood once Knowing Level 4 is well established. The ability to interpret and emulate other selves' mental states—their inner objects—and to take stances on them lays the groundwork for the gradually developing ability to articulate stances on one's own mental states or inner objects—e.g., on one's own thoughts and desires—and to situate these in a wider heteroglossic field of the diverse stances of other selves, to compare and contrast one's own stances with those of others, to evaluate one's self as others do from their viewpoints, and to clarify and articulate the reasons and motives for one's own mental states and actions. The individuated self with a phenomenology of its "inner" objects emerges.

The recursivity of the self's linguistically constituted stance-taking takes a reflexive turn to the self. The self's languaging recursively *and* reflexively operates on its own languaging. This development gives rise to increasingly self-referential and self-reflexive stance-taking as the self, with increased powers of self-awareness, operates through its own languaging on its relations to its "inner" objects in the individuation of the self's character. In this way, the self develops skills and capacities to reflect on its own character. The self becomes aware that the self has self-referring mental states or "inner" objects that are one's own and that one can self-reflexively take stances on them in ways not unlike the stances one learned to take on others' mental states (Knowing Level 4 above).

With this fifth level of knowing in place, children in middle childhood develop abilities of meta-selving. They develop the ability imaginatively to project themselves beyond the I-here-now deictic framework that grounds the current I-self and thus to project imagined selves into diverse times, places, and domains beyond the current I-here-now. When selves engage in meta-selving, they project from their current I-self a meta-stance on the self that is construed as performing actions or having thoughts, etc., that are attributed to the self that is projected from the meta-stance. I use the idea of linguistic "projection" roughly in Halliday's (2004/1985: 441–466) sense. Consider Table 3.1 below in relation to the following text:

"I've been married once and I don't know if I'll get married again," she said, "but I can tell you that as of this very moment, as of today, I have no plan to get married."

[Source: http://www.nydailynews.com/ entertainment/gossip/jennifer-aniston-no-plan-married-romance-justin-theroux-article-1.968416]

Table 3.1 Two examples of meta-selving, showing the current I-self projecting imagined future actions of the self

I don't know	If I'll get married again
I can tell you	that as of this very moment, as of today, I have no plan to get married
Current meta-level I-self	Projected future self

In this short excerpt from an interview with *Hello* magazine, Jennifer Aniston talks about her future plans regarding marriage. Two examples from the excerpt will suffice to make my point. The two examples shown in Table 3.1 show how Jennifer Aniston's current I-self projects a stance on an imagined future meta-self which is construed as performing (or not) particular actions.

The expressive gestures of selves take on an increasingly self-referential aspect that also poses a problem of complex intrinsic reflexivity. One way into this is through observables that we can explore, e.g., body dynamics, dress, vocalisations, etc. But how do we know what these things and their contextual redundancies mean? These redundancies are themselves highly variable with respect to agents' intentions, feelings, expectations, beliefs, and so on. We need to turn to the intrinsic reflexivities of the situations in which selves interact with other selves in social situations. The fact that selves are co-articulated in relation to their ("inner") objects poses problems of the coordination of selves that go beyond the observables of selves and situations. To confine ourselves to the surface observables of other persons is to alienate oneself from the ways in which embodied selves have many layers of reflexivity.

Our awareness of and sensitivity to this reflexivity is what enables us to enter into dialogical relationality with another self. How a particular self understands, evaluates, and orients to the situation also depends on that self's understanding of how other selves do, and so on. Such understandings depend on the relations of selves to their "inner" objects—their beliefs, intentions, feelings, expectations, and so on. This potentially poses a problem of considerable complexity that would be beyond the individual capacities of selves to solve on account of the (theoretical) potential for infinite regress. Successful interaction requires scaffolding in the light of these indeterminacies. Second-order cultural constraints are scaffolds of first-order interactivity. These scaffolds include lexicogrammar (second-order language), genres, and situation conventions (Martin, 2000/1997). Scaffolds enable social realities to emerge out of encounters between selves.

Knowing Level 5 is characterised by self-consciousness and reflexive action (Campbell, 2011: 90). The self is self-reflexively aware of available action-possibilities and is able to reflect on these options and decide which option is best for achieving some goal. Reflexivity is intrinsic to the workings of selves-in-languaging. The reflexive self has perspectives and viewpoints that are grounded in the singularity of its embodiment (Harré, 2001). The I-here-now deictic field

identified by Bühler (1990/1934) functions reflexively to locate phenomena in the perspective of the self and to enable the self interactively to constitute stances on these phenomena in and through its languaging activity. The self also learns that other selves have viewpoints, including viewpoints on the self. The reflexivity of the self is extended to locating phenomena from perspectives other than its own (second and third person) and of imaginatively projecting others' perspectives from the self's perspectives (e.g., *she thinks that I know she did it*) and therefore of viewing the self as others do.

3. The knowing levels and the emergence of the co-articulated Self-Environment-Other Interaction System

In unfolding the developmental emergence of the Knowing Levels discussed in section 2 above, I have sought above all to focus on the diachronic emergence of the enlanguaged self. Given that people are not born selves, the self and the explanation of its diachronic emergence in the course of the development and individuation of the person cannot be reduced to organismic processes alone though it must include these. The emergence of the self is in reality the emergence and progressive articulation and differentiation of an increasingly diversified and extended Self-Action/Utterance-Environment Interaction System. The self is a time-extended organisation of process that is extended into and co-articulated with selected aspects of the world through action, including the highly productive action system of languaging.

Moreover, there is no dichotomy of the internal (endophasic) and external (exophasic) aspects of these processes. Instead, as we have seen in relation to both Gibson's (1986/1979) account of dual awareness (Vol. II, chapter 2, section 3) and to the microgenetic account of the corporeal schematisation and sculpting of mental acts across layers of brain and bodily activities and processes (section 1 above), selves couple to selected aspects of their environments and co-articulate internal and external processes in relation to them. They do so in the seeking after and the achievement of recursively constituted functional fits between their embodied capacities and skills and the affordances of the environments, both actual and virtual, that they inhabit and interact with.

Like Gibson's distinction between proprioception and exteroception, the relationship of co-articulation faces two ways—to self and to world. As Werner and Kaplan's orthogenetic principle shows, felt personal meaning is progressively articulated-differentiated across layers of neuroanatomical, bodily, and external media as an utterance that co-articulates self and its vague personal meaning to the different components of the environment that the orthogenetic principle identifies. Languaging, embedded in unified fields of action and perception, plays a central role in these self-environment couplings and co-articulations. As we shall see below, this implicates viewing "grammar" in the relational terms I first outlined with respect to the FSB door handle in Vol. II, chapter 2, section 4.

Wordings therefore serve to constrain, enable, guide, and direct the functional fits between self and environment and the seeking and discovering of meaning

and value that the achievement of these functional fits realises. Selves are con-stituted, enacted, displayed, and otherwise instantiated in the co-articulated rela-tional dynamics between biosocial persons and selected aspects of their worlds. As Gibson showed, this does not require that the self's relation to its world be "mediated" by representations. Action-perception and languaging are exploratory activities that couple selves to their worlds through cycles of action selection and differentiation of environment that are motivated by a future-oriented, anticipa-tory dynamic that is intrinsic to their organisation.

This anticipatory dynamic determines action selection in anticipation of what comes next in a recursive process of continual co-articulation, de-articulation, and re-articulation of self-environment interactivity. On this view, lexicogrammar is a means of enabling, constraining, directing, and guiding the recursive processes of co-articulation, de-articulation, and re-articulation of self-environment relations as selves move along their languaging trajectories and go along with and become intertwined with the trajectories of others. In this sense, it is a relational grammar of "betweenness", of "joining together", and of "going along together" rather than a representational interface that mediates the purported Cartesian gap between self and world.

The Knowing Levels proposed above have a developmental focus though this does not mean that the different levels are a fixed sequence of developmental stages. The movement through Knowing Levels 1–5 shows increasing articula-tion and differentiation of the (proto)-self-environment-other interaction system *together*. Moreover, the movement from one knowing level to the next one does not mean that the successor level transcends or leaves behind the prior levels. Instead, the new level contextualises and integrates to its own principles of organ-isation the capacities and forms of organisation of the prior levels. Any given level is continuous with all the others. The human infant, as it moves through the sequence of Knowing Levels, co-differentiates both its body and its environment in increasingly more highly articulated ways. From the outset, these developing processes are intrinsically multimodal. It is therefore of limited explanatory value to think of "language" as a distinct semiotic modality that is combined with other modalities such as gaze, gesture, posture, and so on. Infants regularly coordinate gaze, gesture, posture, and vocalising in their multimodal proto-linguistic efforts to indicate and to explore what interests them.

Moreover, the fact that successor levels integrate to their own principles of organisation those of the prior levels shows that languaging is irreducible to an abstract verbal modality that sits on top of the prior levels. Languaging is an integration of a series of progressively more highly specified (articulated and differentiated) modelling systems. By "modelling system", I do not mean an internal mental model or schema that is imposed on the external world by an agent. I refer rather to the ways in which the processes of articulation-dif-ferentiation described above interactively constitute the co-articulated inter-actional fit of self to environment along the time-extended trajectory of these co-articulations. What is constantly modelled and re-modelled is the entire sys-tem of co-articulations rather that one component imposing a model on some

other component. In this way, the entire system of relations takes on emergent shape and form and thus increased determinability in the world. We develop the capacities and skills to fit our bodies to the world and the tasks it calls upon us to perform.

In current multimodal social semiotic approaches to "communication", some researchers argue that speech and writing are modalities of communication that are "combined" with other modalities (e.g., Adami, 2019: 38–39). Moreover, the diverse semiotic modalities, so understood, are defined and analysed in terms of the structural patterning and textual features of the different modalities and their "combinations". The different modalities or modes are said to have affordances that enable different kinds of "meaning-making" to occur. However, the socio-cognitive and ecological capacities and skills of selves and their embedding in the human ecology are less focused on in these approaches. Meaning-making is a vague, all-purpose term that increasingly fails to shed light on the enskilled cognitive, perceptual, and semiotic work that selves perform in and through their dialogically concerted proto-languaging in infancy and languaging from childhood onwards (see also Roth, 2016: 205). In this sense, multimodal social semiotics remains within rather than alternative to a text-centred approach to communication that has its historical and theoretical roots in traditional linguistic analysis.

The hierarchy of Knowing Levels sketched above is a hierarchy of modelling systems of the emerging and increasingly diverse and extended Self-Environment-Other Interaction System. The higher levels nest the lower ones within themselves in ways that are not unlike Salthe's concept of the integration hierarchy (Salthe, 1993: 52–72). Starting with the earliest, most primordial forms of intersubjective attunement that occur in the proto-conversations that take place between infant and caregiver in the first six months or so of the infant's development, and moving through the various Knowing Levels to the capacity for meta-level emulation of both one's own mind and that of others, it is clear that each of the Knowing Levels from 1 to 5 is a progressively more articulated and differentiated modelling of the relations between self, environment, and other along the lines suggested by Werner and Kaplan's orthogenetic principle. This progression is outlined as follows:

Knowing Level 1 (primary intersubjectivity) shows the entirely implicit proto-self of the infant modelling the felt resonances of the flows of affect that link infant and caregiver in dialogical communion with each other.

Knowing Level 2 (secondary intersubjectivity) shows the infant's still entirely implicit modelling of its participation in triadic $self_1$-object-$self_2$ activity-structures involving shared attention and the ability to take up reciprocal roles in activity formats as well as to anticipate the roles and intentions of the other (Bråten, 2009: 59).

Knowing Level 3 (tertiary intersubjectivity) is the ability to enact triadic proto-linguistic self-world-other coordinations that prepare for the movement from proto-languaging to languaging and thus the ability recursively to constitute semantic topics by means of linguistic operator-argument relations.

Knowing Level 4 (the transition from proto-languaging to languaging) gives rise to the ability to participate in recursive operations of linguistically constituted interactive-stance taking in dialogue with other selves.

Knowing Level 5 involves the ability to entertain an explicit self-referential relationship to the past and the future and to situate the self in a timeline of actions grounded in autobiographical memory together with the ability to emulate others' minds and to project self and other into imaginary situations beyond the here-and-now in relation to the timeline of the self's life trajectory.

The progression through the Knowing Levels shows that humans are borne into and learn to participate in increasingly complex socio-culturally organised distributed cognitive systems (DCSs) (Hutchins, 1995, 2010). This progression entails increasingly more complex ways in which human agents co-articulate their embodied selfhood to aspects of their worlds. In the languaging perspective, languaging is not a semiotic mode that is combined with other modes such as gesture, posture, proxemics, and so on (c.f. Bezemer & Jewitt, 2009; Adami, 2019). Rather, languaging is a form of whole-body co-participatory sense-making (De Jaegher & Di Paolo, 2007) that increasingly comes under second-order cultural-historical constraints that are experienced as and oriented to as wordings that have the capacity normatively to affect and direct experience. Wordings mesh with pico scale bodily dynamics (Vol. I, chapter, 3, section 14); Vol. II, chapter 4, section 11) to create utterances that have an artefactual quality. This meshing of wordings with body dynamics gives rise to utterances that selves can manipulate in concert with other persons and with extra-somatic artefacts, texts, tools, technologies, situations, and so on in order to perform complex forms of concerted thinking and problem-solving, amongst other things. The progression through the Knowing Levels outlined above shows that DCSs are not a special add-on to "normal" individual-centered cognition. Human cognition is socially distributed and culturally organised through and through from the outset of a person's life.

The progression through the knowing levels shows a progressive articulation and differentiation of the self's relations to its environment, including the environment of other selves, and the self's embodied and other resources for extending itself into and engaging with its environment. The progression through the Knowing Levels has the characteristics of what Salthe (1993: 54, 79) defines as the implication hierarchy of levels of diachronically emergent organisation. The relations between the levels in an implication hierarchy are transitive. That is, what is logically true at any given moment of the system is true of the system through all of its moments. Therefore, the most highly specified Knowing Level 5 implicates Knowing Level 4, which implicates Knowing Level 3, and so on. This system of levels "reflects the categorial reach of some observer, extending from the most general types relevant to some classification to the most highly specific (highly specified)" (Salthe, 1993: 65; see Thibault, 2000: 298–300 for earlier discussion). Figure 3.1 models the implication hierarchy of Knowing Levels discussed in section 2 in this sense.
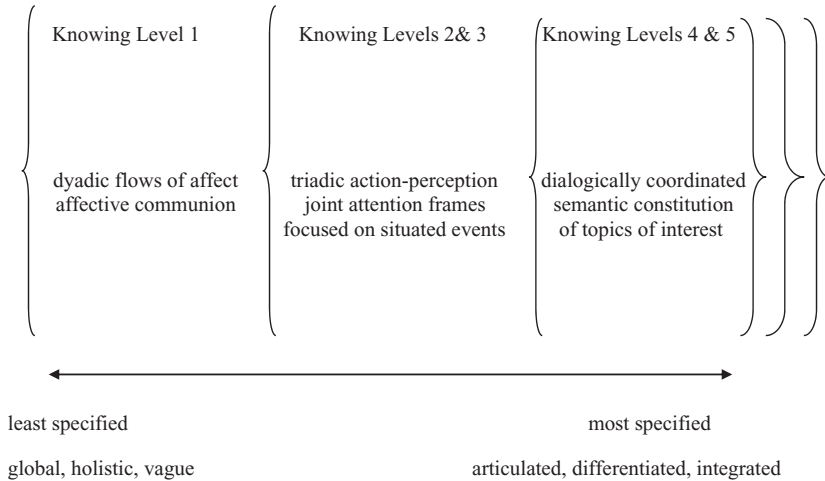
Figure 3.1 The implication hierarchy of Knowing Levels (section 2), showing the nesting
of the least specified levels inside the most specified levels in the developmental
progression from Knowing Level 1 to Knowing Level 5

The progression of the Knowing Levels outlined above is not unlike the devel-
opment of the processes of "distancing" described by Piaget (1952). The progres-
sive "distancing" between knowing subject and object which Piaget observed in
children's development entails a progressive process of differentiation and articu-
lation that extends the child's capacity to integrate an increasing diversity of space
and time scales. Piaget's concern was with the developmental (ontogenetic) time
scale. Analogous though not identical processes of progressive articulation and
differentiation also characterise the very fast time scales of the neural and bodily
processes involved in the microgenesis of a single utterance or other mental act.

The processes of "distancing" described by Piaget were also central to the
microgenetic construction of external objects or referents described by Werner
and Kaplan (1984/1963). While the Knowing Levels proposed above are aspects
of a developmental progression of the self, microgenesis evidences on the scale of
brain processes an analogous progression from a less differentiated, or relatively
undifferentiated and holistic globality, to a more differentiated and hierarchi-
cally integrated articulation (Werner & Kaplan, 1984/1963: 7) of the Self-Action/
Utterance-Environment Relation.

This microgenetic movement characterises what these authors term the "ortho-
genetic principle" (Werner & Kaplan, 1984/1963: 7). The orthogenetic principle
refers to the progressive, microgenetic differentiation of the four components of
Werner and Kaplan's model of symbol formation, *viz.* addressor, addressee, sym-
bol vehicle, and referent, together with the increased integration which increased
differentiation enables. This process of progressive differentiation thus allows

for the co-articulation of the four components of the orthogenetic principle in the process of symbol formation, e.g., the microgenetic construction of an utterance.

In Werner & Kaplan's theory of the microgenesis of mental acts, a diffuse, less differentiated personal meaning strives to find articulation in social situations at the same time that the latter feed off and are energised by the felt resonances provided by embodied personal experience. It is this striving for articulation in public forms that characterises the microgenetic process of the transformation of felt bodily experiences into "appropriate linguistic expressions for communication to others" (Werner & Kaplan, 1984/1963: 242). Werner and Kaplan write:

> We assume that this process is essentially an orderly, sequential one. It begins with a phase in which meanings are felt or suffered rather than cognitively apprehended. The earliest representations are presumed to be of an affective-sensory-motor nature, representations which serve perhaps to establish global outlines of the experience but which do not establish circumscribed connotations or lead to an articulation and inner organization of the total experience. Gradually, the diffuse and interpenetrating sentiments and meanings gain some degree of embodiment in personal, idiomatic and contextualized gestures or images—these mobile, plastic forms participating in, and rising out of, the total experience, and comprising but isolated islands within the experience. Increasingly, as the experience is shaped more and more for communication to others, there is a progressive differentiation and articulation of connotations (for example, a differentiation of subjective and objective spheres), increasing individuation of connotations, and a progressive channelizing of meanings towards communally adequate verbal forms. At the same time, there is a progressive differentiation of representation from bodily experience and also a progressive differentiation among the various media of representation. Lingualization becomes increasingly detached from imagery and gesture and becomes dominant over these more personal and covert media. Communication about the experience is more and more directed towards, and facilitated by, the communal lexicon and syntax.
>
> (Werner & Kaplan, 1984/1963: 242)

According to the orthogenetic principle proposed by Werner & Kaplan (1984/1963), all mental processes undergo a progression from global and integrated brain and body structures and functions to more finely articulated and differentiated ones. In similar terms, Brown (2015: 18, 105) explains that actions are first organised in the proximal core of postural control. From its basis in the axial muscles, an action such as reaching for a cup of tea is progressively more differentiated into peripheral limb activity such as the movement of the arm towards the cup and the further differentiation of fine-grained distal (wrist and finger) muscles. According to microgenetic theory, this progression from global to axial and focal to distal is no less true of language (Tucker et al, 2008: 45–46).

Languaging is a form of skilled action that has its origins in the embrained body in global, more holistic structures of the core self. These holistic structures arise

from limbic cognition at the onset of the mental process. More holistic, less differentiated structure unfolds as microgenetic process on a milliseconds time scale of brain and body process towards more differentiated focal structures that are articulated as vocal tract gestures. These initial, primordial holistic structures are not totally undifferentiated. The term 'holistic' refers to an initial delimitation—itself a differentiation—that is made within a field of potentialities and which lays the ground for the emergence of a more differentiated structure (Sonesson, 2013: 536–537). The parts of a structure differentiate out of an initial, more holistic delimitation, in Sonesson's sense, that nonetheless serves as an organising principle that relates its incipient parts both to each other and to the whole. Utterances are articulated structures of action that originate in less differentiated, more holistic structures in the self's pre-linguistic infra-structure.

According to the theory of microgenesis, things in the world do not have an independent and freestanding existence with respect to the cognising subject (Ames, 1955; Brown, 1988: 312; Müller et al, 2013: 470; Werner & Kaplan, 1984/1963: 242). As the above quotation shows, the process of distancing entails a process of progressive differentiation and articulation across layers of neuroanatomical organisation (Brown, 1988: 312), bodily dynamics, and external media that is "more and more directed towards, and facilitated by, the communal lexicon and syntax" (Werner & Kaplan, 1984/1963: 242, see also Sonesson, 2013: 538–540).

In both microgenesis and ontogenesis, albeit on radically different time scales, the increasing articulation-differentiation of the self-utterance-environment-other relation entails increased distancing of the self from its objects. This distancing helps to create the illusion that the self and its objects exist independently of each other and that the self is able to act on its objects from this detached perspective. The self gradually develops the capacity to differentiate the subjective and objective domains as two poles of awareness and attention and to take stances on the two domains from an increasing variety of viewpoints that accrue to the self. The increasing articulation-differentiation of self-environment-other relations that the progression through the five knowing levels proposed above shows means that there is an increasingly articulated self-action-environment fit across an expanding diversity of social situations. In this way, self comes to world. Rather than the associating of forms to meanings, the embrained and embodied self co-articulates increasingly differentiated self-action-environments fits that arise from within and come under more and more layers of socially and culturally accrued semiotic constraints. In this way, the self constructs models of self-world relations that integrate the asymmetry of Subject-Object and Agent-Patient (Davidse, 1997) to the highly differentiated forms of action targeting that are afforded by human languaging.

The radical betweenness that characterises the dynamics of co-articulated self-object relations is therefore functionally necessary in the recursive self-maintenance and recursive self-individuation of both self and its objects. The self must therefore feel that it is a locus of action that stands against its objects, engages with them, manipulates them, and so on. Languaging builds on and extends this principle, giving rise to further layers of the self-object relation that are built into the intrinsic functional constraints on languaging as action system (Vol. II,

chapter 4, section 2). The self is a principle of action before it becomes a principle of reflection. That is, the semiotic and material friction between self and its objects that is both encountered and felt, especially when the world resists, drives the need for the self to co-articulate its functional fits with the objects and affordances that constitute its world.

The functional meanings of affordances reside in the internal relations between perceiver/self, the self's action possibilities, and the environment rather than between the projecting of linguistic patterns in texts onto supposed contextual features. For a piece of wood to function as a graspable object, e.g., a stick, the piece of wood must have intrinsic structure for it to be graspable. The piece of wood *qua* stick therefore has the intrinsic functional capacity—the affordance potential—to be picked up and grasped. There is an intrinsic relation of congruence between the affordance potential of the stick and the capacity of the person to actualise this potential and pick the stick up. Perception is always deictic and situated; perception is from an embodied point of view and is experienced with reference to that point of view. The "thatness" of the stick lying on the ground is assimilated to the "thisness" of the perceiver's embodied points of view and action potentials when the perceiver picks it up to activate its functional capacities.

The perception of an environmental affordance is therefore from an embodied point of view that is interactively constituted by the perceiver's exploratory engagement with the affordance potentials of the perceiver's environment. When the perceiver perceives an affordance, the perceiver is aware of a fit between the embodied capacities and skills of the perceiver and the functional potentialities of the perceived affordance. The perception of an affordance means that the given environmental object or event is perceived as having functional meaning and value for the perceiver. There is an awareness of an intrinsic functional fit or congruence between perceiver and affordance.

The perception of this functional fit or congruence is therefore from an embodied viewpoint that extends from perceiver to perceived affordance. The progression through the Knowing Levels discussed above shows how the progressive articulation-differentiation of the self-environment-other interaction system constitutes the progressive discovering and extending of the congruence between self and the affordances of the world over more and more place and time scales. In other words, there is increasing articulation and more refined differentiation of the congruence between the propriospecific information specifying how the self encounters the environment in the process of exploring it and the exterospecific information about the environment that is picked up during the act of exploring the environment.

4. Dyadic and triadic intersubjectivity, the turn to dialogically coordinated languaging, and the emergence of the enlanguaged self

Human languaging is grounded in and developmentally emerges from earlier forms of dyadic followed by triadic intersubjective action-perception. In contrast

to earlier forms of dyadic intersubjectivity that are focused on the co-regulation and co-monitoring of the affective attunement of caregiver and infant, triadic intersubjectivity is characterised by a turn to and an interest in events in the world beyond the dyad. In triadic intersubjectivity, child and other jointly attend to and co-experience events in the world that in some way affect them, i.e., arouse their interest, curiosity, attention, and so on. In this phase, the two participants both jointly attend to some event at the same time that they are able to monitor each other's affective responses to the event. This form of intersubjectivity is triadic because it crucially involves a third element in the world beyond the dyad that the two participants—infant and caregiver—co-orient to. Whereas earlier dyadic forms of intersubjectivity are based on mutual adjustment and synchronisation between the two members of the dyad, the emergence of triadic intersubjectivity lays the foundation for the developmental emergence of human languaging (Halliday, 1975; Trevarthen, 1978, 1987).

Triadic intersubjectivity is characterised by the creation of joint attention to perceived events in the world that infant and other are affected by, co-orient to, and respond to. Crucially, triadic intersubjectivity is *about* something in the world beyond the dyad that is pointed to and thus indicated as an object of concern or interest. Such events are like proto-topics that infant and other respond to affectively. Perception, action, and expression constitute a necessary unitary field that has its basis in the intersubjective character of perception identified by Merleau-Ponty (1945: Part 2, chap. IV; 1964: 183) (see also Berthoz, 2010: 14; Thibault, 2019: 56–60).

Selves draw on cultural resources and practices that enable them to solve local problems of coordination between selves to the extent that is required for a given situation to be successfully negotiated. Expressive utterances and the social episodes they are embedded in help to solve this problem by taking on increasingly ritualised and stylised qualities that have historical continuity in a particular community. These increasingly ritualised resources and practices are abstracted from more basic forms of intersubjective action-perception and include:

1. Basic action structures and associated roles;
2. Particular ways of structuring experiences as recurrent configurations of activities, events, places, persons, etc.;
3. Strategies for eliciting, directing, and coordinating attention;
4. Ways of enlisting and sustaining cooperation and coordination of selves in the face of the increasing diversity of social labour;
5. The expressivity of the body as a locus of action and viewpoint;
6. The need to express and ratify desires, feelings, beliefs, intentions, thoughts, etc., in accordance with what is considered normative vs. exceptional;
7. The need to track other selves and their viewpoints across time and place;
8. The increased social pressures to interpret others' feeling, intentions, motives, etc.

The emerging regularities of social encounters and the repertoires of expressive gestures that social agents draw on and orchestrate in these encounters serve to reference conventions for recognising and for acting appropriately within a potentially vast range of social situations. Selfhood is foundational for languaging. Holiday (1988: 109) points out that the social rituals out of which languaging arises rest on a deep "reverence" for selves and their rights to speak and to be listened to (Holiday, 1988: 109). Rituals enact and display social relations so that the members of a society may know their own society and its ways of life. Rituals maintain particular forms of social life. Holiday (1988: 109) argues that languaging rests upon and presupposes a respect for ritual, which is an ontological foundation for the very possibility of human language.

Human cognition and selfhood are not reducible to intrinsic properties of biological organisms that are simply expressed in conventional form by language. Instead, cognitive capacities and skills and selfhood are founded on a biological basis that is ontologically open to different forms of sociality together with the developmental emergences that the mutual shaping of biology and society enables and gives rise to. Selves and the intrapsychic process that is their foundation, on the one hand, and the social situations in which selves encounter and seek to coordinate with other selves, on the other, are co-articulated aspects of a single developmental emergence. For this reason, selves are not reducible to either language or to particular social realities.

Microgenetic theory establishes the precedence of the self in every utterance (or other mental act) at the same time that the (core) self is the unconscious precursor of the more finely differentiated end products of their microgenetic development. The unidirectional drive to actualisation described by Brown (2015: 62) and by the orthogenetic principle theorised by Werner and Kaplan (1984/1963: 7–11) show that the often highly abstract schema of cognitive and functional linguistic theories fail to show the grounding of language in the intersubjective perception-action cycles of selves. They fail to show that languaging is shaped and animated by factors such as the following: appeal, anticipation, attention, attunement, betweenness, conation, connection, control, coordination, desire, directionality, drives, experiential memory, expressivity, feelings, imagery, intentional vectors, interiority, physiognomic perception, movement, modulation, orientation, relationality, responsivity, stance-taking, transaction, vectoriality, viscerality, and so on.

The factors noted above have their basis in different forms of corporeal schematisation of the kind postulated by Werner and Kaplan (1984/1963: 17–19). The grounding of first-order languaging and its organisation in factors such as those listed above shows how the modulation of utterances by, for example, affect, attention, and intention sets up what Rosenthal calls "the dynamic link between holistic differentiation, meaning and readiness for action" (2004: 223). Languaging is in a sense grafted onto, grows out of, and extends action-perception routines such as the coordination of attention between selves. Werner and Kaplan (1984/1963: 242) described the microgenetic development of an utterance as a progressive "channelising" of the different phases of this development as a process

of corporeal schematisation (section 3). In this sense, all mental acts, including utterances, are stratified. Their stratification has directionality. It establishes a formative direction involving a microgenetic unfolding from depth to surface that traverses and incorporates different layers of neuroanatomical organisation rather than a causal progression of a linear surface sequence of events (Brown, 2015).

Figure 3.2 presents in outline form the progressive corporeal schematisation of an utterance-in-becoming as an unfolding of successive layers of virtual potential originating in the core self (the "me"). Prior layers are integrated to and re-organised by successor layers throughout the endophasic phases of its derivation as the utterance-in-becoming progresses towards its actualisation as an utterance with a determinate phonetic (or graphic, etc.) shape in the terminal exophasic phase.
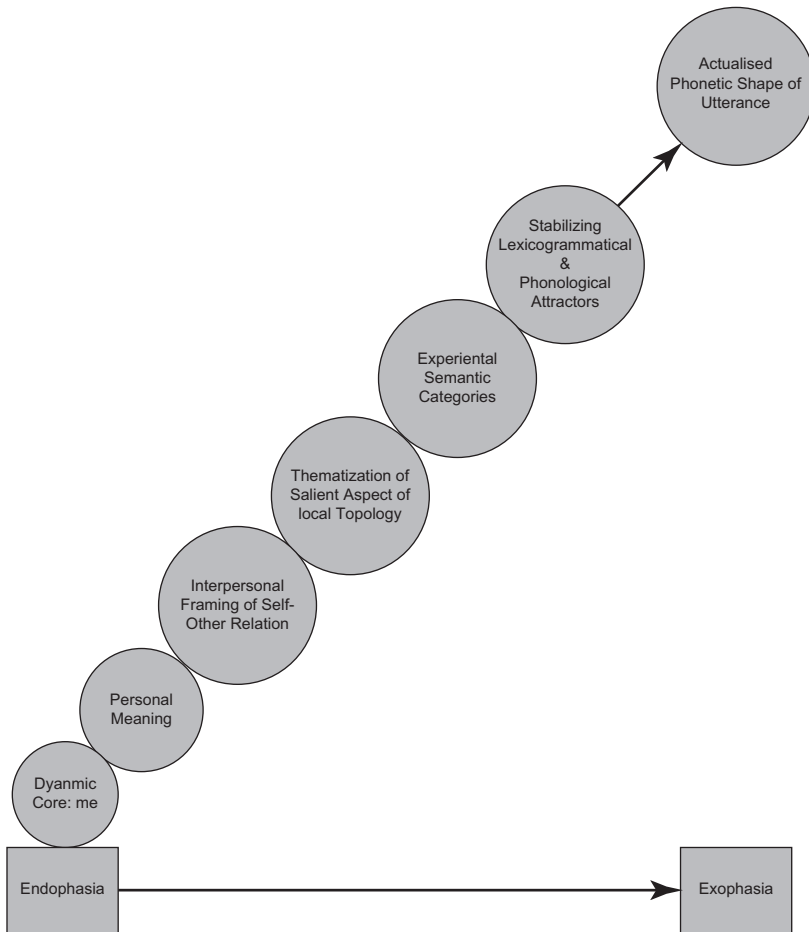
Figure 3.2 Phases in the corporeal schematisation of personal meaning and its microgenetic progressive sculpting as a virtual utterance-in-becoming across diverse phases of endophasic process until its actualisation as an utterance in exophasic space

The initial more global, more diffuse, less articulated personal meaning takes on a more determinate, more specific shape through processes of corporeal schematisation until its articulation as an utterance that is adapted and entrained to community norms such as second-order, socially distributed phonological and lexicogrammatical pattern (Port, 2010; Thibault, 2011a). Importantly, this process is always a process of categorisation and differentiation (Brown, 2015: 98–99; Rosenthal, 2004: 223) that sets up future interaction potential for selves. This process of categorisation and differentiation is not the starting point of the process. The process starts with the very earliest phases of the arousal of a pre-semantic mood in limbic cognition in the dynamic core self (the "me") that is prompted by recall or situational factors that inform all subsequent phases of the derivational process. This "mood" is akin to what Ames (1955: 56–57) referred to as a "sensed feeling", or what I have discussed as proto-modal friction (e.g., Vol. I, chapter 3, sections 9–10). This "sensed feeling" or felt proto-modal friction is always present but is especially apprehended when there is a conflict between situation and expectations. The "mood" provides the first primordial orientation to the situation that motivates the need for a communicative response to it. A "mood" is the first felt stirrings of a motivation to act and thus of a communicative orientation in response to circumstances before transitioning to the microgenetic derivation of a full-fledged utterance.

The unitary field of action, perception, and languaging constitutes the pragmatic basis of languaging as a means of co-ordinating persons and persons and aspects of the situations in which they co-participate with each other. Crucially, languaging is "about" something that is not reducible to simple triadic co-ordination between persons and between persons and perceived objects and events. The "aboutness" of languaging is a complexly organised triadic coordination of selves, the expressive resources of languaging, and the non-linguistic aspects of experience that selves orient to, are affected by, and seek to affect in their dialogically coordinated languaging. How then does languaging differ from triadic intersubjectivity? I will now respond to this question.

Languaging proper entails the ability to use vocal and other gestures that *semantically* constitute or evoke the topic of interest rather than the "topic" being a perceived environmental event that the participants co-orient to by means of a vocal or other gesture. This ability to constitute the topic by semantic means rather than simply co-orienting to a perceptual actuality—e.g., a perceived object or event—in the local environment arises when selves learn to take stances on particular topics at the same time that they discover that others in their social worlds often have different, even contrasting and conflicting, stances on a diversity of topics (Reed, 1996: 167). The ability to take stances requires inner objects for the self to exercise and experience its agency. The co-articulation of self and its (inner) objects—its concepts, ideas, feelings, etc., including concepts of, ideas about, and feelings about other persons—is necessary for intentional action and self-reflexive dialogically coordinated languaging. Beliefs, concepts, desires, ideas, and feelings are mental objects that guide, direct, and give shape to agency and hence to the self's ability to act on a world of external objects. Without the

co-articulation of the self and its internal objects and the mediating role of the latter in the exercising of the self's agency, the self is unable to act on the world. Intentions are directed at objects in the world under the guidance of the self's internal objects.

This does not mean that languaging is simply the externalised expression or representation of the self's internal objects. Utterances do not recode preexisting internal mental objects into externalised and perceivable utterances. The microgenetic derivation of utterances over the various phases of endophasia to their objectified termination in exophasia enables selves to discover, refine, elaborate, and ratify concepts, desires, intentions, feelings, and other inner objects of selves as they emerge, take shape, and are further elaborated and transformed in dialogically coordinated languaging between selves. The self and its co-articulated systems of inner objects in endophasia is a simplex system in a self-referential perspective that self-awarefully interacts with and experiences the lower level flow of experience from that perspective (Thibault, 2018b: 165–169). The expressive capacities of enselved bodies, which are founded on and emerge from earlier forms of intersubjective action-perception, enable selves to articulate their inner objects in relation to the experiential flow of the social realities in which they are further transformed, evaluated, and negotiated from the diverse stances of selves-in-interaction.

Utterances are generated and animated from within living selves-in-movement as they participate in the life processes of the human ecology. Microgenetic theory, as I discussed above, shows that all mental activity, including languaging, arises and grows within the self and extends outwards towards the world as a self-organising and form-creating process that unfolds towards its anticipated end point under the influence of a fluctuating heterarchy of values (Hodges, 2007a, 2007b). Trevarthen (1993: 123) has proposed the term "motive" as a more appropriate way of referring to the actions of living selves. Trevarthen points out:

> "Motive", in the sense used here, designates a mental function that is a cause and a director of movement and, at the same time, a seeker of information to direct and confirm movement—to make it work for a purpose (Trevarthen, 1978, 1982, 1984). A motive causes a subject to be curious and exploratory, as well as purposeful and effective, to be prepared to react selectively to the information that will be taken up in perception and to seek immediate influences that are appropriate for direct, ongoing control of acts and their effects. The motive regulates what will be chosen for uptake in perception and for retention in memory. Motives originate in largely inaccessible cerebral activity, but because they generate a wealth of movements for aiming and focusing perception as well as for acting on the world (Figure 8.2), they are as real and readily observable as any regulatory principle in behavior. The central energy and self-regulating quality of motives are expressed in emotions.
>
> (Trevarthen, 1993: 123–124)

James, as I pointed out in Vol. II, chapter 2, section 5, described the self as the "storm centre" of the body's actions. The body is the "storm centre" in which

the motives that animate and direct action, including languaging, arise. Motives generate curiosity and interest. They focus attention. They direct value into the things focused on. They select and draw on experiential memories and conceptual feelings. A motive regulates what is chosen for development as a mental act. However, a motive is not a cause that stands behind an act and gets its going. Instead, motives flow through and modulate mental acts from inception to conclusion. They are therefore present in the final, publicly observable act. The here-now-me deictic frame is then the locus for the formation of a motive that arises from the interaction between the recticular activation system, the diencephalon, and limbic system (Brown, 2005: chap. 6; Hart 2011/2006: 48). The motive gives rise to and shapes the microgenetic development of the outward movement towards, for example, the perception of something in the environment or an action directed towards something in the environment (see also the discussion of "sensed feeling" or "mood" in section 4 above).

The wordings that linguists abstract from living utterances and describe as lexicogrammatical forms have been reified as if they were free-standing entities. In actual fact, wordings, which derive from and are solidified by cultural/historical traditions in a community, are more like attractors to which selves entrain their bodies. Socially distributed second-order lexicogrammatical and phonological attractors on the population scale of a community of languaging agents are implicit system properties that agents entrain to in their languaging activity. These properties become manifest as perceptible patterns of wordings in utterances as the population scale system dynamics are expressed through multiple iterations as languaging activity. In this way, bodies and bodily actions are shaped and fitted to the environment in functionally adaptive ways. The assigning of functions to lexicogrammatical forms is a way of showing that functionality is a top-down filter that both specifies which structures are possible and which structures are best adapted to the achieving of co-articulated functional fits between selves and the particular aspect of the world that is focused on in their languaging activity. As Werner and Kaplan (1984/1963: 17–19) showed with their idea of "corporeal schematisation", the self's personal meaning—its motives—is attracted to and shaped by the lexicogrammatical patterns and meaning potentials of the community—what I have elsewhere called second-order language (Thibault, 2011a) in order to achieve co-articulated functional fits between self and world. Lexicogrammar is best seen in relational terms as a grammar of "betweenness". Lexicogrammar enables and gives shape and direction to intersubjective encounters between selves and between selves and the aspect of the world that is focused on. Michael Halliday's interpersonal interpretation of the grammatical Subject in the Mood structure of the clause shows this very clearly (Vol. II, chapter 4, section 2.1).

A linguistic grammar is a grammar of "betweenness" because: (1) it gives shape to the interpersonal encounters between selves in languaging activity; and (2) it goes beyond proprioception and exteroception. In addition to the two poles of awareness identified by Gibson (Vol. II, chapter 2, section 3), it is also, as Trevarthen writes of intersubjective perception, *alteroceptive* (Trevarthen, 1993:

127). It is oriented to dialogically coordinated exploration of and interactivity with other selves and anticipates the potential responses of other selves. A linguistic grammar of betweenness is animated and energised from within by the self's motives and personal meanings. These motives and personal meanings are concentrated in any given moment of the stream of thought as an outbreak of the inner storm of competing motives and possibilities that motivate and give rise to an utterance.

The outward movement of motives from self to world along a developing action trajectory is a bit like the unstable upward movement of moist warm air that rises and mixes with downdrafts of cold air, leading to condensation of the water vapour as cumulous clouds and the release of heat, resulting in a thunderstorm. Volatile updrafts are balanced by downdrafts that stabilise the storm and enable it to persist for the duration of its life cycle. Analogously, the sometimes unstable and volatile motives and personal meaning of selves strive for momentary outward expression in and capture by a determinate linguistic shape that stabilises them, thereby constituting a transient display of the empirical self that extends into its environment in order to achieve a functional fit of the self and its motives to the environment of the self, only then to perish, like the storm, and thus to give way to the next cycle of the movement from motive to action. The motive or cluster of motives that breaks through into the environment as an utterance or other action is what grounds and sources the utterance in the here-now-me of bodily experience. At the same time, its sculpting into a determinate linguistic shape gives it normative force and value in the social world of other selves. In languaging, the ground is a localised here-now-me deictic frame with reference to which the self in a particular moment seeks to give shape to the effort to enter into and jointly regulate a dialogical act of coordination between selves and between selves and some aspect of the world.

In this study, I have emphasised that languaging builds on and extends action-perception. On the other hand, stratified theories of "language" that were developed in the twentieth century under the influence of Saussure (1971/1915, 1993/1907, 1910–11) and Hjelmslev (1954, 1961/1943) have viewed linguistically structured vocal tract and related activity as the bodily means for realising, externalising, or otherwise making manifest utterances in languaging and in written inscriptions. Stratified models of language are scalar hierarchies (Salthe, 1993) that at least implicity seek to model the interface between languaging and bodily processes (Hjelmslev's expression stratum) and the world (Hjelmslev's content stratum) (see Halliday, 1992, 2004/1985: 24–26; Thibault, 2004b: 39–46). Models of language based on scalar hierarchies tend to de-couple language from its environments and treat it as a vertical organisation of inter-related levels of structure that have their own intrinsic properties, units and their relations. However, languaging, like all forms of action, involves *directional* processes. This raises a problem: How to connect internal linguistic structure to the world? A further question arises: How does a scalar hierarchical model of language become an action vector that extends from self to world? Generally speaking, linguistic analysis of stratified scalar hierarchies favours scalar values over directional or vectorial ones

(see Simeonov et al, 2012: 22–23). A solution to this problem is provided by Werner and Kaplan's (1984/1963) 'orthogenetic principle' in relation to their account of the microgenetic processes that give rise to mental acts of all kinds, including utterances.

Languaging is a higher-order system of sensitivity that integrates 4-D multimodal invariance structures of the environment to linguistic structure as compressed cultural information (Vol. II, chapter 1). More holistic, less differentiated personal meaning is progressively re-articulated across diverse layers of neuroanatomical and bodily organisation until its articulation as a gesture-sound-wording complex that serves to point to and to indicate some aspect of the world that the utterance is about. Utterances are, dually, articulatory artefacts and actions that enable people to co-articulate themselves to some aspect of the world—real or imagined—that is indicated by the utterance and which the utterance is about. As I showed in Vol. I, chapter 4, section 4.3.3, deictic gestures integrate both manual control and haptic exploration to linguistically structured vocal tract action in ways that give rise to the capacity not only to indicate things in the world but to connects things to other things and to ground them in situations. Thing-deixis in the nominal group and event-deixis in the clause afford this expansion of the aboutness of languaging to differentiated situations that are pointed to and located in diverse places and times with respect to the embodied viewpoints of languaging agents.

5. The microgenetic derivation of utterances and the self

Microgenetic theory helps us to clarify the fundamentally affective nature of languaging. The microgenesis of utterances originates in deep levels of brain organisation as motor processes. The latter are prompted and directed by bodily feelings and imagery that develop across different layers of brain organisation as linguistic and other acts. In this way, the self is extended into and is inseparable from its objects. Rather than the idea that units of language form correlate with units of meaning in a relation of structural isomorphism, I argue that languaging works by functionally constraining and enabling forms of linguistically constituted and guided flows of experience in the extended human ecology. A theory of the linguistic imagination and of the centrality of the imagination to the workings of languaging therefore requires us to dispense with the extreme polarisation of subject and object, or the world "in here" in contrast to the world "out there" (Thibault, 2019). In taking this step, we see, in accordance with microgenetic theories of human psychic life, that value is distributed between and across self and its objects. Linguistically constituted forms of experience are in no way exempt from this fact. The functional capacity of languaging to enact, coordinate, direct, and guide a vast range of experiences crucially depends on the fact that languaging has its origins, as noted above, in deep layers of brain-body organisation where experiential memories, feeling, and value are activated as subjective personal meaning and channelled into linguistic structure (Thibault, Forthcoming a, b).

Microgenetic theory entails an event or process ontology. An "object" is always an event. The object that is present in consciousness is actualised from an antecedent, less differentiated whole that is progressively sculpted into the parts that differentiate as the end product that is deposited in consciousness. This process is the becoming-into-being of the object. Microgenetic theory demonstrates that the object develops in a succession of phasal transitions of brain process over a particular duration of existence, which Brown (2005, echoing Whitehead (1978/1927–28), calls an "epoch." The movement from whole to part that animates and sustains microgenetic construction is no less true of the relation between utterance and its situation. Utterance and situation unfold and are progressively differentiated as parts of an antecedent, less differentiated whole in preconsciousness before their depositing in the extra-personal space of the context of situation. *Pace* Urban's critique of "contextual determinism" (1981: 660), the relation between utterance and context of situation is not a purely indexical one of spatio-temporal contiguity between "sign vehicle and entity signaled." Instead, utterance and context of situation are dialectically co-articulated aspects of an initial whole that is progressively difffferentiated as a self–utterance–situation matrix when the utterance is actualised.

The utterance-in-becoming is embedded in a more global, less differentiated "matrix of perception and motility" (Brown, 1979: 140) that includes postural tone, gesture, and facial expression. Moreover, an analytical focus on the utterance *per se* removes the holistic or global meaning configuration that is constitutive of the meaning of the final utterance that is deposited in consciousness. The final phonetic shape of an utterance—the vocal tract action that is deposited in the extra-personal space of the context of situation of the utterance—is the exteriorised end product of this process. The structure of this final exteriorised end product takes with it all layers of the preceding microgenetic construction process and actualises them in the final product. Moreover, the utterance is embedded in and is a constituent part of a cognitive-semiotic act that includes the context of the situation of the utterance and incorporates acts of perception of objects "in" the situation, body movements, and so on. A self-utterance-situation configuration is an emergent process that has a microgenetic pre-history that develops over a series of levels of neuropsychological organisation that "correspond to or map stages in the evolutionary and maturational history of the brain" (Brown, 1979: 141). The microgenetic construction of an utterance traverses all of these stages before its final realisation.

Theorists of microgenesis such as Brown (1979, 2005) and Werner (1957/1940) have shown that microgenesis, which occurs on the very rapid time scales of brain process, recapitulates the process of individuation from a global, less differentiated whole to the more specified, more differentiated parts that is also characteristic of both evolution (phylogenesis) and development (ontogenesis). Brown's neurologically grounded theory, based on extensive clinical practice and observation, shows that the mature human brain is comprised of a series of neuropsychological layers or strata that correspond to stages in the developmental history of the individual's brain. The microgenesis of an utterance, percept, act, memory,

and so on, is a qualitative transformation that traverses these different layers of brain organisation from unconscious depth to conscious surface.

This transformational movement entails the successive pruning of the anticipatory pre-meaning until it selects a particular phonetic shape *qua* vocal tract action that is deposited in the extra-personal space of social life. This pre-meaning is of a much more holistic and less differentiated kind that lacks the degree of specificity and contextual adequacy of the final end product. The pre-meaning pulls into its orbit, so to speak, a wider field of associations that are progressively pruned and delimited prior to the realisation of the final phonetic shape of the utterance that is deposited in consciousness. We all have at times the so-called "tip of the tongue" experience when we can't derive the final phonetic shape to objectify our felt meaning. Nonetheless, this meaning is felt at an anticipatory stage prior to its abortive realisation. The anticipatory character of the pre-meaning that we are more or less conscious of without being able to find the right phonetic shape to express it nonetheless is felt as part of the unconscious drive towards articulation that is characteristic of the trajectory of the entire microgenetic construction process. The entire trajectory and its successive transformations is ingredient in the final objectified utterance as experiential memory and conceptual feeling.

The idea of the selection of linguistic items can be understood not as a choice from a repertoire of already existing items that pre-exists the particular choice. Instead, the utterance arises from and extends into a field that is prior to the utterance. Utterances are values-realising acts that individuate the field. In the transition from initial virtual potential to the actual utterance that is deposited, the entire microgenetic trajectory of the utterance-in-becoming is ingredient in the final end product as experiential memory and conceptual feeling that is inherited from the past and deposited in the actualised present of the utterance. The background of an utterance is an interpersonal field that is prior to the utterance. The emergent utterance-in-becoming individuates the field precisely because the utterance is not the result of an assemblage of prior parts, but because it imports prior experiential memory, feeling-meaning, and value biases into the present as a dialogical response to some aspect of the field.

Halliday's (1975) longitudinal study of one infant's proto-language and his transition to the adult language evidences the developmental layers that individuate the field at the different stages of the infant's development. The discrete microfunctions of the earlier stages in Halliday's account deposit as less differentiated, more holistic utterances that transition to the more differentiated utterances of the adult system. By the same token, the trajectory of the microgenetic derivation of utterances in the later stages of the individual person's development does not leave the earlier developmental phases behind. As the progressive emergence of Knowing Levels shows, the earlier developmental phases are not transcended by later ones. Instead, the trajectories of these later derivations reflect the inherited history of the earlier phases. Every utterance imports its past, both ontogenetic and microgenetic, into the present and makes it real. It is in this way that utterances are replete with what Whitehead called "plenitude"—they are resonant with pastness, with conceptual feeling, and with the sense that they belong to real persons.

6. The subjective ground of languaging: feeling-meaning blends and the microgenetic sculpting of utterances

McKellar (1987: 539–542) draws attention to various aspects of the unconscious dimensions in the formation of spoken utterances and written texts. For example, speakers and listeners are less conscious of the wording. As McKellar (1987: 541) points out, requests for the repetition of someone's utterance tend to be met with a paraphrase of the meaning rather than the repetition of the exact wording. It is the feeling-meaning blend that strives for articulation in a situation. The phonological and lexicogrammatical constraints are parameters in the later phases of the derivational trajectory as the utterance-in-becoming is shaped more and more by external situational, social, and cultural constraints. McKellar (op. cit.) also draws attention to Halliday's (1983) account of the ineffability of grammatical categories. Grammatical categories such as subject, actor, theme, finite, given, new, modality, process, and so on derive from more primitive unconscious pre-linguistic categories of feeling-meaning that originate in the core self.

For example, the transitivity structure of the clause—Halliday's experiential layer of meaning—is a more global type of linguistic organisation that is progressively differentiated until the terminal point of its actualisation as the more specific lexical exponents of a particular kind of transitivity structure. Instead of saying that the clause is an assemblage of parts into a larger whole, the clause is a meta-grammatical formulation of a more global principle of linguistic semantic organisation that can be lexically specified to a more delicate degree. Of course, one can, analytically speaking, decompose the clause into its parts. My point, in line with the microgenetic account, is that the parts are derived from the whole and not the other way round.

Having established the principle of whole-to-part derivation rather than part-to-whole assembly, we can then see that the more global level analytically represented as the transitivity structure of the clause is in fact a resource for construing situations or aspects of situations. On this view, the lexical items that instantiate specific categories of participants, processes, and circumstances in the clause are embedded in the linguistic construal of a situation as the more natural way of experiencing them where situations are seen as configurations of functional individuals that are grounded in some spatio-temporal region to varying degrees of functional specificity and determinateness—to varying degrees of actuality. Take the lexical item *book*. Except in dictionaries, we seldom encounter the word *book* in isolation. Rather, we encounter it embedded in activities, practices, and situations in which we may be first-person participants, or which we may observe as third persons, etc. Consider the following:

> Once upon a time, nine-year-old bookworms used to curl up with *Little Women*, or burrow under the bedclothes with a torch to read *Swallows and Amazons* after hours. Childhood reading was an idyll in a walled garden and books forever shaped the landscape of our minds.
>
> [The Guardian, 3 September 2017; https://www.theguardian.com/ books/2017/sep/02/young-readers-drive-book-sales]

In the text above, books and their even more delicate specification as actual titles of books (*Little Women, Swallows and Amazons*) are embedded in and are functioning participants in activities and practices involving young readers, the places where books are read by them, and the role books are held to play in the shaping of young minds. Each clause in the text contributes to and updates the maintenance of the situation image that the text evokes for readers. The conceptual structures pertaining to books are not reducible to the pairing of a sequence of graphemes (b + o + o +k) and its corresponding concept, as in the word *book*. Instead, the word *book* is a cultural-semantic compression of vast networks of activities and practices in which books are embedded and in which they participate. The functional diversity of semantic roles (participants, process, circumstances) that is manifested in the transitivity structure of the clause constitutes a unity and derives from a more diffuse, more global precursor unity—a more holistic apprehension of an incipient situation—that constitutes the commonality of origin of the diverse parts or roles that are actualised in the derivational process as particular lexical selections. Consider in this regard the first clause of the above text.

The participant role Actor lexicalised by the nominal group *nine-year-old bookworms*, the Process of the material action type lexicalised as *curl up*, and the Circumstance of Accompaniment lexicalised by the prepositional phrase *with Little Women* instantiate diverse functional roles that nonetheless derive from a deeper semantic unity due to the commonality of origin of these lexicalised semantic roles. They are not disparate parts that are assembled to form a whole, but parts that derive from a prior whole that is specified into its parts. Readers of the text activate and tap into that prior unity and the experiences it evokes of their own childhood memories of curling up in secluded places to read their favourite books. The semantic unity that is evoked is one that derives from our experiences of and the practices of reading books, our recollections of childhood, the associations of an idyllic and secluded world of fantasy removed from routine.

McKellar's point, *pace* Chomsky, is that languaging is irreducible to knowledge of the "rules" of a language because knowledge presupposes processes that are accessible to conscious thought whereas the grammatical categories cannot be adequately glossed in ways "which would relate them to the categories of [our] conscious experience … They have evolved in order to say something that cannot be said in any other way" (Halliday, 1983: 11; quoted in McKellar, 1987: 542–543). These observations highlight aspects of the blends of the unconscious intra-psychic processes that constitute the initial parameters that progressively sculpt the derivational trajectory of the utterance-in-becoming and which, in influencing succeeding phases, leave their trace in the final product. The fact that meaning, not wording, is more readily attended to and brought to consciousness (see above) indicates that meaning has its basis and its origin in more global, less differentiated pre-semantic feeling-meaning unities in intra-psychic or subjective process.

The striving for articulation of feeling-meaning blends constitutes parameters of selection in the initial phases that are sculpted to more determinate linguistic shape by socially distributed second-order phonological and lexicogrammatical

constraints in the later ones. Werner and Kaplan refer to what I call feeling-meaning blends that are "felt and suffered rather than cognitively apprehended" and which are characterised by "diffuse and interpenetrating sentiments" (1984/1963: 242). Utterances have their intra-psychic origins in blends of affect, conceptual feeling, drives, habit, memory, value, and so on, that parametrise the early phases of the derivational process even before the direction of actualisation specifies, for example, that an utterance rather than a memory or a percept is to be derived. In the unconscious core, affect, conceptual feeling, habit, memory, and value are continuous blends of intra-psychic process that can be actualised in different ways—e.g., as a mental image, memory, percept, utterance, etc.—that determine the relations among the different factors at play in the blend.

On the other hand, Saussure's association model of the sign and its many successors in linguistic phenomenalism and computationalism assume that utterances are composed through the assembly of fully formed subsystems and their purported "rules" of combination. Combinatorial models assume an inventory of impersonal elements that are somehow retrieved from memory and assembled into a final whole. The theory of microgenesis, on the other hand, shows that utterances emerge from the self's sensitivity to and capacity to fine-tune its interactivity with its environment on the basis of subtle blends of the underlying processes in the unconscious core that are sculpted along a microgenetic construction trajectory to yield a final product that is carefully attuned to very fine-grained interaction dynamics between persons. Pico scale vocal and other bodily dynamics instantiate these fine-grounded blends as particular colourings of affective and valuative orientations that have the capacity to affect and change others.

Unlike non-living physical "entities", which are constituted by and held together by a wave of non-directional process that extends over the temporal duration of their existence, in living beings process takes on directionality along vectors of action and orientation that are energised and modulated by affect and feeling. The association of signifier with signified in the making of the Saussurean concept of the sign through the coordination of elements on the associative and syntagmatic axes in the *mécanisme de la langue* misses this point entirely. It misses the directionality of the transitional movement from feeling in the core to object *qua* locus of attention and interest to semantic categories to final phonetic realisation in the final actualisation of the utterance. Feeling is ground, source, and motive of this process.

As theorists of the cognitive microgenesis of mental acts of all kinds (e.g., actions, percepts, mental imagery, utterances) have demonstrated in clinical and experimental research (Brown, 1988; Rosenthal, 2004; Werner & Kaplan, 1984/1963), all acts of cognition, including utterances, involve a phase-transition from more global, more diffuse, and less specified meaning at the inception of the derivational process to an increasingly more specific meaning at its final actualisation. This microgenetic movement from whole to parts is the opposite of the more usual view that is predominant in the cognitive and language sciences, i.e., wholes are assembled from parts. However, the increasing differentiation and specification of the whole-to-part transition in the microgenetic theory of cognition is consistent with the ways in which living systems both evolve and develop in ways that assembly theories of cognition and language are not.

The transitional process described here constitutes successive phases of a wave of potentialities (Brown, 2015) that is constrained in the early phases of its derivation by conceptual feeling, intention, habit, subjective belief, desire and value, and in the later phases of its derivation by semiotic, situational, social, and cultural dynamics, and so on. At each level or phase of the derivational process, different possibilities compete for selection as some possibilities are pruned and others are selected as the basis for further partitioning at the next phase of the derivational process. It is important to emphasise here that each level is not left behind with the transition to the successor level. Rather, all levels in some way contribute to the derivation of the utterance-in-becoming and its final actualisation. The term utterance-in-becoming expresses the fundamental idea that the transition across successive phases outlined above is a purely virtual content that is increasingly specified until its final actualisation as an utterance.

Linguistically structured vocal tract actions are not the physical carriers of a meaning that is external to the vocal tract gesture or on some other level of abstract linguistic meaning. Instead, they are its most delicately specified actualisation, as manifested in the fine-grained vocal dynamics that languaging agents are sensitive to and are affected by. On this view, micro-temporal or pico scale vocal and other bodily dynamics are the most delicate or fine-grained partitioning and specification of the global potential that is actualised in utterances and which has its unconscious origins in pre-linguistic conceptual feeling in limbic cognition. Given that the starting point of this series of phasal transitions is in a less differentiated, more holistic personal meaning (Werner & Kaplan, 1984/1963), or a pre-linguistic mood (Deacon, 2005), delicacy in this case refers to the increasing degree of differentiation and specification of the virtual potential as the incipient utterance-in-becoming transitions along its microgenetic trajectory to its most delicate and concrete end point, i.e., as a phonetic gesture. A phonetic gesture is not the physical carrier of a 'meaning' that is external to it, but its most delicate and specified actualisation. This follows from the fact that holistic personal meaning arises within the person and strives for articulation in a form that is entrained to and sensitive to situational, social, and cultural dynamics.

Li Wei (2017: 17) proposes a Principle of Abundance in contrast to the sparse systems of rules, underlying programs and formal architectures that are often proposed by linguists as the basis of the "mysterious inner machinery" (Harris, 1987: 171) that supposedly generates and explains languaging activity. Li Wei's Principle of Abundance suggests, like microgenetic theory, that languaging draws on and orchestrates, across multiple time scales, a rich array of affective, bodily, sensory, cognitive, memorial, and semiotic resources as persons participate in languaging with each other (see also Thibault, In press-b: chap. 1).

7. Roy Harris's language machine: living selves in their worlds, or worldless, pre-programmed machines?

Roy Harris showed that Saussure's *mécanisme de la langue* fails as a theory of the cognitive workings of the linguistic system in the brain of the language user because the postulated *mécanisme* is "a prefabricated device designed to handle

traditional morphological units" (1987: 49). It is a form of reverse engineering that presupposes that the same kinds of units that the linguist deals with are somehow present in or represented in the brain (see also Deacon, 2005). Saussure's two-dimensional distinction between syntagmatic and associative coordination presupposes what it seeks to explain, i.e., how unordered collections of linguistic parts on the associative axis are assembled into linguistic wholes along the syntagmatic axis. The Saussurean dichotomy between "syntagmatic" and "associative" relations makes no allowance for the many latent or unconscious dimensions of selection that take place in the derivation of utterances. As microgenetic theory shows, there are many latent dimensions involved in the microgenetic derivation of utterances. Microgenetic theory rejects mechanistic analogies between living process and machines. Microgenetic theory starts from a radically different premise: embodied selves, their viewpoints, and their situatedness in their worlds are the basis for the development of explanatory frameworks of human languaging.

Computers have no deictic anchorage in a world. They have no viewpoints on the world. They have no interest in the world or their place in it. They simply exist in physical locations such as the one sitting on my desk. Computers are not situation-constituting. They can simulate interaction formats for which they have been programmed, but they have no normative investment in the simulation. They are designed artefacts that are embedded in and function in cycles of human activity. The fact of our embodiment together with the fact that languaging enables us to transcend our embodiment requires us to address the technologically informed reconceptualisation of languaging as running on machine-like programs hidden in the inner recesses of the mind that control us (Harris, 1987). The machine-like reconceptualisation of the inner cognitive machinery of language in Saussure's account of the *mécanisme de la langue* along with its many successors treats language as an assembly of more basic units that are combined according to the supposed rules of their combination. On this view, constraints are above all combinatorial ones. Linguistic entities such as sentences, phrases, words, and morphemes are detached from embodied selves deictically anchored to situations. These linguistic entities are second-order metalinguistic constructs derived from writing that are seen as being composed of combinations of smaller size parts of the same basic kind, e.g., morphemes to words to phrases to clauses.

As Harris points out with respect to Saussure, these metalinguistic assumptions are then projected onto the supposed workings of a machine-like cognitive program on analogy with the programming of the digital computer. Unlike embodied selves, machines and the programs that run them are not deictically situated in a world. The fact of our embodiment and *ipso facto* of our deictic situatedness in a world is the primary source of the constraints on languaging rather than postulated rules of combination of disembodied second-order linguistic constructs. Combinatorial rules and constraints are not part of the explanation; they are a part of what needs to be explained. The fact that we can carry out metalinguistic operations such as the segmentation and re-combination of linguistic units is an outcome of the kinds of meta-linguistic reflection on languaging which writing

made possible. The reconceptualisation of language that writing made possible and its projection onto the machine-like programs referred to above presupposes that "language" is separate from embodied selves and their deictic anchorage in the world. Disembodied linguistic inputs and outputs correspond to the workings of a machine that has no intrinsic ties to a world, no embodiment, no capacities for action and perception that situate an agent in its world.

Saussure undertakes a two-dimensional re-construction of the mental processes that underpin the generation of utterances by resolving them into impersonal linguistic elements external to one another and pertaining to the two axes of coordination projected into the homogeneous medium of space. Saussure treats the *mécanisme de la langue* as the manipulation of already existing elements that are assumed to be combined by the postulated mechanism. Saussure's associationistic thinking abstracts these elements from the prior whole rather than understanding them as interpenetrating one another at deeper unconscious layers of the self. At deeper, unconscious layers of the self, psychic processes are not separate but interpenetrate one another such that each is "tinged with the colouring of all the others." (Bergson, 1950/1889: 164). Utterances like all other mental acts emerge out of more fundamental psychic processes that have their origins in the unconscious core self.

Saussure commits the associationistic error identified by Bergson of "reducing the self to an aggregate of conscious states: sensations, feelings, and ideas" (Bergson, 1950/1889: 165), which are seen as "no more than is expressed in their name" (Bergson, 1950/1889: 165). Saussure assumes that the underlying internal conditions of utterance construction can be explained in terms of the external products that are derived from them. The latter are projected back into the underlying unconscious processes. In this way, Saussure only retains their impersonal aspects and fails to see how it is the interpenetration of all of these psychic states within a definite person that enables them to assume the "particular colouring" that is a mark of the whole personality and character of the self. Bergson explains:

> there is no need to associate a number of conscious states in order to rebuild the person, for the whole personality is in a single one of them, provided that we know how to choose it. And the outward manifestation of this inner state will be just what is called a free act, since the self alone will have been the author of it, and since it will express the whole of the self.
>
> (Bergson, 1950/1889: 165–166)

The interpenetration of different underlying psychic processes rather than their aggregation gives utterances their "particular colouring." They are imbued with qualities of the self who utters them. Utterances are seen as "combinations" of elements on analogy with the metalinguistic models provided by writing. From the point of view of their microgenetic origins in the interpenetration of many layers of intra-psychic process, their "particular colouring" is more in the character of a blend of interpenetrating processes rather than a combination of distinct elements. Often very subtle changes in the colouring of the final product—the

utterance—register changes in the internal conditions of the self as the self processes and adjusts to changing internal and external conditions. Changes in the self's internal conditions prepare for and set up how the self will respond in its languaging to changes in its environmental conditions. A continuous virtual space of blended intra-psychic processes establishes the initial parameters that can potentially affect the next phase of the microgenetic construction process. In so influencing it, the given parameter is selected while others are de-selected or pruned. In carrying the selected parameter to the next phase of the derivational trajectory, the selected parameter constrains the further development of the trajectory of the utterance-in-becoming.

Differentiations of microgenetic processes differentiate out of more global undifferentiated process. The developing utterance arises out of a preliminary limbic cognition (Brown, 1979: 178–179): The motor envelope is an early, more global, and undifferentiated space in which the utterance, related gestures and facial expressions, the postural tonus within which it emerges, and an affective drive component (Brown, 1979: 178) constitute a global, relatively undifferentiated process in which the microgenetic dynamics of utterance construction are set up. Languaging differentiates out of more holistic common processes. For example, the speech-gesture complex differentiates out of a relatively more undifferentiated Growth Point (McNeill & Duncan, 2000). Simultaneously with the microgenetic unfolding of the utterance, limb movements proceed towards objects in extra-personal space (Brown, 1979: 179). Their microgenetic processes influence and coordinate with each other throughout the nervous system and beyond.

In the final utterance, the particular affective and other colouring is present in the distinctive blend of functional constraints that give final shape to the utterance. Feeling-meaning blends and their striving for articulation along vectors of action and orientation are the primitive driving force of the microgenetic construction process. This view is entirely compatible and commensurate with Halliday's idea of the "meaning potential" that is developed along the individual's ontogenetic trajectory and unfolded in acts of meaning that are constrained and shaped by layers of lexicogrammatical and phonological constraints in particular contexts of situation.

Languaging is not the expression of an inner idea or content that is already fully formed in consciousness and then packaged into a suitable linguistic form so that it can be externalised. The microgenetic derivation of an utterance is not the compiling of pre-existing parts into a whole. The microgenesis of a mental act, including an utterance, is a movement and a development of a vector of initial feeling-meaning that strives for articulation. This movement is a process of progressive form-creation—corporeal schematisation—that bodies forth the initial feeling-meaning as an utterance (Thibault, In press-b). Utterances are not formed by the mechanistic combining of pre-existing parts, or by the pairing of a form to a meaning. This is not how living selves act. Utterances, including the most routine and stereotypical ones, are creative acts that are responsive to specific situations. For example, Van Lancker Sidtis (2012: 342) is wrong to say that novel expressions are formed by assembling lexical items according to grammatical rules whereas formulaic expressions are non-compositional wholes that are acquired

and processed as unitary shapes. All utterances derive from prior, less articulated feeling-meaning. Formulaic expressions can be inserted into situations in novel and creative ways. True creativity gives rise to the articulation of new possibilities, new categories that tap into deep layers of the self's virtual potential whereas the routine utterance is heavily constrained by external situational factors.

Every utterance is implicated in the self's participation in the projects in which selves create the fabric of the living of their lives together. Every utterance, whether formulaic or creative, imports its past to the present and in some way is integrated to the further development of the future trajectory of the self. Languaging is a dialogical encounter between selves. Languaging is therefore informed by their viewpoints, commitments, convictions, interests, and values. Rather than the mechanistic pairing of form to meaning, the microgenetic perspective shows how utterances are informed and shaped by the striving for articulation of doubt, conviction, feeling, friction, thinking, uncertainty, the desire to know, and so on—both in self and others. Languaging is an open-ended and emergent dialogical *praxis* rather than being under the control of pre-defined activities and pre-existing goals (Matusov, 2020; Thibault, 1991). Languaging is not just the bringing forth of utterances; it is the movement involved in the making and re-making of each other as selves in the projects that form the living of human life in the human ecology.

8. Microgenetic set up, semiotic repertoires, and self-design

William James (1950/1890) viewed the self in terms of an ongoing *I-me* dialectic. The Jamesian *me* is a collection of habits, dispositions, values, and so on that change slowly over time and which underpin the self's sense of continuity in time. The *me* is the stable core self. The *I*, according to James, is a series of recurring moments in the history of the *me*. The *I* of any given moment is generated by the *me*; it also has the capacity to transform the *me* in some small way. Whereas the *me* is continuous in time and changes slowly, the *I* is a transitory occurrence of a mental act such as an utterance that issues forth, decays, and is replaced by the next occurrence. The *I* is, then, a momentary mental occurrence that is replaced by ensuing occurrences in an ongoing cycle of recurrence. In microgenesis, an utterance-in-becoming is aroused by an affective dynamic that has its origins in limbic cognition in the core self (the *me*). Affective arousal occurs when the *me* is in some way perturbed or when it encounters what I have called proto-modal friction. Affective arousal may be in the form of a feeling, perception, a memory, or a situational prompt that in some way affects the *me* and initiates an *I*-response by the *me*. The result is an *I*-response that is generated by the *me* in order to deal with the felt proto-modal friction—the pre-semantic mood—that is engendered. The empirical *I* selects from semiotic repertoires both to hone and to perform its identities and also to co-articulate itself with the social projects, the self-concepts, the conceptual-ideational structures, and the modes of bodily display and performance that characterise the self's identity in a particular ecosocial niche (Vol. II, chapter 4, section 1).

Microgenetic processes are internal processes in the virtual internal ecology of the self (Thibault, 2019)—the Jamesean "me". They are ongoing processes of internal construction and preparation that ready persons for actual interaction with the affordances of the ecosocial niches that they dwell in. Given that the microgenetic construction of, say, an utterance takes place on time scales in the range of milliseconds of brain activity, microgenetic construction processes must also allow for inputs from higher-scalar levels of ecological organisation. This means that a lot of prior history is necessarily embedded in the virtual internal ecology of the person to enable these processes of internal preparation and set up to occur. Small-scale microgenetic processes therefore embody larger-scalar ecological constraints in the internal virtual ecology of the self (Thibault, 2019). If this were not so, the rapid time scales of microgenetic construction in brain activity would not easily allow for relevant inputs from higher-scalar (meso and macro) levels of the human ecology. In this way, persons set up, prepare, and also change internal microgenetic constructions and their conditions of construction in ways that modify how interaction with the world will proceed (Bickhard, 2011).

Adami (2019) interestingly discusses dynamic multimodal semiotic repertoires in ways that are relevant to the present discussion. The *I* selects from semiotic repertoires and their affordances that constitute the socially organised niches in which selves participate and which define the social projects that they adhere to. As I showed in Vol. I, chapter 2, section 8, voice creak, which is at the bottom of the pitch range of amodal phonation, is an element in the semiotic repertoire of the persona of "tough girl" in Chicano gangs. In another example discussed there, falsetto voice, which is at the top of the range, served to create the persona of a gay diva. The two examples show how persons design themselves in ways that enable them to co-articulate the self with particular ecosocial niches and the kinds of identities and the forms of experience that characterise a particular niche and its projects. In both these cases, the Jamesean *I* enacts occasion-specific performances of its semiotic repertoires.

Semiotic repertoires require the integration of micro (N-1), meso (N), and macro (N+1) processes and resources (Vol. II, chapter 4, sections 9–12) in the performance of a particular selection from a given repertoire on a given occasion. Micro elements are enabling conditions such as the affordances of the biological individual, including pico scale body dynamics. Meso elements are the intermediate level of persons interacting with each other and with artefacts, text, tools, and technologies in ways that constitute recogniseable actions and events in social situations. Macro elements are higher-scalar ecosocial norms and constraints. They include cultural patterns, institutions, norms, and forms of social and cultural organisation that both enable and constrain what people can say and do. For example, creaky voice and falsetto voice are performances of lower-scalar affordances of the biological individual's vocal tract and related bodily activity. However, these vocal performances, with their distinctive pico scale dynamics, mesh with higher-scalar or macro level ecological constraints to yield performances of particular social identities and personas in particular ecosocial niches (Vol. I, chapter 2, section 8).

Reuchlin (1978, 1999) developed a model of cognitive functioning called *vicariance*: Selves have semiotic repertoires of alternative possibilities fulfilling the same cognitive, semiotic, or social function. These possibilities are in competition amongst themselves for the fulfilment of that function (see also Berthoz, 2017/2013). Reuchlin's vicariance model is probabilistic: The different potential actions in competition do not have the same probability of activation. Instead, the possibilities of activation are organised hierarchically according to individual, situational, cultural, and other variables. Moreover, as Lautrey (2003) points out, the processes that are activated simultaneously may vary from individual to individual, as well as being activated with different weights in different individuals. This then sets up, microgenetically speaking, individuated developmental and learning trajectories in different individuals. Simultaneous microgenetic processes within the virtual internal ecology of the self yield the possibility of interactions among these same microgenetic processes (Bickhard, 2011). Interactions in the virtual internal ecology of the self between different microgenetic processes set up the conditions for the selection from diverse semiotic repertoires and their co-articulation with particular ecosocial niches in ways that will shape how interaction proceeds in that niche. For example, this may include internal microgenetic construction of the interactive conditions for engaging in translanguaging (Li, 2011, 2017), or for the enactment and display of different social identities and personas that require, for example, that microgenetic set up of self-concepts that monitor and modulate pico scale voice dynamics in the creation of a particular social persona in anticipation of the forms of interaction that persona will participate in in the ecosocial niches in which it is recognised and valued.

Languaging is vicariant not only because it involves alternative selections from semiotic repertoires, but also because it can monitor other kinds of processes and function as explicit vicariants for them even before the latter are actualised. As Bickhard shows, one mode of microgenetic influence is for one process to monitor another process and thus to discriminate among the various dynamic possibilities of the monitored process. Languaging activity can function as explicit vicariants for what Bickhard (2001) calls constructive error when monitored processes risk error. For example, I might tell my 11-year-old daughter to avoid (inhibit) a particular hand action with the vegetable peeler when she is peeling potatoes—an action that may result in self-injury. Or my daughter might catch herself using the peeler in an injury prone way through a self-monitoring utterance even though the error prone use of the peeler is being generated by a microgenetic process that hasn't been tried before. Both dialogical languaging with others and self-languaging—Vygotsky's personal speech—thus have the capacity to anticipate and to correct microgenetic error in microgenetic spaces that have yet to be explored or which have not yet occurred except in the imagination (Bickhard, 2011).

Vygotsky (1987/1934) and Luria (1973) showed that cultural resources are psychological tools that are used to organise the human mind and hence the kind of self-interpretation that the modification of mind by the appropriation of particular psychological tools makes possible for different groups of individuals. The human capacity for downstream (future-oriented) niche construction selects for

the group, not the individual, together with the interpretative abilities and skills of different groups (Sterelny, 1993). For example, children's caregivers (parents, siblings, nannies, etc) promote culturally valued skills and competencies by actively organising the activities and routines of children in ways that scaffold and organise the development of these competencies and skills. Moreover, cumulative downstream niche construction means that social (not biological) patterns of inheritance are no longer tied to relations between particular person (e.g., parent to child). Instead, social group selection means that crucial aspects of ecosocial niche construction are inherited by social means, in particular the ways in which, for example, powerful social institutions such as school, the corporate media, and government institutions act to change the semiotic-informational character of the environment of present and future generations. The semiotic-informational character of the niche, along with downstream niche construction, plays an important role in the shaping of the next generation's cognitive-semiotic environment.

Basil Bernstein (2000) shows that the social mechanisms that ensure the accurate flow of information between generations together with the particular principles of cooperation that are selected by different social groups in order to maintain their in-group identities are differentially organised and accessed along social class (and other) lines in western societies. Moreover, the groups in society who control and own the cultural capital of the education system ensure that cultural capital, information, skills, capacities and psychological tools are not equally available to all. Class-based coding orientations form ecosocial lineages based on cross-generational patterns of ecosocial inheritance. These patterns ensure that differential patterns of interaction, differential semantic orientations, differential access to different ranges of situation types and their conventions, etc., and different ways of interpreting selves and their relations to situations are inherited and reproduced from one generation to the next. These patterns of interaction, semantic orientations, and so on are the cultural affordances that constitute the socially organised niche of particular social groups. We need to enquire more closely into the *psychological* dimension of the affordance-person relation without resorting to individualistic accounts (Vygotsky, 1997). Cultural affordances are psychological tools (Ratner, 2012; Vygotsky, 1987/1934: 85).

The psychological tool organises and makes possible a cultural response to an affordance. Languaging is a psychological tool with its own affordances in this sense. Psychological tools play a crucial role in the setting up of the kinds of microgenetic constructions that enable people to participate productively in particular ecosocial niches with their semiotic repertoires and thus to design their selfhood and social identities accordingly. Utterances make available a particular selection of ecological information using a particular orchestration of semiotic-informational resources and repertoires. The information so organised has the potential to make others aware of a particular aspect of the situation, including interactants' relationship to the situation. As Reed (1996: 171) points out, speakers' capacities to make other selves aware also gives rise to the capacity to make one's own self aware through the self-reflexive exercise of these same capacities. In this way, the self develops the capacity to select, organise and present

information for the purposes of guiding one's own activity, (self)-reflection, and for self-design. I can selectively use the information that languaging makes available to self and others in order to indicate aspects of situations to myself and to imbue this information with meaning and value that tells me something important about my relationship to the situation, including how others may view my relationship to the situation.

Note

1 In his response to the special issue on simplexity in which my article (Thibault, 2019) appeared, John Stewart, in his "Afterword", makes the following observation on my use of the term "simplexity":

Finally, however, there is a question which requires clarification; it concerns the status of simplexity. Thibault seems to have decided that "simplexity" is the repository of all virtues; and since he also has a positive attitude towards Selving, this had lead him (by association?) to consider that Selves are simplex. I must confess that I do not follow the argument (to the extent that there is one); but the conclusion seems to me to be dead wrong. On the basis of my own personal experience, particularly in psychoanalysis, I would rather consider that a Self is indefinitely fascinating, open and ... complex. There is room for an honest disagreement here, of course, and maybe some mutual explanations. Nevertheless, this only goes to confirm my impression that "simplexity" is not as straightforward and above-board as it seems and indeed purports to be. (Stewart, 2019: 73)

I agree with Stewart that the self is all the things that he writes: "fascinating, open and ... complex". Stewart's observations entirely accord with everything I have written in this chapter. The microgenetic transition from endophasia to exophasia in the development and actualisation of an utterance is, I argue, a process of progressive simplexification as competing ideological and axiological possibilities are pruned and honed until the final actualisation of the utterance. The final utterance is thus always to varying degrees a compromise solution between the endophasic and the exophasic dimensions of its microgenetic construction.

4   Languaging

Your speech is not merely tongue-wagging, larynx-buzzing, and listening. It is much more the result of the brain doing its job as a manager of muscle to keep you going in your situation.

> J. R. Firth, *The Tongues of Men*, 1964/1937,
> p. 19

The community of actual things is an organism; but it is not a static organism. It is an incompletion in process of production.

> Alfred North Whitehead, *Process and Reality*, 1978/1927–28), pp. 214–215

A language is not only a mode of reflection; it is also a mode of action. Besides its ideational function, as a theory for construing our experience, it also has an interpersonal function, as a praxis for enacting our social and personal relationships.

> M. A. K. Halliday, Grammar and daily life: concurrence and complementarity, 2002a/1998, p. 382

1. Languaging as collaborative project

Languaging is a form of collaborative interactivity between persons that is interwoven with the many other forms of collaboration between persons that constitute human social life. Collaborative projects, as Andy Blunden (2014: 15) points out, are founded on concrete social relations between selves. Projects both focus on the motives of individual selves and are regulated by the norms in terms of which a particular form of collaboration is recognised and defined. The language sciences have operated dichotomies such as "langue" and "parole", "competence" and "performance", "system" and "text", "code" and "message", etc. None of these dichotomies has succeeded in providing an adequate explanation of the relationship of individual selves to their languaging. The human ecology is formed, maintained, and changed for good and for ill by the many projects that are woven together in ways that constitute societies of selves. Blunden (2014: 15) points out that projects bridge psychology and sociology. They are

the means whereby selves exercise what Saussure called individual acts of "will and intelligence" in *la parole* (Saussure, 1971/1915: 30). Projects also constitute the resources in and through which the self "produces and reproduces the social fabric" (Blunden, 2014: 15) by virtue of its participation in the social projects to which it adheres.

Norms of collaboration vary with the kind of project involved and the self-concept that participants have of that project. The norms of a family, those of a service transaction between a buyer and a seller, and those that regulate the relations between a teacher and his or her pupils are all norms that are well known and grounded in the self-concepts of the various projects in which they are embedded. Different projects are guided by different self-concepts. Self-concepts are not affect-free. Instead, they are suffused with feeling that gives them their affective tonality. Concepts are categories of idea *and* feeling in which the idea or the feeling component may predominate though both are always present. Every concept has a feeling component that endows it, in varying degrees, with conviction, desire, motivation, interest, and value. At the same time, the concept has an ideational component that specifies what the object of a particular feeling is. Projects are always informed by self-concepts in this sense. The selves who adhere to and participate in a given project do so on the basis of concepts that are infused with their feelings, convictions, desires, and values. By the same token, the concepts that guide a project establish what the objects of the project are.

Concepts have a subjective pole and an objective pole. The idea that feeling pertains to a subjective pole of the self's private inner life and that concepts exist in an objective pole that lies outside the individual in an outer public domain is mistaken (Vol. II, chapter 3, section 1). Concepts have their origins in unconscious intra-psychic process that is pre-logical and metaphorical. Rational thought is a coherent set of propositions that is derived from these subjective processes. The objectivity of a concept or of an entire conceptual structure is not a matter of its correspondence[1] to external reality, but of its *adaptation* to the requirements of the physical and social world. Adaptation does not entail here a fixed objective world. Rather, selves-in-languaging perform ecological work that is both work on behalf of the self and on behalf of the human ecology. This process of adaptation is always a dialogical and dialectical one in which concepts are continually tested against other concepts and other points of view (Mancini, 1995). In this way, concepts are refined and adapted to the requirements of the selves who use them. On this view, subjective desires, feelings, interests, and motives cannot be defined without reference to those of others and their actions. There is no privileged authentic "inner" world of the self in relation to the project. Microgenetic theory shows that "inner" and "outer" are continuous with one another. Languaging is not the externalised expression of already fully formed inner desires, feelings, and so on. It is their further dialogical development and ratification in the social world. Others respond to them, negotiate then, criticise them, develop them further, and so on. Desires, feelings, interests, and motives are therefore normative and social, as is all mental life. Freedom, as Susan Babbitt (2014: 90–91) argues, is not grounded in an "inner" domain of "authentic" experience, as in the ideologically

dominant liberal discourse in western societies. Freedom is defined and exercised in the projects in which one participates.

By the same token, the subjective origins of concepts mean that they are also elaborated by an individual human mind and hence by a self and its mental structures and processes. These structures and processes form the "inner" context of any particular concept and thus the relationship of that concept to the other mental structures and processes that constitute a particular mind. From this point of view, concepts are evaluated as to how they fit in relation to these structures and processes. In other words, they are evaluated in accordance with criteria of coherence on which the character of the self and its authenticity is built (Brown, 2005: 215). A project necessarily involves and combines for the individuals who adhere to it questions of both adaptation and coherence. Individuals, through their projects, seek to live and act both in conformity with the self-concepts of that project at the same time that they strive for self-realisation through their participation in the project.

Rather than viewing society as a contingent collection of social groups and taking the "group" as the unit of analysis, Blunden argues that a society is a weaving together of many projects, both past and present. Much of current social and political theory segments society into various constituencies or groups that are appealed to on the basis of the differences (gender, sexual preferences, race, lifestyles, ethnicities, consumer preferences, etc.) that are taken to define the members of a particular group. The members of a particular group are defined on the basis of the abstract predicates that are assigned to them. For example, someone is referred to as a "white Christian male" or "gay" and their "identity" is defined and evaluated in terms of the abstract exchange value of these predicates and who they get attached to in the market place of identities by those who specialise in contingently celebrating and promoting some identities over others. On this view, identities are abstract and affect-free predicates that are attributed to individuals on the basis of criteria that derive from an impersonal marketplace of competing identity predicates that are defined purely differentially but not dialectically.

Moreover, these identity predicates are external to the categories of ideas and feelings that arise from within a person's subjective experience at the same time that they are completely and necessarily integral to the symbolic order of neoliberal capitalism. They are integral to the symbolic order of neoliberal capitalism in the following sense: they correspond to and are markers of the commodified identities and corresponding consumption patterns that reduce persons to those abstract properties that serve the requirements of capital and accordingly circulate in the market as freely exchangeable goods unimpeded by any form of interpersonal or social conflict and contradiction based on gender, social class, race, and so on. Projects, on the other hand, are necessarily dialectical in character. Projects are also based on ontological criteria that constitute the foundations of the project. Identity predicates and the differentialist identity politics that derive from them are anti-dialectical and anti-foundational—constitutively so—and therefore non-projectual.

Persons pursue projects of many kinds. Unlike the abstract predicates that define and fix the "identity" of persons according to the neo-Kantian social constructivist thinking that informs contemporary identity politics, projects are concrete, lived collaborative activities of real persons with their beliefs, commitments, ideas, intentions, feelings, emotions, goals, and values. This is so because selfhood is a social project in this sense—one that does not simply refer to a lone self, but to a self who participates in collaborative projects with other selves. Projects also include the many occasions in which persons seek to coordinate with other persons in many different kinds of social situations and social activities. Such occasions can include, for example, the "phatic communion" that two strangers waiting at the bus stop engage in and the complex forms of interactivity that take place between persons and between persons and artefacts, social situations, and technologies in institutional and occupational settings of all kinds. Projects also include the many different kinds of interactivity characteristic of informal (non-institutional) interpersonal networks of all kinds that are the basis of friendships, social solidarity, and personal interests and hobbies. Whereas the abstract identity predicates attached to persons are static and do not develop or change, projects are concrete: they undergo development and change.

Projects come into being and exist on many different place and time scales ranging from those of the individual person to community and institutional scales (family, play group, school, health system, etc.) to entire nation states and other political entities such as the EU and transnational corporations. Projects on all scales are defined by the values they seek to realise. Projects are values-realising activities whatever the scale they exist on. This means that projects, unlike the abstract identity predicates discussed above, are defined by the values they seek to realise and therefore by the forms of life that are the outcomes of the continual attempts to realise these values. All persons participate in and seek to realise the values of the many projects they engage in and through which they seek to live their lives. The human ecology is a complex mix of meshwork and hierarchical principles of organisation.

"Meshworks" combine or mesh together heterogeneous elements by exploiting their functional complementarities in order to form a newly emergent self-consistent whole (DeLanda, 1997: 260–263). Combinatorial richness and the heterogeneity of the components are crucial for these combinations to occur. Also crucial are those processes which enable heterogeneous elements to be co-articulated in order to create a meshwork. Meshworks are non-hierarchical forms of organisation—biological, social, etc.—composed of assemblages of diverse elements in which the elements that are combined retain their relative autonomy and thus have the capacity to be detached from one assemblage and attached to some other (Delanda, 1997: *op. cit.*). Languaging exhibits meshwork building capacities: It co-articulates connections between heterogeneous elements in the forming of what I have previously called social-affective-cognitive assemblages (Thibault 2011b, 2011c**).** For example, a conversation between two or more persons is a meshwork in which the respective persons and their complementary needs and wants are connected to each other and to artefacts, situations, texts, tools, and

technologies. Languaging is a powerful and effective co-articulator of the diverse needs and wants of persons precisely because of its culturally saturated character.

Meshwork and hierarchy principles work together, in different combinations, and to different degrees in the many different projects—past and present—on many different scales through which people live their lives, develop as human selves, care for other selves, develop a sense of belonging to a place, pursue their hopes and dreams, and more generally engage in the economic, social and political life of the communities in which they participate. Projects are intrinsic to the human life process and are its defining essence.

A completely flat, non-hierarchical view is not, however, viable for the theorisation of the multi-scalar processes that embed languaging in the human ecology. To be sure, overly simplistic and rigid top-down command hierarchies are not what is intended here. However, languaging, as we have seen in previous chapters of Volumes I and II, involves and integrates many spatial and temporal scales of organisation and self-organisation. The small local scales on which occasions of languaging take place can catalyse cascading changes in lower scalar bodily and neural dynamics of the individual person in ways that can bias action, perception, and valuation. They can also can and do have larger-scale consequences on larger spatial and longer temporal scales. Moreover, the repetition across spatial and temporal scales of many functional or dysfunctional acts can have consequences for the higher-scale functionality and integrity of a community or ecosystem.

On this view, human languaging, including individual utterances, are constitutive and functioning component processes in the larger-scale projects, social activities, and ecosystem processes in which they play a role. Languaging does not function independently of the human projects on many different scales in which selves enact and develop both their projects and, in doing so, their own and others' selfhood. The language sciences have separated utterances from the selves who create them and treated them as combinations of formal items or as the causal outputs of formal systems and their algorithms. Utterances, independently of the selves who create them, respond to them, and are affected by them, are said to be occur "in" their contexts. Meaning is displaced onto utterances in their contexts so that the internal relation between self and utterance is lost. The interest in the internal subjective dynamics of selves and the projects of selves as the generator of utterances is diminished.

Human projects are the outcomes of struggles of people to become conscious of their own practical-historical problems in different conditions of historical consciousness. The finished forms—the end products—of the microgenetic derivation of utterances are products of human consciousness that other individuals can experience (Kosík, 1976: 84). It is in and through their active participation in projects, not their membership of the social groups they are required to fit in with, that selves, under the guidance of the project and its motives, can learn to be conscious of the historical, personal, and social conditions of their own consciousness. They can thus learn to be aware of and to understand the world of their own experience and its creative potentialities and to harness these potentialities to the

projects and their concepts that they choose to participate in. In becoming self-aware in this way, selves can use their creative potential not only for their own growth and becoming but also to help the others they move along with in their growth and becoming.

2. Languaging as action and the intrinsic functional organisation of utterances

Languaging is a highly productive form of action that is constrained by the intrinsic functional organisation of utterances. An utterance is a concrete functional unity in the form of a gesture-sound-wording complex. The ecological work of an utterance is a unity of functional capacities that is both constrained and enabled by linguistic (e.g., lexicogrammatical) pattern. An utterance can vary in size from a single morpheme to a complex text. However, utterances should not be confused with entities like morphemes and texts (Bakhtin, 1986a; Vološinov, 1983). Morphemes, words, clauses, sentences, and texts are idealised and abstract entities. They are second-order meta-linguistic constructs. Utterances are not reducible to associations of forms with meanings. The important point is not so much that a given utterance has a "meaning", but that, by virtue of its intrinsic functional organisation, it contributes to the regulation of the awareness and action of self and others in the human ecology (Reed, 1996: 155–156). Utterances are functionally organised structures of action that operate on situations. Meaning is not an abstract level of utterance organisation, but a system-level property of co-articulated Self-Utterance-Environment interactive relations and dynamics.

In the first instance, an utterance such as *Can I have three bananas, please?* is a gesture-sound-wording complex that couples the two selves who participate in the episode from which the example is taken (section 2 below). Betweenness is enacted and achieved because the buyer's vocal tract action modifies the medium of air in ways that couple buyer to greengrocer. The patterns of sound produced by the buyer's vocal tract action are articulated in ways that (1) fit with the greengrocer's perceptual capacity to attune to the sounds that he picks up; and (2) enable him to detect information in them that he can make use of. The sounds do not transmit an encoded message or meaning from buyer to greengrocer. Rather, the gesture-sound-wording complex makes available information about the source event—the buyer's utterance—that others can use, modify and appropriate to their own viewpoints and projects provided they have the capacities and skills to do so.

The buyer's gesture-sound-wording complex is an action that seeks to exert anticipatory control over the flow of the interaction, on who is expected to respond, what they are expected to say and do, etc. The utterance qua gesture-sound-wording complex seeks to establish an interactive relation of betweenness with another self. In the human ecology, we orient to and treat other people as distinct selves. We set up occasions for interacting with others as selves who have their own motives—motives that may be very different from one's own. This means that we need to anticipate others' intentions, motives, and what they know.

Utterances are intrinsically modal in this sense. Drawing on prior experience, selves through their languaging activity, anticipate the future development of the self's interactivity with others. As we saw in Vol. II, chapter 3, section 1, microgenetic construction processes, which are ongoing in the virtual internal ecology of the self, ready the self for responding to future events.

Speech sounds provide observers with information about the more fundamental environmental event—the co-articulated vocal tract gestures of the speaker—that is the proximal cause of the speech sounds (Fowler, 1986, 2010). Speech sounds make available information that enables the listener to attune to the speaker's vocal tract gestures so that the coupling of speaker and listener can take place. The capacity to attune to the other's vocal tract action is supported by the brain's mirror system. The mirror system is important not only for imitating another's action, but also for understanding their intentions (Bråten, 2009; Greenfield, 2006; Rizzolatti & Arbib, 1998; Zukow-Goldring, 2006). The capacity for the covert simulation in one's own neural structures of the other's vocal tract gestures clearly is a case of the speaker affecting the listener's internal dynamics when the two selves couple their internal (neural) and external (bodily) dynamics in this way and entrain to each other's dynamics. As Kinsbourne (2005) points out, entrainment is not only in terms of bodily interactional synchrony, but also involves the entrainment of the neural structures required for the covert simulation of the other's vocal tract gestures in the forebrain of the listener. The neural structures involved are entrained to the intrinsic potential for complex, fine-grained differentiations that vocal tract gestural activity articulates.

Synchronised attunement, which arises in the limbic regions, is referred to as "limbic resonance" by Hart (2011/2006: 49). Limbic resonance, Hart argues, "requires that an internal state be expressed externally" (Hart, 2011/2006: 49–50). The fine-grained sensory-kinetic dynamics of the face, the hands, and the vocal tract have the capacity to articulate many very fine-grained sensory-kinetic discriminations and functional synergies of these, which partly come under the control of the cranial nerves in the brain stem. The cranial nerves connect to circuitry involving the diencephalon, the limbic system, the insula, and the amygdala. They also "later connect with an area deep inside the frontal lobes: the orbitofrontal cortex, which enables us to feel and understand facial expressions" (Hart 2011/2006: 50). In this way, the human brain and that of other primates can link the perception of gaze and facial expression to emotion, motivation, action, and awareness. A different explanation from one that is based on the external expression of an internal state is possible.

The mutual resonance of the dynamics of two (or more) selves is a form of intersubjective "betweenness" that is the basis for how persons dialogically align their experience with another's experience in the creation of a higher-order hybrid experience that two (or more) persons orient to and coordinate with in ways that give rise to what Colombetti (2014: 181) refers to as the feeling of "closeness". Intense social encounters have the capacity to create altered states of bodily feeling and consciousness that facilitate the building of affective and social bonds between persons. Intersubjective resonance is not simply a matter of the self's

expressing its inner experience in external behaviour. Nor does it mean that the experiences of the two selves are merged as one. The resonance pattern enables the two selves to experience a feeling of alignment at the same time that the two selves remain distinct loci of coordination.

The development of the experience of the self's sense of its own inwardness arises from the experience of the inter-individual resonance patterns of the neural and bodily dynamics of the two selves. In infancy, the immature self-control systems of the infant are both aroused *and* regulated by forms of affective communion that take place between the infant and the primary caregiver during the first year. The forms of limbic arousal, shared attention, social role-play, and deictic pointing that emerge in these early forms of affective communion create the pre-linguistic infrastructure from which languaging emerges in the second year (Vol. II, chapter 3, section 2). A change in arousal in the limbic networks is linked to memory systems of the regulatory processes. Consequently, pre-mood structures of arousal in the form of conceptual feelings begin to structure an orientation to the formation of a proto-linguistic utterance or other communicative act that is responsive to a social situation (Tucker, 2002: 69). These pre-mood structures are part of the pre-linguistic infrastructure that generates the languaging activity of the self (Vol. II, chapter 3, section 4). Grammatical mood is a further linguistic development of the pre-mood structures that are aroused in limbic cognition in the early preparatory phases of the microgenesis of an utterance.

Emergent dynamical patterns occur on very fast time scales that are truly inter-individual. The dynamics are so rapid that it is impossible to separate the dynamics of oneself from those of the other self. Their dynamics are enfolded with and entangled with each other (Vol. I, chapter 3). The mutual entrainment of the neural and bodily dynamics of languaging agents provides a solution to the problem of assimilating one's own internal dynamics to the bodily and neural dynamics of others. It is in this way that persons can assimilate their own bodily and neural dynamics to the experiences, feelings, intentions, and points of view of others in dialogically coordinated relations of betweenness. There is no need for abstract codes that mediate these processes. The ability to transcend the self and to see things from another's point of view is inherent in the dynamics of the inter-individual resonance patterns that form the basis of intersubjective empathy. Rather than a merging of feeling, perspective, and experience, empathy is a strengthening of the affective and social bonds in and whereby persons co-ordinate experience in deictically grounded relations of co-affiliation, co-participation, and co-sensing when inter-individual resonance patterns give rise to the conditions for alignment described above.

Motives are not hidden away in the hidden recesses of the brain though they have their origins there, as microgenetic theory shows. Trevarthen (1993: 127) shows that motives are visible and accessible in the very rapid, subtle and fleeting minutiae of, for example, eye movements, facial expressions, and voice dynamics (Vol. II, chapter 3, section 4). Elsewhere I have discussed these crucially important aspects of interpersonal encounters in terms of pico scale voice and other bodily dynamics (Thibault, 2008, 2011a, 2011b, 2011c; Vol. I, chapter 3, section

14; see section 11 below). Pico scale bodily dynamics on time scales of fractions of seconds to milliseconds are what contribute to and enable our sensitivity to the presence of another animate and living self with a sensitivity for the "feeling of what happens" (Knowing Level 1 above: see Vol. II, chapter 3, section 2). We develop capacities, skills, and techniques for scaffolding and managing our interpersonal encounters with other selves so that a focused yet highly flexible form of betweenness can be established and sustained between the selves who participate in interpersonal encounters of this kind. These skills and capacities include the ability to detect and attune to these fine-grained aspects of our embodied first-order languaging with others. They are aspects of the affordance layouts of our bodies in interaction (Thibault, 2017). To varying degrees, people learn to "educate their attention" to these aspects of interpersonal encounters and to use the information that they pick up to detect the other's motives, to identify with the other's emotions and feelings, and to resonate with the other (Trevarthen, 1993: 127–128).

Anticipatory or prospective control of action, including languaging, is microgenetically set up by the central nervous system. Trevarthen (1993: 125–126) makes a similar point when he writes that the endogenous dynamics of the brain's neuro-physiological organisation are the basis of the brain's capacity to hold "together all of a subject's behaviors and perceptions in any given moment" (1993: 125). Motives are the germ cell of incipient actions and of the anticipatory control that these actions entail. In this way, anticipatory control enables the motive to be unfolded and progressively sculpted across diverse layers of neurophysiological, bodily and external media along the lines proposed by Werner and Kaplan's (1984/1963) idea of "corporeal schematisation". Motives are thus grounded in the deepest layers of the central nervous system before they are manifested as bodily actions of the self.

William James (1950/1890: chap. ix) showed that the self is immersed in a constant stream of thought or consciousness (Vol. I, chapter 4, section 6) that is in constant movement and flux. This is in one sense the life of the self. The motivation of a self to coordinate with some aspect of the world therefore varies from moment to moment. It varies in terms of intensity, focus, timing and temporal duration, the degree of felt agency that is involved, the spatial location of the body that is most affected, and the form and the modality or modalities of sensory information that the motive arouses into action (see Trevarthen, 1993: 126 for some complementary arguments). James had good reason to refer to the "storm centre" of the body as the grounding for the body's actions in the world (James, 2010/1912: 227–228; Vol. II, chapter 2, section 5).

The here-now-me deictic ground that I discussed in Vol. II, chapter 3, section 4 is not an abstract geometric point. It is a synergy of the affective, kinematic, energetic, and physiognomic parameters of movement that are generated in the brain as an action trajectory. An action-in-becoming is sculpted along its unfolding trajectory in endophasic space until it is enacted in the exophasic space of dialogical betweenness as a determinate bodily act that is articulated by one or more of the body's action systems such as the hand, the head, the vocal tract, and

so on. The here-now-me deictic ground is, then, the coordinated focus of motive on the particular body surface whereby the empirical self (the "I") is unfolded and enfolded in action and is co-perceived in interpersonal encounters with other selves. Following James, the "me" is the movement of the trajectory of the self's embodied experiences in the world and the perceived sense of the continuity of these experiences as pertaining to and belonging to the self. The "I" is the appropriation of these experiences in any given moment as a locus of unified action that is always grounded in and originates in the movement of the trajectory of the "me".

Wordings are further layers of culturally sedimented and conventionalised patterns that derive from cultural-historical traditions and the practices and the continuities that these provide (Linell, 2011/2005: 213–216). Wordings therefore are normative scaffolds and enablers of interpersonal encounters and the forms of dialogical betweenness that languaging enacts. A linguistic grammar of relationality must be able to show how betweenness is operationalised, guided, and directed by the second-order wordings that selves appropriate and adapt to first-order languaging. In this way, wordings are meshed with first-order body dynamics in ways that help selves to go along with each other in dialogically coordinated languaging activity. I will now consider the buyer's utterance *Can I have three bananas, please?* in order to show more precisely how different aspects of the lexicogrammatical patterning of the utterance constitute an affordance layout that selves make use of in order to manage their first-order languaging activity. In doing so, I will also show how the intrinsic functional organisation of the lexicogrammar of the utterance is inherently organised in terms of anticipatory control and interpersonal coordination.

To show this, I draw on Michael Halliday's (1979, 1985, 1994/1985, 2004/1985, 2014/1985) metafunctional account of the layered organisation of lexicogrammar in terms of a number of diverse yet overlapping functional regions. Rather than a hierarchy of sequential functions, the metafunctions work in heterarchical synergy to yield linguistic actions (utterances) that enable selves to achieve (or try to achieve) a functional fit between self and the selected aspect of the environment that the self focuses on by means of the utterance. As Warren McCulloch, who first formulated the idea of "heterarchy" in his paper "The heterarchy of values determined by the topology of nervous nets" (1945), pointed out, the non-hierarchical circularities in preference that constitute an heterarchical neuronal net, rather than introducing inconsistencies, "actually demonstrate consistency of a higher order than had been dreamed of in our philosophy" (McCulloch, 1945: 93; see also Hodges, 2007a, 2009 and Thibault, 2004a: 249–251, 2012b: 12–15 for further discussion of "heterarchy"). In making use of Halliday's insights, I do not simply re-produce the standard accounts. Instead, I introduce a number of modifications of my own in order better to explain the points raised above.

The metafunctional organisation of the clause is a set of functional affordances that organise a particular pulse of the interaction flow (see Vol. I, chapter 4, section 7) as a locus of intersubjectively coordinated betweenness. Halliday (1985) and Thompson & Couper-Kuhlen (2005: 485), working in the traditions

of systemic-functional linguistics and interactional linguistics, respectively, have emphasised that the clause is a locus of interaction. In the following brief analysis, I show how in different yet complementary and overlapping ways all four metafunctions proposed by Halliday contribute to the setting up of the clause as a locus of interaction. Unlike these linguists, I do not hypostatise the clause as a locus of interaction *per se*. Rather, the clause is a locus of functional constraints and enablements that operates on unfolding phases or pulses of the flow of embodied first-order languaging and interactively constitutes them as loci of interaction (Vol. I, chapter 4, section 7).

The heterarchy of the overlapping and complementary functional regions that Halliday theorised as the four semantic metafunctions can be related to the developmental progression of the knowing levels described in Vol. II, chapter 3, section 2. First, the me-you dyad interactively grounds the interpersonal co-regulation of affect between "me" and "you" (Knowing Level 1). Second, the infant develops the capacities and skills to indicate and therefore to thematise objects and events of interest and to dialogically coordinate with the other member of the dyad in me-object-you interactions and with environmental objects and events by means of deictic gestures and vocalisations (Knowing Levels 2 & 3). Third, the infant, once the transition from proto-languaging to languaging has been achieved (Halliday, 1975; Lock, 1980), has the capacities and skills interactively to constitute semantic topics of interest and stances on these by drawing on the resources of second-order verbal pattern to coordinate with others (Knowing Level 4). Fourth, the child increasingly develops dialogical capacities that require the ability recursively to operate on one's own and other's utterances and to coordinate one's unfolding trajectory and its dependency relations with the trajectories of others (Knowing Level 5).

Knowing Level 1 is the prototype of the interpersonal metafunction. As Halliday (1993: 103) put it, the interpersonal is the "gateway" into all the others (see also Thibault, 2005a, 2005b, 2005c). The interpersonal metafunction provides the gateway into and the frame in which the other metafunctions are embedded. Knowing Levels 2 and 3 are the prototype for the capacity to specify something of interest or concern as the Theme of the clause. The Theme, which in English occurs in clause-initial position, provides the addressee with an anticipatory indication of what follows the Theme in the further interactive development of the Theme in the Rheme of the clause. Knowing Level 4 takes us to the capacity that wordings provide to *semantically* differentiate particular aspects of the currently active experiential topology (Vol. II, chapter 1, sections 3 and 6), to focus on a specific region of the topology so differentiated as the current locus of interest or concern, and to indicate interactively constituted stances on the aspect that is so differentiated. A semantic differentiation is a simplex construct that induces a selective focus on some aspects of the particular locus of concern and its affordance potentials while de-selecting others. Transitivity selections in the clause and experiential lexis perform this function. Finally, the recursivity of operator-argument dependency relations (the logical metafunction) serves recursively to instantiate the dialogical coordination between speakers along their temporally

unfolding and intertwined trajectories. These trajectories establish the contextual dependency relations between utterances in dialogue (and later in written text) and between utterances and aspects of the unfolding situation. I now discuss each of the four metafunctions in more detail in relation to the utterance *Can I have three bananas, please?*

2.1 The interpersonal metafunction: interactive stance taking

The interpersonal metafunction is about the clause as a locus of modalised inter-active stance taking (Thibault, 1992, 1995). As Table 4.1 shows, the buyer's utterance is a yes/no interrogative. The addresser—the buyer—takes up an inter-rogative stance on the proposition in the clause. This means that the addresser interrogates the proposition and at the same time she indicates that she seeks the addressee's stance on it. Again, there is an intersubjective anticipatory dynamic at work. The mood selection organises a dialogical stance at the same time that it seeks to co-orient or to align the addressee's stance with that of the addresser in order to elicit a response that is in accordance with the addresser's desires.

In accordance with Halliday's interpersonal interpretation of Subject, the utter-ance designates the first-person "I" as Subject, meaning that the addresser—the "me"—modally invests in the "I" for the success or failure of the interaction that ensues or is expected to ensue. In the present example, the success or failure of the buyer's utterance will depend on how the greengrocer responds, i.e., on what he says and/or does in response to the buyer's utterance. For example, if he had no bananas in stock, he is likely to respond in ways that block or deny the buyer's utterance, e.g., *I'm sorry we're out of bananas today. Would you like to try some of these nice kiwis?* With regard to the Jamesean dialectic of me-I, the "I" is a momentary (linguistic) enactment and outcome of the flow of the stream of thought that is grounded in and generated by the here-now-me deictic ground of the moment.

The division of the clause into two components—the Mood structure and the Residue—is functional in organising what I call *interactive stance taking*. This two-way division is fundamental to the way languaging works as a means of setting up interactive stances that are both deictically tied to situations at the same time that they operate on them and (seek to) transform them. The Mood component deicti-cally anchors the clause as an interactive event. The Subject indicates something that is locally retrievable from the immediate environment as the locus of this act of

Table 4.1 Analysis of the clause *Can I have three bananas, please*?: Interpersonal metafunction

Can	I	have	three bananas	please
Finite: Modal operator: Capacity	Subject: First person deixis	Predicator	Complement	Adjunct
Mood		Residue: Non-finite		
Interrogative Mood: Irrealis				

interactive stance taking. In this case, it is the speaker, who is indexed by the first-person pronoun *I*. The Residue is therefore grounded as a stance that the speaker provides on the Subject when the particular Residue is attached to the Subject of the clause so that something can be asserted or claimed about it (propositions), or so that an action can be proposed in relation to it (proposals). In this way, the stance that is articulated in the Residue must be contiguous with the Subject that grounds the stance. Whereas the Subject points to the speaker and the Residue points to the Subject, the relationship of contiguity between Subject and Residue points to an interactive stance that the speaker of the utterance enacts in relation to the situation, including the addressee (the greengrocer). This interactive stance in turn points to the speaker's desire to buy bananas and thus the anticipation of the collaborative work that addresser and addressee must perform to bring this off successfully. The hierarchy of deictic/indexical operations described here is functional in constraining and directing the interaction flow in determinate ways.

The grammatical mood of the utterance organises the latter as a locus of (inter) action. The utterance is an action selection whereby the buyer seeks to operate on the situation and the conventions that are apperceived to be in operation and to transform the situation in some way. The mood selection sets up and enacts a values-realising dynamic. In the present example, this may be glossed as follows: The addresser (the buyer) seeks to possess bananas in order to gain access to the values of edibility and nutrition that bananas afford. To do so, the buyer must interact with the affordances of the greengrocer in accordance with the norms of transacting a sales transaction. The affordances of the greengrocer and his shop serve as intermediate affordances that must first be interacted with before the affordances of the bananas can be accessed and interacted with.

Of course, there are other ways of obtaining bananas and accessing their affordances, e.g., picking them off the banana tree in one's garden, stealing them, taking one from the fruit bowl on the dining room table, etc. However, these activities and practices are not operative in the situation in our example. If the buyer were to grab the bananas and run from the shop without paying, the social situation conventions and the intrinsic telos of the activity that was being played out until that moment would be radically altered and a new situation would be constituted. This would be so irrespective of whether the buyer from the outset had the intention or not of buying the bananas.

The "irrealis" status of the utterance is important. At the moment of speaking, the irrealis status of the interrogative utterance indicates that the proposition is not yet grounded in the situation. In terms of the values-realising dynamic that I mentioned above, the irrealis status of the utterance means that the sought-after value is not yet in the possession of the buyer. In other words, there exists a condition of modal disjunction between the Subject of the clause—the first person "I"—and the desired value with which the self (the buyer) who utters and motivates the utterance seeks to be conjoined. The Residue *have three bananas* is the component of the interrogative mood structure that specifies the desired and not-yet-possessed value that the speaker is seeking to be conjoined with.

As Davidse (1997: 420) points out, the Mood component of the clause holds the Residue in its scope and grounds it in an interactive event. The Residue stands outside the Mood component and is scoped by it. The Mood component holds the Residue in its scope and indicates what kind of interactive stance the speaker takes on it. Davidse (1997: 421) argues that the non-finite (ungrounded) character of the Residue means that it serves as a "general template" that can be attached to and scoped by different Mood components in different interactive situations and viewed from different perspectives. For example: *I have three bananas* (Conjunction: Possession), *She wants three bananas* (Disjunction: Non-possession), *You can't have three bananas* (Disjunction: Prohibition), *I won't eat three bananas* (Disjunction: Rejection), *She stole three bananas* (Conjunction: Possession; Illicit), etc.

In the example, the non-finite or not-yet-grounded status of the Residue refers to a desired but not yet grounded situation. This situation may be schematised as follows:

> I DESIRE BUT DON'T HAVE (Modal Disjunction: Non-possession) to be transformed to I HAVE (Modal Conjunction: Possession)

The ecological work of the utterance is the seeking of a particular value: the buyer's possession of the bananas. Heider (1958: 96) points out the connection between possession and *can*. Possession of something conjoins it to one's self and enhances or increases the capacities and powers of the self. What is possessed may be internal to the self, e.g., the ability to swim, or it may be something external that one has acquired, e.g., when one buys a new car. Whatever the case, what is possessed is experienced as a part of or an extension of the self. In the present example, the buyer's utterance presupposes that she possesses the money and therefore is positioned as having the economic capacity to pay for and thus to gain possession of the desired value—the bananas. Possession of the bananas, in turn, gives her the capacity to exploit their affordance potentials, e.g., to eat them, cook them, and so on. The utterance both sets up and anticipates the ecological work involved in realigning the dynamics of the values involved so that the buyer is conjoined with the desired value once the flow of the ecological work that the utterance catalyses is completed.

Finally, the Finite modal operator *can* in the Mood component of the interrogative utterance specifies a modal stance that I gloss as CAPACITY (Thibault, 1993, 2004a: 83–84). The interrogative stance means that the buyer wants the greengrocer to provide his stance on the possibility of the buyer obtaining the desired bananas and of course to act on it. As argued elsewhere (Thibault, 1993, 2004a: 83–84), I consider "possibility" and modal assessments of "possibility" to be aspects of a single unified modal value that I term CAPACITY. If I say, *he may come tomorrow* or *its possible he will come tomorrow*, my assessment of the possibility of his coming tomorrow is an assessment of modal capacity, whether or not he will exercise the capacity to come tomorrow or will be allowed to do so. In our example, the speaker delegates this assessment to the greengrocer. This

implies a dialogical distribution of modal capacities between buyer and greengrocer as follows:

1. The buyer has the social capacity to participate in sales transactions and the economic capacity to pay for the goods-&-services that are transacted;
2. The greengrocer has reciprocal capacities to participate in sales transactions and the capacity to provide the goods-&services that buyers pay for.

2.2 The textual metafunction: setting up an interaction focus by means of Theme-Rheme in the clause

Table 4.2 presents the analysis of the Theme-Rheme structure of the clause.

The Theme in an English interrogative clause includes the Finite verb operator and the Subject. The Theme of the clause in Table 4.2 indicates to the addressee what kind of interaction the addresser is setting up and, in the case of interrogative clauses, what kind of response the addresser is seeking. Again, an anticipatory, intersubjective dynamic is at work. The Theme is the locus of the clause that provides indications to the addressee as to the kind of interaction which is to follow. The Rheme is the further development and specification of this interactive potential. From the greengrocer's perspective, the Theme of the buyer's clause provides a clause initial indication in the form of the interrogative mood selection *Can I* that the buyer is opening up a bid to buy something.

The Theme-Rheme structure of the clause is an extremely simple functional constraint that performs an important function in reducing and focusing the attentional load and the concomitant memory work that is required to sustain successful and focused interaction. The fact that the default position of Theme in the English clause is initial position suggests that Theme-Rheme is optimised for maintaining the position and relevance of a given selection in the flow of interaction. Theme-Rheme is therefore a simplex principle that reduces the focus to a single item that is posited as the Theme against a background of competing possibilities. The Theme performs an indexical function of indicating and thus identifying a single locus of attention in the experiential topology.

The Theme-Rheme structure is therefore a highly automatised aspect of linguistic structure that is posited by the addresser but which enables the addressee rapidly and efficiently to disambiguate the current locus of attention in the interaction flow as indexical preparation for the development of a higher-order symbolic relation that is created when the Rheme is connected to the Theme. The Theme establishes a locus of indexical support for the utterance and, in doing so, it

Table 4.2 Analysis of the clause *Can I have three bananas, please*?: Textual metafunction

Can I	have three bananas	please
Theme	Rheme	

provides the basis for the development of a symbolic relation between this indexical locus of attention and the unfolding situation. Theme is a further development of the capacity to indicate and thus to constrain attention to a given environmental object or event that is established in tertiary intersubjectivity (Vol. II, chapter 3, section 4). Thematisation, therefore, is an indexical constraint that sets up and prepares for the development of a symbolic relation in the Rheme, as shown in the preceding paragraph.

2.3 The caring metafunction: differentiating and attending to the aspect of the experiential topology that the self cares about

Table 4.3 presents the analysis of the caring metafunction.

The transitivity structure of the clause and its specific lexical selections function interactively to differentiate and thus to direct attention to a particular aspect of the local experiential topology that is presupposed to be currently active, or that is activated by the utterance.

Words and wordings are differentiators that indicate or direct attention to a particular aspect of the world. They differentiate by categorising something as "this, not that", e.g., "banana, not apple". In differentiating or partitioning some aspect of the environment in this way, words and wordings provide indications as to what is, from the speaker's point of view, the current locus of attention and action. In this sense, words and wordings provide indications as to what the speaker cares about or takes to be the current matter of concern. They enable a functionally and normatively constrained attunement to a selected aspect of environmental structure and its affordance potentials. This would still be so even if no bananas were physically present in the situation. In that case, the circumstances are likely to be different from those that hold sway in the present example in which bananas are visibly on display in the greengrocer's shop (see Table 4.4 below).

For this reason, I re-name Halliday's experiential metafunction the Caring Function. Experiential differentiators selectively differentiate, as explained above. In doing so, they import value into whatever is differentiated by indicating that something rather than something else is the current focus of attention, concern, interest, and so on. Having possession of three bananas is what the buyer cares about in the present moment of the interaction.

Experiential semantic differentiators are not encoded representations of something external to them. Instead, they differentiate the given aspect of the currently active experiential topology in order to indicate potential ways of interacting with

Table 4.3 Analysis of the clause *Can I have three bananas, please*?: Caring metafunction

I	HAVE	three bananas
Carrier:	Process: Relational:	Attribute:
Possessor	Attribution:	Possessed
	Possession	Value

the specific aspect of the environment that is selectively differentiated by the experiential selections in the utterance. Experiential differentiators are anticipatory and interactive in this sense. They provide indications to the addressee as to where one's attention is to be focused for the purposes of the *future* development of the interaction which is to hand. In doing so, they coordinate a joint attentional focus to what the addresser wants the addressee to orient to in order that the interaction proceeds in the desired way. The word *bananas* does not stand in a relation of encoded correspondence to anything. Instead, it serves to co-orient the two selves to the bananas as that which are selectively differentiated for the purposes of interacting with the bananas (and not something else) in the further development of the interaction.

In Table 4.3, the use of small caps serves to indicate that the experiential structure analysed there is ungrounded with respect to the interactional context at the time of utterance. That is, the experiential meaning—the transitivity structure and the lexical selections shown in Table 4.3—taken in the abstract—shows an ungrounded construal of a not-yet-realised situation in which the "I" will become the possessor of "three bananas". Taken in the abstract, as shown in Table 4.3, there is nothing that indicates the interactional status of this transitivity structure. Is it a claim or an assertion by the speaker? Or a question? A request? How does it integrate with the interactive event that occurs between "me" and "you" that is organised and framed by the interpersonal metafunction (2.1 above).

2.4 The logical metafunction: recursive construction and meta-recursive modification

When we expand the word *care* by means of the morpheme suffix /-er/ to yield a new word *carer*, we have done two things. First, we have constructed another word. I will call this process *recursive construction*. One morpheme is added to another one to yield a new construction. This example follows a productive pattern in English, e.g., *teacher*, *builder*, *runner*, etc. Second, note that in adding the second morpheme to the first, we have modified the meaning of the first morpheme. In addition to recursive construction, there is meta-recursive modification, i.e., one unit operates on another unit and modifies its meaning, as the example shows. I will refer to this as *recursive* (or *meta-recursive*) *modification*: one linguistic unit operates on and modifies the meaning of another unit in some way. The verb process *care* is turned into the agent noun *carer*. Prior constructions serve as the basis for new constructions according to the principle of recursive construction, as outlined above, e.g., *care > carer*.

Recursion operates at all levels of the grammar from morpheme to clause and combinations of clauses (clause complexes). The nominal group *three bananas* shows both recursive construction and meta-recursive modification. The numerative *three* operates on the noun *bananas* to yield a new construction. Moreover, the recursive operation of the numerative *three* in the nominal group *three bananas* enacts a semantic modification of the noun in the process of indicating an interactive stance on it from someone's—the buyer's—point of view.

Brown (2015: 131) suggests that recursion in syntax evolved in relation to depth perception. Rather than the standard engineering view of syntax as combinations of smaller units into larger (see Deacon, 2005: 269–272 for discussion), the recursivity of *three bananas* can be explained as a relation between an interactive ground (*bananas*) that is resolved from the standpoint of the perceiver as a figure (*three*) in relation to the interactively constituted point of view of the self. Against a ground of competing possibilities in the local experiential topology, the nominal group *three bananas* both selectively thematises a specific argument (*bananas*) and indicates an interactive stance (*three*) on it. This stance resolves the disparity of virtual and actual by providing further specification and actualisation of the ground.

The dynamic tension between the stable ground and the dynamic figure is grounded in the interactively constituted relational dynamic between self and the aspect of the current topology that is attended to. The speaker's utterance does not encode three physical bananas among those visible in the local environment. Instead, it expresses a quantification (*three*) of a semantically differentiated locus (*banana*) in the currently active experiential topology that is projected as a stance from the perspective of the buyer. The nominal group indicates to a given degree of specificity and definiteness a partitioning of the local topology as a virtual potentiality that will in the further development of the interaction be actualised as the three physical bananas that she buys. The recursive operation of one level on another—the numerative *three* on the noun *bananas* in our example—is always a simplex operation in which fuzzier or less differentiated relations on lower levels are made clearer and are more differentiated by higher level recursive operations on them.

The same kind of argument applies to the interactive stance taking that is enacted in the interpersonal syntax of the clause. The Mood element (Finite + Subject: *Can I*) establishes the interactive ground in relation to which the Residue (*have three bananas*) functions as the dynamic figure that indicates the speaker's stance on the Subject, or in relation to which the speaker seeks the addressee's stance. In this example, the interrogative clause posits an ungrounded (*irrealis*) situation (the speaker does not yet have the bananas) that anticipates the potential for its actualisation in the further development of the interaction between the buyer and the greengrocer.

2.5 Dependency relations and the dia-logical metafunction: finding one's way and moving along together in languaging

The example under consideration illustrates the more general point that the dialogical coordination of perspectives and experiences in languaging and perhaps its evolutionary precursors serves recursively to instantiate the dialogical coordination between speakers' utterances and other actions in ways that turn loose couplings of perspectives and experiences into tighter couplings with emergent properties of the kind that the example instantiates, i.e., the genre specific characteristics of a sales transaction (Ventola, 2005). Such an

emergence gives rise to trajectories of construction on both the historical-cultural and the individual person scales that open up domain-specific constructive cognitive, semiotic, and other advantages for selves. What is sometimes referred to as conversational turn-taking in discourse-analytical approaches can be understood in this light albeit with caveats that I address below. The buyer's utterance anticipates a response from the greengrocer. The intrinsic functional organisation of the buyer's utterance and its intrinsic telos require and anticipate a response.

The dialogical coordination of perspectives and experiences in talk can be seen in this light. Take the following example:

Buyer: Can I have three bananas, please?
Greengrocer: Removes three bananas from display hook behind him on his left and places them on scales for weighing.

The greengrocer's response is an action that is fully integrated to and in conformity with the intrinsic telos of the buyer's utterance (Vol. II, chapter 2, section 5).

As the following analysis and discussion shows, the intrinsic telos of the unfolding activity that is apperceived by both participants to be in operation serves to motivate their dialogically coordinated languaging. The two participants, albeit from their different points of view and with their partially diverging interests and motivations, seek to co-articulate aspects of their own structure and potential to selected aspects of the structure and potential of the environment in which and in relation to which the activity unfolds.

The greengrocer's response operates on the buyer's utterance both recursively and meta-recursively. Recursively, it conforms to the requirement that the greengrocer respond to the buyer by generating further linguistic or other structure that provides the response that the buyer seeks. Meta-recursively, the greengrocer's response is a higher-order operator that takes the buyer's utterance as its argument and operates on it in ways that transform and extend the understandings that the buyer and the greengrocer have of the situation. The buyer's interrogative utterance invites the greengrocer to provide his interactive stance on the buyer's utterance, resulting in the coordination of the different perspectives and intentions of the two selves. The combinatorial constraints on operator-argument relations therefore apply between selves in talk. These emergent dependency relations constrain the organisation of the unfolding activity loosely or tightly depending on the genre and situation conventions that are evoked and sustained.

As Halliday showed in considerable detail and with unparalleled analytical subtlety, there are numerous kinds of dependency relations between clauses at the level "above" the clause that Halliday called the clause complex (see Halliday, 2004/1985: chap. 7; 2014/1985: chap. 7). Some kinds of utterances (or other modalities of action) differentiate the contextual conditions for others to occur (Thibault & Van Leeuwen, 1996). This is certainly the case in the example. In this sense, the greengrocer's action response of taking the bananas from the hook and weighing them is contextually dependent upon and makes sense in relation to the contextual conditions that the buyer's utterance sets up in the local situation.

The buyer's utterance is a conventional operator on the situation that specifies and differentiates the conditions for other operators to occur.

The buyer's utterance is a conventional operator of the kind I gloss as Purchase Bid. Her utterance is of course embedded in and is a constitutive functioning component of an unfolding social activity or practice that her utterance in conjunction with other aspects of the situation initiates: she enters the shop, she approaches the counter and faces the greengrocer, she has a shopping list in her hand, she and the greengrocer are differentially positioned on opposite sides of the counter, fruit and vegetables are abundantly displayed, etc. Her opening utterance indicates some aspect of an experiential topology. In doing so, it therefore presupposes that the contextual conditions indicated by all of these (and other) non-linguistic aspects of the situation that currently hold are necessary for her utterance to function in its context. That is, the operator type of which her opening utterance is an instantiation is itself dependent on these conditions for it to function appropriately and successfully.

Moreover, for the utterance to operate successfully, it must do so in relation to the particular configuration of contextual conditions that it is dependent on. A bare bones transcription that strips the activity down to an orthographic rendering of the lexicogrammar of the respective sequentially arranged "moves" or "turns" of the participants will miss much or even all of these conditions. In the present example, a multimodal sensorium of haptic, olfactory, spatial, visual, and other perceptual information will provide input to the apperception of these contextual conditions. All of these conditions make up aspects of the currently active experiential topology.

As I showed above, the buyer's utterance selectively activates a differential focus on a particular location in that topology—a banana location, not, for example, an apple or a kiwi one. Utterances are operators on situations. To be successful, the particular aspect of the topology that is differentiated by the experiential semantics of the utterance must be recoverable from the currently active locus of attention in the topology. This does not necessarily or always mean that the currently active locus is physically present, though this is the case in the example. I may tell you that I plan to buy bananas tomorrow because I am out of them. No bananas are physically present, but in the contextual conditions that hold you and I are able to recover a contextual location for them in the currently active part of the topology that is presupposed to be in operation. The bananas in this case are virtually evoked as part of a future plan or intention. In both cases (either physical or virtual presence of bananas), the intrinsic functional constraints of utterance selections (and other forms of action) are non-arbitrarily necessary for the appropriate and correct functioning of language qua action system in conjunction with other modalities of action.

The buyer's utterance and the greengrocer's response mutually presuppose each other. Moreover, the dependency relations that are mutually presupposed forge and intertwine the trajectories of the two selves as they go along together in a co-responsive relation of "correspondence" (Vol. II, chapter 2, section 4). In their languaging activity, selves move along trajectories in both actual and virtual environments or some blend of these. Languaging activity is a time-extended activity or trajectory consisting of a succession of recursively nested intervals of

Nows. Each Now is a temporal interval that functions to update the spatiotemporal self-location of the "me" in relation to its environment.

Languaging is therefore centred on the here-now-me deictic field and its continuous updating as the self navigates its way through actual and virtual space-time. This self-locating frame of reference is continuously generated, maintained, and adjusted along its trajectory by (1) the pickup of environmental (exteroceptive) information; and (2) proprioceptive information about the self's own whole-body sense-making and about the internal milieu that provide information via continuous feedback loops about the self's spatio-temporal orientation in its environment. In this way, selves-in-languaging are able to keep track of and to monitor their own self-location in relation to their trajectories in both actual and virtual space-time and the blends of these that selves navigate in and through their languaging activity.

Table 4.4 displays a sample of the unfolding phases of the intertwined trajectories of the two selves—buyer and greengrocer—that are forged by the dependency

Table 4.4 Dependency relations between actions and utterances in the intertwined trajectories of buyer and greengrocer; B = Buyer; G= Greengrocer; italics indicate a linguistic action (utterance); normal font indicates non-linguistic action; [Source: *Off to the Green Grocer's*, produced by Early Vision Ltd., UK; https://www.you tube.com/watch?v=qG-MOZM59to]. See Appendix I for the transcription key to this table.

relations between their utterances and other actions in a fragment of the episode referred to above.

3. The sense-making body: embodied co-attention and co-responsivity

Dialogical coordination between selves is based on both feedback from others (present and absent, actual and virtual) and on the capacity to anticipate potential future responses from them. In dialogue, feedback enables the participants to mutually regulate each other's interactivity along proprioceptive, exteroceptive, and alteroceptive dimensions of attention and awareness (Vol. II, chapter 3, section 4). The overall episode referred to in Table 4.4 consists of three subphases. The first of these is focused on the purchase of the bananas that I discussed above, the second is focused on the purchase of oranges, and the third on the purchase of apples. For reasons of space, I will confine my remarks to the "purchase of apples" subphase. Table 4.4 refers to the "apples" subphase. This subphase consists of three postural shifts, as discussed below.

3.1 Posture 1

Having placed the oranges in her shopping basket, which is on the floor, (Row 1, Table 4.4), the buyer stands up and faces the greengrocer while saying "and some apples … which are nicest apples?" The buyer's utterance "and some apples" serves to enact the shift into the "apple purchase" phase. The additive meaning of the paratactic conjunction "and" links it to the previous phase, which was focused on the bananas, at the same time that it moves the trajectory into a new phase, focused on the purchase of apples. Her interrogative utterance, "which are nicest apples?" is addressed to the greengrocer. The positive polarity and the declarative mood of the greengrocer's reply, "Daydream are the nicest" take up and maintain the semantic posture of the buyer and provide the information she requires. She shifts her gaze in the direction of the apples behind her in synchrony with the word *daydream* in the greengrocer's utterance. Her gaze shift initiates a change of focus from the alteroceptive focus on the greengrocer to a new, exteroceptive focus on the apples that is continued in Posture 2.

3.2 Posture 2

The buyer's declarative utterance, said with rising intonation (*these ones are the nicest?*), in conjunction with her body turn and hand point to indicate the apples behind her, enact a change in posture and orientation from the alteroceptive one above to an exteroceptive focus on the apples in the display rack on the shelf behind her. This composite action functions to seek confirmation of the buyer's declarative utterance. The positive polarity of the greengrocer's "Yes" in his response confirms the proposition: The semantic posture of the buyer is thus maintained. The positive polarity of the greengrocer's response is a polarity

operator which responds to and retroactively operates on the buyer's utterance in order to maintain and confirm, not change, its semantic posture.

3.3 Posture 3

The buyer now leans towards the rack of apples and takes one in her hand while saying "I'll have four apples". This action is a declaration of an intention that flows through and modulates the subsequent development of the action trajectory. It is also the enactment of an intended action to bring about the desired modal conjunction with the four apples specified in her utterance. Her declarative utterance synchronises with her grasping the first apple in her hand and taking it from the rack. The irrealis status of the ungrounded proposition in her utterance both anticipates the not-yet-realised purchase of the specified quantity (four) of apples and synchronises with her selecting the first of the four. She then shifts gaze and body orientation to an alteroceptive focus on the greengrocer while uttering the interrogative utterance "do you need to see those?" in order to ascertain whether the greengrocer needs to weigh them. The greengrocer's declarative response "we do for weighing" provides the sought for confirmation. His utterance prompts the buyer to turn and move towards the greengrocer while handing him the first apple while uttering "one". The buyer then turns back to the apples, takes one in her hand while saying "that's two", sustaining her grasp and briefly feeling them with her hands. She then turns to the rack again and takes two more apples in her hand while saying "that's three and four". She turns back to the greengrocer and hands him the final two apples. On taking them in his left hand, he responds "thank you very much" as his gaze shifts downwards from the prior alteroceptive focus on the buyer to an exteroceptive focus on the four apples that the greegrocer now holds in both hands as he prepares to place them on the scales for weighing.

Further remarks on the posture analysis

Selves are the emergent outcomes of the relational matrices within which they develop and individuate together with the human and non-human others of many different kinds that populate the human ecology. Selves are the emergent outcomes of the many ways in which people go along with each other and shape each other's living of life. People are enfolded into each other's dynamics like intertwined melodies (Vol. I, chapter 3) in relations of community and reciprocity that can at times be smooth and harmonious and at other times jagged and dissonant. Conversation-analytical and discourse-analytical traditions have not freed themselves from the idea that discrete individuals take turns or make and respond to moves in unfolding sequential arrangements of turns or moves. On this view, discrete individuals "interact" with each other and in so doing they seek to influence each other or to communicate with each other.

The idea of correspondence and its concomitant of co-responsivity (Vol. II, chapter 2, section 4) show that people participate in a continual process of

attending to the persons and the other beings with which they are related in the life processes in which they move along together. For example, Ingold discusses walking as an attentional movement—a going along with—in precisely this sense:

> Walking calls for the pedestrian's continual responsiveness to the terrain, the path, and the elements. To respond, he must attend to these things as he goes along, joining or participating with them in his own movements. This is what it means to listen, watch, and feel. If attention, in going for a walk, interrupts or cuts across movement so as to establish a transverse relation between mind and world (the separation of which is assumed from the outset), in walking it is an animate movement in itself. The key quality that makes a movement attentional lies in its resonance with the movements of the things to which it attends – in its going along with them. Attention, in this sense, is longitudinal.
>
> (Ingold, 2016: 19)

Human languaging is no exception to the general principles set out by Ingold in the above quotation. Languaging is longitudinal. This does not mean that languaging is the same as walking! However, both walking and languaging are ways of moving around in and attending to the environment of the self. Languaging requires the participants to continually attend to and to respond to each other and to the other aspects of the situation as it unfolds in time. Languaging requires attentive speakers and listeners who attend to each other's vocalisations, facial expressions, direction of gaze, feelings, their relations to their surrounds, the topic and so on. In attending to the other's movements, languaging builds upon bodily skills acquired and honed through imitation—skills that enable one person to imaginatively "inhabit" another person's body and thus to share their bodily experiences and perspectives (McGilchrist, 2012/2009: 122). In their languaging, persons attune (or try to attune) to each other and to aspects of their worlds, not always successfully, of course. In doing so, languaging enables participants to take part in dialogically coordinated ways of selectively attending to others and to aspects of their worlds.

Languaging, like walking, is grounded in bodily movement. This is not to say that it is reducible to movement *per se*. It is our movement-based resonance with the movement of the affordances of the world that we move along with that enables us to extend ourselves beyond the skin-bound boundaries of the organism. In going along with others, we engage in co-orchestrated patterns of movement that are woven together into more complex figurations (Elias, 2000/1939). Languaging very likely has its origins in movement and music. Movement and music go closely together: all forms of skilled bodily movement become automatised as kinetic melodies that serve to bond people into social groups (Freeman, 1995, 2000c; Stuart & Thibault, 2015; Vol. I, chapter 3) that are based on affective ties and the forms of relationality that arise from these. The movement and musical bases of languaging are important though they are to some extent dampened or inhibited by verbal pattern to varying degrees (Perlovsky, 2009: 520), depending

on circumstances, convention, and social situation. The origins of languaging in the skilled performance of bodily movement and melody shows that languaging is deeply affective and tied up with social cooperation and emotional bonding. Through socially patterned movement and melody, humans participate with others in forms of enkinaesthesia (Stuart, 2010) that bond them in relations of community and reciprocity that are essentially affective and dialogical in character (Vol. I, chapter 3, section 10).

Seen in this way, languaging does not presuppose formal linguistic units as the building blocks of language. Nor does it suppose such units to be the starting point of analysis though without denying their descriptive utility. Such units, as I pointed out above, are second-order meta-linguistic rationalisations of some dimensions of the dynamics of first-order languaging. Without going into the question as to how these units have come to take on the reified existence that they have (see Harris, 1980, 1981; Linell, 2011/2005), it is however important to point out that languaging is regulated by what the folk-theories hypostasise as its verbal aspect though not in the ways that these hypostatisations suppose. Languaging is an embodied, multimodal action system that is entrained to and constrained by second-order cultural dynamics. Verbal pattern is not a semiotic mode that is combined with other modes, but the phenomenological manifestation in first-order languaging activity of higher-scalar cultural attractors. Verbal pattern thus brings first-order languaging under semantic control. However, first-order languaging is not upwardly reducible to second-order verbal pattern because, as I have argued in this volume and elsewhere (Thibault, 2011a, 2011b, 2011c, 2014a, 2014b, 2015), languaging develops in relation to and is an extension of intersubjective action-perception rather than something qualitatively different that sits above action-perception. Languaging is therefore always grounded in and presupposes embodied action-perception without which it could not function at all. The grounding of Subject and Theme by their deictic relation of contiguity to the speaker (sections 2.1 & 2.2) are concrete illustrations of this general observation. Aside from having no formal autonomy, this means that languaging necessarily depends upon, is grounded in, and is necessarily constrained by action-perception. Bodily expression is not the material means of "expressing" or "realising" abstract content or meaning. Bodily expression is intrinsically meaningful.

For example, a phonetic gesture is an embodied mode of action in which the resources of the sense-making body are synergistically recruited and coordinated along one or more vectors of attention and control that extend from self to some aspect of the environment that is selectively focused on and differentiated. In the first instance, this vector of attention and selection serves deictically to anchor a bodily action to a self and its viewpoints at the same time that it extends the self into its environment in the same manner that a deictic act of finger pointing does (Vol. II, chapter 2, section 1). In Row 2, Table 4.4 of the analysis in section 2.4 above, a good example of this general phenomenon is the way in which the buyer points to the apples behind her with her left hand while her gaze is directed to the greengrocer standing behind his counter when she utters "these ones are nicest?". Her utterance is embedded in a whole-body posture-movement system

in which different components of that system simultaneously orient to different foci of attention (see Scheflen & Ashcraft, 1976). The buyer's hand points to the apples on the display rack beyond her while her face and gaze simultaneously orient to the greengrocer in front of her. The whole-body posture-movement system is interactively constituted as a deictic system of coordination—as a signpost in Bühler's (2011/1934: 107–108) suggestive analogy—in which the utterance is embedded and without which the utterance would not make sense.

The two foci of attention—the apples and the greengrocer—show how there are direct relationships between aspects of bodily behaviour and the environmental affordances they couple with. In ways that are vaguely analogous to the linguistic structure of her utterance, the body system described above posits the apples as Subject in synergy with the nominal group *these ones* in the utterance. The hand movement vector is a vague (less specified) gestural analogue of the Finite element that ties the Subject (the apples) to the interactive event that coordinates the attention of the buyer and the greengrocer with respect to the apples. The buyer's body is then the pivot that connects the focus on the apples behind her that she indicates with the hand point to the concurrent focus on the greengrocer in front of her to whom she directs her gaze. The apples are interactively grounded as a locus of attention and action at the same time that this locus of attention and action is coordinated with the concurrent focus on the greengrocer as addressee. The body acts out this locus of attention and action in ways that are a vague, less specified analogue of the buyer's utterance. Like the Subject-Finite relation in the clause, the bodily action described here both enacts and grounds the dialogically coordinated relation of "me" and "you" between the buyer and the greengrocer at the same time that this relation frames and actualises their joint attending to the apples. The utterance grows out of and is a further specification of the deictic field that is established by these body-environment coordinates (Vol. I1, chapter 4, section 4). The acoustic dimension of the utterance is itself a vector of attention and movement that the two participants go along with in conjunction with the other body movements and environmental features described here.

The buyer and the greengrocer engage in bodily-based forms of intersubjective co-action that are scaffolded by mimetic capacities (Hutto, 2008: 167, Zlatev, 2008; Thibault, 2011a). Mimetic acts such as making the body into a signpost constitute and enact intersubjective co-action based on joint perception-action such that a shared world is created in imagination. The buyer enacts a shared "mimetic schema" (Zlatev, 2008) that serves as the basis of the co-action between herself and the greengrocer. Body parts and environmental features function as intersubjective anchors since they afford non-arbitrary connections to a range of activities and modes of display that are the shifting focus of joint attention. These mimetic activities constitute a means of creating objects of shared attention even in the absence of the given event or object though that is not the case in the example. Mimetic activities have the capacity to invoke absent objects and events on the basis of potentially shareable networks of sensory-kinetic experiences that are grounded in common bodily experiences and body-environment co-articulations.

They therefore have the rudiments of the property of incipience that is central to how languaging functions.

For example, I might want you to help me lift a heavy object. Instead of asking you to do so, I mime the action I want you to help me perform. My miming the action in question is a form of abbreviated rehearsal of it that indicates the main features of the action I want you to help me perform though without undertaking a full performance. The rehearsed action—the mime—is a reduced or abbreviated performance that prepares or readies one for a possible full performance (Melser, 2009). It is said to be abbreviated or reduced because the mimed action is more like a compressed summary of a full performance that only shows the essential properties of the action. Languaging is an action system that has refined this capacity for abbreviation and incipience to a much more highly articulated extent due to the semantic information that is compressed in the typological-categorial possibility spaces of lexicogrammar. If I ask you to help me carry the heavy object, my utterance co-articulates a compressed semantic possibility space that may or may not be unpacked and actualised into an actual performance of the desired action on some future occasion. Categories of action that were first learned implicitly in acting them out (helping someone to carry a heavy object) are compressed in the transitivity structure of the clause as incipient actions (*Could you give me a hand to carry the bed upstairs?*) that may or may not be actualised in a future full performance of the action.

Summing up: A posture is the maintenance of some body state with respect to some feature of the environment (Reed, 1996: 84). A movement is a controlled transformation from one posture to another. As Reed points out, the ability to maintain a particular body state with respect to some environmental feature is the most basic form of regulation of organism-environment relations. Bühler's analogy of the signpost is suggestive because it shows that deictic pointing with the arm-hand-eye system is the maintenance of a body state—a posture—in relation to some feature of the environment that is indicated by the point.

Noble (1993: 71) argues that the capacity for pointing emerges from the prior capacity for one-handed aimed throwing. Aimed throwing, by definition, involves the selection of a distal target at which the throw (of a stone, a spear, etc.) is aimed. Aimed throwing is a form of skilful articulated action involving action coordination of the hand-arm-eye-stone-target system. It is one way in which the agent can interactively couple with the selected environmental feature. The activity of aimed throwing has sensory-kinetic properties that can be explored, differentiated, and hence known. The idea of the knowing levels discussed above is again relevant (see section 2; Vol. II, chapter 3, section 2). The first level system—aimed throwing—yields properties that can be abstracted as a second level knowing system when the arm-hand-eye system performs the action of aiming without throwing, i.e., indicating or pointing at the designated environmental feature.

This second-level system in turn yields properties that can be interactively explored, discovered, differentiated, and abstracted by a third level knowing system that explores and differentiates the second knowing level property of pointing

to indicate some environmental feature or series of such features that are encountered over some interval of time. Noble further points out that pointing can become sustained pointing or tracking over a pathway. As one moves along the pathway with another person, one can successively point to various features that come into view. The recursivity of the iterated operation of successive pointing serves to indicate a pathway to be followed or moved along. A third level of knowing therefore differentiates the property of indicating an environmental feature with one's arm-hand that is a feature of the second knowing level. This property can be interactively explored and reorganised as time-extended iterated pointing along a pathway that agents move along together.

This third knowing level thus integrates the directionality of pointing and the requirement that the observer follows and tracks the direction of the pointer's point on the second level to the new third-level principle of indicating and following the direction of movement along a pathway together with the environmental features that are perceived to come into view on that pathway as one moves along it. Noble (1993: 71) suggests that what he calls "follow pointing" could serve to indicate the direction of travel of animals along a pathway to hunters who have an interest in tracking the direction of the animal's movements. In moving along the pathway, the hunters recursively indicate to each other the movements of their prey as they follow their prey along the same pathway.

This third level of knowing gives rise to features that in turn can be interactively explored, differentiated, reflected on, and abstracted to a fourth knowing level. For example, sensory-kinetic features of the movements of the animal that is being tracked could be interactively explored, differentiated, and abstracted to a fourth knowing level. This fourth knowing level could focus on, as Noble (1993: 91) suggests, the type of animal as characterised, for example, by its distinctive patterns of movement, its mode of walking, and so on. Arm-hand movements are used mimetically to rehearse in abbreviated form the movements of the animal that is being tracked.

The fourth knowing level thus integrates to its principles the action targeting, the pointing, and the tracking of movement of the previous levels. It adds to these principles the mimetic capacity for creating compressed possibility spaces that serve to indicate: (1) categories of environmental features (e.g., the type of animal and its distinctive gait) even when the feature is not directly perceived; and (2) the specification of a course of action or a movement pathway to follow in relation to the movement along the pathway of the indicated environmental feature. Moreover, the modulation of the arm-hand action in terms of speed, intensity, and so on would additionally serve to provide indications of affective stances to be taken in relation to both (1) and (2) above. Languaging builds on and integrates to its own principles of organisation these more basic modes of mimetic and other action. Languaging and the pathways—actual and virtual—that it lays down, I argue, is a form of wayfinding which we humans have evolved through our active participation in the life process in order to move along with others and to find our way in the human ecology.

4. The modulation of first-order languaging by second-order linguistic pattern

People learn in time to control bodily dynamics qua action output, including vocalising, in ways that control perceptual and other input. Initially, the pre-linguistic infant has little control over this input, sending only loosely coordinated neural commands to the muscles. In time, he or she learns to co-articulate certain commands with specific responses in the world, especially responses from other persons. This co-articulation of action and response is established on the basis of the consistencies that are built up between the bodily action (signifier) and the perceptual or other input that is generated by this action. The "signifier" is a bodily act that extends into and explores the environment. In this sense, it is an action output. This exploratory activity seeks and receives responses from the environment that provide input to the self. In time, the infant can elicit anticipated and desired responses in others by calling up the normatively appropriate bodily action or signifier (e.g., proto-imperatives). The infant learns to control her vocal and other bodily actions in concert with others (and later solo). The infant establishes with others a consensual recursive domain of consistent sensory-kinetic relationships grounded in his or her embodied interactivity with the world.

These sensory-kinetic relationships bias action and perception in value-weighted ways that lead, in the course of development, to higher-order semantic control when the sensory-kinetic dynamics of vocal tract and related bodily activity are modulated by second-order linguistic pattern. The child's first signifiers are more and more entrained to population scale dynamics such as lexicogrammatical pattern (Halliday, 1975). Rather than saying that the signifier is "associated" with a signified, or that a form expresses a meaning, as in the standard biplanar accounts of the sign, lexicogrammar is a cultural shaping of the signifier qua mode of action so that it is functionally constrained to seek and to orient to consistent and reliable anticipations of the input that the action (the signifier) seeks to elicit in the domains in which it operates. Seen in this way, wordings are affordance layouts that make available semantic information about how to go on and how to co-articulate the structures and potentials of the self to the structures and potentials of the environment. The achieving of semantic control of vocal tract and other gestural activity means that the gesture can serve, for example, to get others to fulfil one's needs and wants. This achievement gives rise to co-agency. The higher-order semantic control that is achieved in enacting the gesture just is, from the child's point of view, the "meaning" of the gesture. The gesture gets ecological work done in this sense.

By the same token, the child learner also discovers that others in the same cultural milieu interpret her gestures on the basis of their beliefs, including beliefs concerning behavioural regularities or patterns that are shared and to which the participants are entrained. Moreover, the child discovers not only that such regularities—e.g., a syllabic pattern—can be harnessed to control her interactions with others, but also that the use of such patterns is rewarded with positive affect from others (Vol. I, chapter 3, sections 8–9). Initially, the child's gestures are directed

to obtaining desirable input and avoiding undesirable input. The seeking of desirable input and the avoiding of undesirable input means that the behaviour is motivated—at first by what Trevarthen (1993) and Cowley (2008) have discussed as the infant's intrinsic motivations. However, the child's discovery that others use certain regular and preferred action patterns in order to manage their interactions with each other gives him or her the *cultural* motivation to align his own behaviour with the actions of others in dialogically coordinated languaging.

In this way, the child learns that the regularities of languaging serve as normative standards which people aim for and which they use as a reference point for evaluating their own and others' actions, in the process learning how the syllabic or other pattern is grounded in a cultural matrix of dialogically coordinated bodily activity. It is not a matter of the syllabic or other pattern encoding a meaning, but of how the pattern is integrated with and co-articulates with other aspects of interactional events on the basis of local cultural beliefs and values that give rise to increasingly conventionalised patterns that serve to solve problems of coordination between individuals in their social encounters with each other. The increasing ability to reify and therefore to lift out of the flow of activity some patterns (e.g., the syllabic patterns the child later learns to call "words") and to use these patterns to control events across an increasing diversity of place and time scales may foster the illusion that these patterns are arbitrary instantiations of symbolic tokens from a language-code. But this view loses sight of the bigger picture.

Languaging is not a system of symbols or abstract verbal patterns that we "use". The idea that "language" is a symbol system derives from the social and cultural institutions of second-order language (Love, 1990; Thibault, 2011a) imposed on us by literacy, writing, and other pedagogical practices. Through our participation in literacy practices we learn to have conventional beliefs about the reified entities we call symbols to which meanings are assigned. But this is not how languaging works. Rather, the social objects we learn to call "words" and in which we invest so much trust, put constraints on what we do and, developmentally speaking, what we become as persons (Cowley, 2008). Some of these constraints are "symbolic" not because of formal syntactic operations but because of empirical constraints deriving from the ways we learn to manipulate wordings in first-order languaging in order normatively to affect the flow of experience.

Languaging develops in the infant in the first instance on account of interpersonal constraints that arise from the self-organising processes whereby persons align to cultural norms in the process of becoming selves. The issue then is not how one uses the symbol system of a given language when languaging with others, but of how selves-in-interaction align to and are constrained by norms that shape the interaction itself and its regularities. In this respect, Halliday showed that the syntactic patterning of the clause in terms of the relationship between the Mood element, consisting of Subject and Finite, and the Residue, consisting of Predicator, Complement(s), and Adjunct(s), is shaped above all by the constraints of *interpersonal* deixis that serve to ground the utterance as an interactive event or a structure of (inter)action (see section 2.1). The syntactic structure of the utterance is a structure of action.

In traditional accounts, syntax is seen as the rules of combination of the parts of a linguistic structure that stand in some kind of encoded correspondence relation to events, objects, persons, properties, and relations in the world. When seen as a structure of action, the syntactic structure of an utterance is seen as intrinsic functional constraints on the structure of that action that provide indications as to how the action is to be interpreted and what kind of action it is. However, the interpretation of an action also always depends on the relevant contextual background and the non-linguistic experiential topology that is presupposed to be in operation or that is activated by the utterance. Utterances *qua* actions are operations on these contextual backgrounds and the experiential topologies that they activate. They do not stand in encoded relations of correspondence to them. Moreover, in much vaguer and less specified ways, we also see how the mimetic capacities of the body in relation to its environment already come under similar kinds of constraints. These constraints serve to ground bodily actions such as the hand indicating the apples as the self seeks to achieve co-articulated functional fits with its environment.

Words and wordings are conventional regularities embedded in a matrix of socio-cultural practices and macrosocial conventions that bring under semantic control the ecological work that selves enact in their dialogically coordinated first-order languaging. In gaining control of these regularities, the self attains forms of higher-order semantic control by exploiting action—e.g., vocalising certain culturally valued syllabic patterns—that give rise to desirable inputs. The conventionalised syllabic patterns that we come to believe in and trust as "words" are objectified linguistic affordances—cf. Durkheim's (1982/1895) "social facts"—that can be reliably exploited so as to achieve desirable output-to-input transformations in dialogically coordinated languaging between selves. The patterns are not arbitrary symbol tokens. Instead, they are non-arbitrarily grounded in sensory-kinetic experience (Vol. II, chapter 1, section 1) because of the role they play in constraining, enabling, and guiding our embodied first-order languaging with others and with the affordances of the environment.

Seen in this way, we can better understand the buyer's utterance, "these ones are the nicest?". Its embedding in the deictic frame established by the bodily activities that I analysed above indicates that it is an action that seeks the greengrocer's corroborative evaluative stance. The declarative mood and the rising (question) intonation of the utterance seek the greengrocer's evaluative stance as a way of validating that the buyer has correctly understood which apples are the nicest ones. Bakhtin pointed out: "Understanding cannot be separated from evaluation: they are simultaneous and constitute a unified integral act" (Bakhtin, 1986b: 142). The buyer seeks the greengrocer's stance in order to bring about the functional closure that is required to constitute what Bakhtin called "a unified integral act".

5. The co-articulation of self, utterance, and environment

As we saw in the example that I analysed in section 2, and in other examples analysed in previous chapters, languaging is always constrained by, is embedded

in, and is a constitutive functioning component process in larger ecological processes. The deictic grounding of utterances in the embodied perspectives of selves that orthodox linguistics essentially severs "language" from is absolutely crucial to the functioning of languaging as well as to its theoretical explanation. Only then can we see more clearly that utterances are interactively constituted stances of selves that serve to operate on aspects of their situations.

As the two participants in the above example move along their intertwined trajectories they, in effect, go along with each other. We see the unfolding of a relational dynamic in which people are co-engaged as they go about the processes of living together, of getting things done together, of shaping themselves and others, and of enfolding into each other's dynamics. A person is not an undivided entity in the way the etymology of the term 'individual" suggests. To be a person with selfhood is to be in relations of continual movement, growth and becoming with the other selves and with the other non-human agents and agencies with which we are dynamically enfolded in relations of community and reciprocity in the human ecology.

Persons, their utterances, body movements, objects, and much else, are co-articulated as the buyer and the greengrocer, in the episode analysed above, explore the potentialities for achieving a functional co-articulated fit or congruence between themselves and between themselves and selectively differentiated aspects of their environment. The awareness of the achievement of this fit gives rise to an experience of a functional "meaning" for the self, seen as a specific kind of ecological experience that is catalysed by languaging. Moreover, dialogically coordinated languaging between selves and between selves and aspects of their environments shows that the effort after meaning and value in the process of striving for these fits involves a fluctuating heterarchy of variable and often simultaneous foci—proprioceptive, exteroceptive, and alteroceptive.

In my exploration in section 2 above of Michael Halliday's metafunctional account of lexicogrammar, I have sought to show how selves, utterances and other modes of action, and features of the external environment must have intrinsic structure in order that a co-articulated fit between these three factors is possible. The greengrocer's shop is an environment that is designed in view of the activities and practices that take place in that environment. As I pointed out above, the shop is a richly multimodal environment of a certain kind in which certain kinds of activities are expected and are considered appropriate (see also Thibault, 2008: 318–320). Like the door handle discussed in Vol. II, chapter 2, section 4, the meaning of the environment of the shop is to be found in the relations of co-articulation between selves, their actions, and the affordances of that environment. The intersubjective character of perception discussed in Vol. II, chapter 1 is important here.

The type of environment—greengrocer's shop—and the kinds of activities and practices that normatively take place in it are perceivable in the affordance layouts of that environment. The displayed fruit "demands" to be looked at, bought, eaten, and so on. The counter differentially positions the greengrocer and the buyer with respect to their roles and associated activities in relation to each

other. The displayed fruit affords its inspection by the customer before deciding to buy. The floor space and the placement of the counter and the racks of displayed fruit and vegetables are particular syntagmatic arrangements that enable some kinds of action and some kinds of co-articulations and block others. And so on. In accordance with Gibson's (1986/1979) theory of affordances, these meanings are directly perceived provided of course that one is in possession of the requisite capacities and skills for perceiving them. Likewise, some kinds of utterances and other forms of action are congruent with these arrangements while others are not.

From the point of view of languaging, language learning, and learning more generally, we can refer back to a point made by Leo van Lier (2004a, 2004b) that I discussed earlier (see Vol. II, chapter 2, section 3). We have seen that the meaning of the environment of the greengrocer's shop emerges in the discovery of the possibilities for the co-articulation of selves, their actions, and selected features of the environment. The structure of the environment has the capacity to affect selves and to elicit from them languaging and other actions that fit with the environment. As the analysis above shows, in going along with each other and with selected aspects of the environment as they move along their interwoven trajectories, the affordance layouts of the environment have the capacity to affect selves and thus to bring forth multimodal languaging activity that serves to achieve a co-articulated fit between self and environment in the process of performing the ecological work that the environment calls forth.

The result is a co-articulated self-action/utterance-environment fit in which the person becomes a functional part of that environment. It is in this way that selves emerge in the course of their developmental progression through the knowing levels discussed in Vol. II, chapter 3. A self is not an entity, but a process of becoming. Selves emerge as they learn to co-articulate themselves with their worlds and, in doing so, to contribute to the recursive self-maintenance and recursive self-individuation not only of one's self, but also of the world in which we go along with others of all kinds and seek to achieve functional fits with them in the living of our lives.

A genre or discourse-analytical description of the macrostructural stages of a sales transaction that is focused on reified discourse patterns such as the alternating moves or turns of buyer and greengrocer cannot adequately describe or explain the nature of these co-articulated functional fits. A description that confines itself to abstract patterns of discourse whether verbal or "multimodal" does not show how the environment gives rise to and is integrated with possibilities of action and languaging. A grammar of relationality is a first step towards an adequate account of the co-articulated functional fits between selves, their actions, and the affordance layouts of their environments. Theories of languaging therefore need to understand how in the process of becoming a self and of exercising selfhood in many different situations, one is actively contributing to the structure of self-action/utterance-environment relations. It is in this way that the self learns to co-articulate its own structures and potentialities with the structures and potentialities of its world.

6. Languaging and the catalysis of unified organism-environment relations

In the tradition of ecological psychology founded by Gibson (1977, 1983/1966, 1986/1979), Verbrugge (1977, 1980, 1985) argued that utterances are catalysts that have the functional capacity either to activate or to inhibit flows of affect, awareness, cognition, action, and so on, in both self and others. In the non-equilibrium chemical processes known as autocatalysis, a catalyst is a molecule that has the capacity to initiate some other chemical reaction without however the catalyst being altered (Deacon, 2011: 572). The catalyst, as Deacon explains, introduces a thermodynamic bias into the reaction that it initiates "as a consequence of its shape with respect to other molecules" (Deacon, 2011: 572). The functional shape of utterances likewise initiates a normative value bias into flows of affect, action, awareness, and cognition without the utterance being altered (section 2 above). According to Verbrugge (1985: 184), utterances are catalysts that serve to activate, constrain, and guide a whole range of both overt and covert actions and other affective and cognitive processes (see also Thibault, 2011b, 2011c for an extended discussion of languaging as catalytic action). Verbrugge's account accords with more recent dynamical systems accounts of catalysis in living systems.

Biologist of cognition Christopher Davia has proposed a dynamical systems account of catalysis as fundamental to how living systems function in relation to their environments on many different fractal scales. Davia's (2006) hypothesis is that at every scale, "living processes are processes of catalysis, and that all biological processes mediate transitions in their environments, employing the same mechanisms as enzymes" (2006: 255). Enzymes are the prototypical catalysts: autocatalytic reactions occur when an enzyme catalyses a chemical reaction without itself being changed (Davia 2006: 261). Following the theory of autopoesis developed by biologists Maturana and Varela (1980, 1987), Davia has questioned the view that cognition "represents" an independent world "out there" that is external to the organism. The theory of autopoesis proposes instead that organisms create their worlds through their interactivity with it.

Davia's theory of catalysis goes further. Davia argues that the organism and its environment are unified by the catalysing role played by solitons or travelling ways in relation to its environment. Carpenter and Davia (2006: 1081) draw attention to neurobiological research that shows "the wave-like or resonance-like nature of perceptual experience itself." (Carpenter & Davia, 2006: 1081; see also Gibson, 1986/1979: 249 on "resonating" perceptual systems.) Carpenter and Davia further remark:

> These observations may reflect a single, unifying principle, namely, the wave-like processes are the way by which living organisms mediate (catalyse) their environment, and they relate directly to the organism's experience (Davia 2006).

> (Carpenter & Davia, 2006: 1081–1082).

Organisms catalyse their environments by means of wave-like processes, including the pulse-like organisation of languaging behaviour of human agents (Vol. I, chapter 4, section 7). The environment does not exist independently of the organism. Instead, it is a result of the organism's catalysing activity. Organism and environment comprise a unified organism-environment system on account of this catalytical activity.

Enzymes are the prototypical biological catalysts. The catalytic process greatly increases the rate at which molecular reactants form a thermodynamically more stable product. The products of this process are thermodynamically more stable than the reactants. Carpenter & Davia (2006) explain as follows:

> In enzyme catalysis, the reaction ultimately occurs because the product(s) is/are more thermodynamically stable than the individual reactants. The catalytic process facilitates the transition from the reactant(s) to the product(s) by overcoming the structural constraints of the reactants' structure and dynamics. Research suggests that catalysis takes advantage of the invariance (symmetries) of the biological structure (the protein-substrate complex) to deliver energy where it is needed to change the molecular structure. The process appears to be "vibrationally-assisted," a wave-based facilitation that involves a type of localized, non-linear wave, called a *soliton*.
>
> (Carpenter & Davia, 2006: 1082)

Something analogous occurs on the very different organism-environment scale in languaging activity. Here I draw on Cowley (2008), who points out that changes in how we report the dynamics of talk are not reports of objectively heard patterns; they are reports on how we feel the dynamics in core consciousness (Cowley 2008: 329; Thibault, 2011b: 34–36; Vol. II, chapter 3, section 2). Dynamical languaging events are, in part, coordinated waves of vocal tract and other bodily activity that are propagated into the environment when they perturb and restructure environmental media such as air and light. They are the perceived dimensions of the agent's languaging behaviour as the agent catalyses an aspect of his or her environment. This dynamical wave-like activity catalyses flows of events that tend to settle on a stable pattern in a process of *semantic synthesis*, not encoding/decoding. This process is akin to Barbieri's (2003) organic process model of protein synthesis (Cowley 2008: 330–331). However, we do not only hear lexicogrammatical pattern in utterances; we also hear voice dynamics (e.g., prosody). The construal of an utterance as a stable semantic synthesis integrates diverse factors during the catalysing process. These factors include: lexicogrammatical constraints (e.g., co-occurrence restrictions) and lexicogrammatical patterns heard as "wordings", voice dynamics, recent events held in working memory, prior experience, and speech timing.

The semantic synthesis of a self-organising semiotic artefact (an utterance) depends on dynamics and timing. Second-order pattern (e.g., lexicogrammar and phonology) constrains the dynamics. When second-order pattern is integrated

to first-order body dynamics, the resulting linguistic catalysis works to either amplify or to inhibit flows of cognition, action, affect, awareness, feeling, and the dialogical coordination of self and others (Verbrugge, 1985).

Utterances are catalysts that have the functional capacity to amplify or to inhibit the self-organising processes made possible by intense matter-energy flows. It is these flows that characterise the range of stable states and forms of organisation available to a particular social system, not abstract forms variously said to be located in the heads of individuals or seen as the outputs of systemic choices. Utterances are catalysts in the sense that they are operators that can act as control switches or knobs, so to speak, that select one stable state over another. Lexicogrammatical differentiators are semantic control parameters that specify, informationally speaking, the ways in which a socially organised flow of matter, energy and information can be catalysed. They can amplify and/or inhibit a qualitative shift from one stable state to another in a system close to one of its critical states (Hollis et al, 2009: 217).

The typological-categorial properties of lexicogrammar keep these semantic parameters relatively constant and discrete. However, other parameters can be varied quantitatively, e.g., semantic grading of, say, adjectives (*very good*) or prosodic amplification and intensification that increase the amount of energy flowing into the system (a person's body or assemblage of bodies) until a critical threshold is reached, resulting in a cognitive, affective, or behavioural change. Such changes are qualitative, not quantitative. A body or a social assemblage of bodies (human and non-human) is qualitatively transformed from one cognitive, affective, behavioural or juridical, etc., state to some other. Moreover, linguistic catalysts (utterances), like catalysts in general, mean that "low expenditure of energy can bring about high energy transformations" (DeLanda, 2002: 147). Lexicogrammatical patterns are cultural replicators that can bring about phenotypic effects, for example, when large flows of energy are triggered by a single directive emanating, for example, from the CEO of a large company (Thibault, 2011c: 111–112).

Linguistic catalysis is, then, a form of top-down flow of an action trajectory from its microgenetic inception in the brain to body and into the world. When an action trajectory is enacted, it therefore has the capacity to move enormous numbers of micro-processes around as a consequence of the action trajectory and in conformity with it (Ellis, 2009: 72–74). Control of the trajectory is not by a central executive in the brain but is distributed along the entire trajectory in ways that incorporate many feedback loops both within particular levels of control and between levels.

Utterances and non-linguistic events or experiences are not external variables that covary with each other (Vol. II, chapter 1, section 9). They are intrinsically and constitutively related to each other as component parts of the one overall self-utterance-environment interaction system that is catalysed by languaging. Utterances and their linguistic patterning can be seen as the commonality that events and situations of the same type share across different occasions. In the light of these observations, I will now examine a brief episode which I have transcribed

from a video recording while interacting with Ida, the 5-year-old girl shown in the transcription in Table 4.5.

Ida, at the time of the video recording, was a 5-year-old Chinese-Norwegian girl. She was a regular visitor to my place in order to play with my daughter. During these visits, she and I sometimes played a little routine with our friend Blinky Bill (Figure 4.1). Blinky Bill is a puppet koala bear named after the character in Dorothy Wall's famous series of children's stories dating from the 1930s and 1940s (Wall, 1988/1953).

The frequent repetition of the "Blinky Bill" linguistic pattern, which combined playing with the puppet koala in co-occurrence with his linguistic name, *Blinky Bill*, in these activities, shapes the activity and is a constituent part of it. Ida and I are co-constrained by the pattern: it shapes our routines and the emergent sense of a narrative self that helps to confer predictability and accountability on these interactions. Ida has attuned to this pattern through these playful encounters on different visits over about a year or so. The two of us orient to the "Blinky Bill"

Table 4.5 Ida throws Blinky Bill; Key: italics = wordings; + = co-synchronised items. See Appendix II for the transcription key to this table.

Frame 1: 00:00.00 - 00:00.03

Frame 2: 00:00.03 - 00:00.09

Frame 3: 00:00.09 - 00:00.12

Frame 4: 00:00.12 - 00:00.13

Frame 5: 00:00.13 - 00:00.15

Frame 6: 00:00.15 - 00:00.19

Figure 4.1 Blinky Bill

pattern to sensitise to a shared inter-world. The pattern therefore has a history formed over repeated encounters. In this way, the pattern *Blinky Bill* acquires functional value: my initiating interrogative utterance in the transcribed episode directs Ida's attention to Blinky Bill (see transcription in Table 4.5). My interrogative utterance catalyses a synergy of body movements, objects, affects, and verbal pattern that draws on and updates the history of the interaction encounters between us.

In so doing, Ida and I enact synergies of bodily co-ordinations that integrate past experience to our jointly created narrative trajectory and its perspectives. Repeated dialogic feedback loops accumulate and store in the trajectories of selves information that is valued by selves and which can be attuned to present circumstances. The self is deictically anchored to the sensory-kinetic dynamics of the body and in this way the self draws on and integrates situationally sensitive information learnt from past experience with perçaction routines in the present that are animated by kinaesthetic memory. By means of their utterances, persons seek to focus attention and change the awareness of interlocutors by catalysing either overt or covert flows of action, thought, imagination, perception, remembering, feeling, and so on. Linguistic pattern constrains and guides this process, but there is no direct or representational relationship between the linguistic pattern of the utterance and the flows that it triggers. As I have argued elsewhere (Thibault, 2011b, 2011b), languaging is a catalyst that initiates and directs flows of the kind mentioned above (see also Verbrugge, 1985). As Verbrugge points

out, the catalyst (utterances) and the process catalysed are both co-constraining and reciprocally entailing (1985: 170).

The linguistic term *Blinky Bill* might appear to have a determinate meaning that can be precisely defined with reference to the puppet koala bear that was a participant in the interactions between Ida and myself. In actual fact, the linguistic term is best described as an indeterminate and fuzzy semantic possibility space that can never be fully determined. Linguistic terms have varying degrees of freedom, i.e., a range of ways in which they are connected to experience, interpreted, affect our awareness of our surrounds, and catalyse action responses for different individuals and groups. When we interactively engage with and explore the affordance potentials of utterances in our dialogically co-ordinated languaging with other persons, the indeterminate and virtual character of these affordance potentials interacts with intentions, feelings, emotions, personal experience, hopes, human relations, aspects of particular situations, the Jamesian stream of our thinking, value biases, and other factors. In this way, the ecological work of utterances is directed along a more determinate trajectory.

My interrogative utterance, addressed to Ida, catalyses a flow of affect, feeling, cognition, action, and so on. The utterance does so by partitioning the search space of the locally relevant experiential topology in a way that invites Ida to attend to and locate the puppet koala named Blinky Bill (he is on the nearby bed in the room). In eliciting and anticipating a response from Ida, my utterance sets off a flow of thoughts, feelings, bodily reactions, experiences, intentions, viewpoints, and actions etc. on the part of both Ida and me. All of these are brought together to interact in the formation of the unfolding trajectory of this event. It is hardly appropriate to speak of "the meaning" or "a meaning" of the event. Instead, a nexus of actions, affects, feelings, perceptions, and thoughts emerge in the dynamic pulling together and channelling of many threads and give rise to the potentialities of the occasion, as the video recording and associated transcription (Table 4.5) show.

For example, Ida's cheeky response to my utterance catalyses her as a self who takes pleasure in acting spontaneously and in taking control of the flow of events. Her playfulness and energy serve to catalyse the emergence of new action, affect, feeling, and thinking. Moreover, we both feel the emergence of these factors as a creative and liberating flow that moves us out of frozen routine and into a zone of exploration and discovery. The latter is characterised by laughter and by Ida's smile with which she emotionally rewards herself for the felt sense of ownership and authorship which she has exercised in her cheeky response.

My interrogative utterance gives rise to the formation of what Whitehead (1978/1927–28) called a "nexus". Whitehead makes an important distinction between "occasions" and "events". For Whitehead, an event is a "nexus of actual occasions, inter-related in some determinate fashion in one extensive quantum" (1978/1927–28: 73). An occasion, on the other hand, "is the limiting type of an event with only one member (1978/1927–28: 73). An event may consist of just one occasion, but more usually it is a binding together of a multiplicity of occasions that constitute what Whitehead calls a "nexus": a nexus is "a particular

fact of togetherness among actual entities" (1978/1927–28: 20). It is a particular binding together of objects, as in the transcribed episode. Objects such as the toys Blinky Bill, Angelina Wallaby, and Little Doggy, which Ida throws at me in rapid succession, may be bound together by some "defining characteristic" that they all have in common, and which they have "inherited" from each other in past interactions with them. Whitehead calls objects of this kind "societies".

A society is self-sustaining. Persons and the objects we encounter in our familiar, everyday world are all examples of societies: in their distinctive ways and on their respective space and times scales, both persons and objects are entextured interweavings of processes that are knotted together to form societies on many different scales of organisation. Blinky Bill is a nexus in this sense. In constituting Blinky Bill as the locus of the interaction on account of my catalysing interrogative utterance, Blinky Bill brings together diverse objects and processes that have a common history. In this way, he constitutes their togetherness as a society in Whitehead's sense of this term.

Let us now consider this event as a developmental pathway or trajectory consisting of the following phases:

Phase 1: Ida and I, in the course of her visits to my home, develop a routine involving Blinky Bill. I might say, for example, "where's Blinky Bill?" and Ida will respond by putting her hand in the puppet, looking at him, etc. Over time, this game, with variations, consolidates and takes on stereotypical and routine aspects;

Phase 2: Ida sometimes shows signs of annoyance, as if she feels teased by the Blinky Bill game;

Phase 3: Her responses over time become less predictable and less inclined to acquiesce to the game;

Phase 4: Ida's "annoyance" at being teased is resolved when she breaks the mould, so to speak, and allows for an outflow of new virtualities that she is able to take ownership of. At the same time, the resolution of the situation and the sense of fun and liberation that it gives rise to enable a new integration of affects to take place—affects that provide a glimpse of new potentials for growth and becoming that the new situation has opened up for the two of us.

The sensory-kinetic dynamics of interaction flow is animated by bodily feelings that constitute the primary form of relational betweenness that connects selves and the things of their world. Whitehead (1978/1927–28: 34) referred to feelings as "prehensions" that conjoin selves and the things that are related to them into a nexus—a particular configuring of objects. A nexus may be ephemeral, or it may endure. The life trajectory of a self is for Whitehead "a historic route of actual occasions" (1978/1927–28: 59) along which the self and its identity is "changed and variously figured by the things that enter into it" (1967/1933: 187). Pred insightfully and relevantly explains this comment of Whitehead's as follows:

The concrescual approximation takes this statement to articulate the Jamesian I-me dialectic, with the me being the natural matrix for all transitions in one's life—one's personal matrix for short—and the basis for Jamesian personal identity, and the I being the outcome of transitions, the emergent subject who with superjection enters and reconfigures, however slightly, the identifying matrix, so that as one acts from, manifests, and alters, one's own characteristics, so is one's personal identity altered.

<div align="right">(Pred, 2005: 150)</div>

Ida's cheeky, self-satisfied smile at the end of the episode discussed above is in my view an indicator of an inner transformation, however small and fleeting, of the self-matrix that the nexus of Ida, me, and Blinky Bill gives rise to on the occasion in question. It is a narrative transformation that connects the felt embodied change she now experiences both to her new place in the narrative-like trajectory at its conclusion and to the still larger space of her unfolding life trajectory. Her smile registers and acknowledges her self's sensitivity to changes in her own lived bodily experience. It shows that there is a pre-reflective self-givenness of bodily feelings that is constitutive of bodily self-awareness. Bodily feelings animate and nourish the narrative trajectories that selves construct in order to model and guide the pathways they move along and the places they occupy along these pathways.

Prior to this occasion, Blinky Bill figured in a little history of interaction encounters between the two of us. Blinky Bill inherited the characteristics of those encounters and the selves who, with Blinky Bill, are conjoined by the prehensions at play into a nexus. Ida at the conclusion of the trajectory described above is in a new place and, as her smile indicates, she rewards herself for the role she has played in ordering the flow of experience in ways that establish her as a social self who has a defining role to play in the ordering of the experiences that count as part of the Blinky Bill nexus. These experiences serve to secure Ida's membership in the ordering of the particular society that is formed by the enduring Blinky Bill nexus, consisting of and constituted by the interactivity of Ida, myself, Blinky Bill and the roles we act out in it.

Ida's response to my utterance–her act of throwing Blinky Bill and the other toys–reveals her lived body as an objectified act of will of the self (Cassirer, 2021/1923: 212). My utterance neither predicts nor causes her response. Rather, it is a catalyst, the wording of which induces a functionally constrained attentional focus on Blinky Bill and the flow of experiencing that grows out of this focus (Vol. I, Chapter 4, Section 7). The utterance thereby foregrounds, against a background of competing possibilities, the affordance potentials of the Blinky Bill nexus. Blinky Bill is one of a small pile of soft toys on the bed that Ida takes in her hand one by one and throws at me. The toys demand to be thrown. They anticipate and set up a focus on their open-ended paradigmatic possibilities for occasioning an event of some kind. Ida's living body is a unity of consciousness that, in responding to the utterance, constitutes a subject-object relation between herself and the toys. This relation is not that of a single, homogeneous objective world that is posited as standing against the self. Rather, the toys are near to hand

in a world that is stratified into different levels of deictically graspable reality that is close to or far from the self to varying degrees (Vol. I, Chapter 4, Section 4.3.1–4.3.6). It is the total participation of the living body that is central here. Rather than positing a rigid opposition between subjective being and objective being, the languaging that takes place between the two of us constitutes the intertwining of the subjective and the objectives poles and their reciprocal, dialectical fusing and inter-penetration. Languaging thus creates that "middle realm" designated by Cassirer (2021/1923: 210) whereby "the forms of existence are referred to the forms of doing, the forms of doing are referred to the forms of existence, and both are fused together into a spiritual unity of expression." This unity of expression depends on the sensitivity of the lived body to low-energy signals and its capacity for total participation in the events that such signals (utterances) catalyse.

Mae-Wan Ho points out the exquisite sensitivity of living systems to weak or low-energy signals. In contrast to mechanical systems, that "work by a hierarchy of controllers and the controlled that returns the system to set points" (Mae-Wan Ho, 1998: 92), living systems work by means of "intercommunication and total participation" (1998: 92) of all the component processes of the organism. This "total participation" of the organism is due to the fact that the organism is "a highly coherent domain possessing a full range of coherence times and coherence volumes of energy storage. In the ideal, it can be regarded as a quantum superposition of coherent space-time activities, each itself coherent, and coupled to the rest" (1998: 93–93).

Biomechanically based low-energy or weak signals such as utterances that mix and hybridise both analogue and digital modes of signaling have the functional capacity to structurally couple persons to their worlds, including other persons, artefacts, aspects of situations, virtual cultural patterns, and so on. Utterances catalyse macroscopic orientational and actional change in bodies in ways that give rise to emergent social-cognitive-affective assemblages. The capacity of utterances to enact very many fine-grained sensory-kinetic discriminations along both the typological-categorial and the topological-continuous dimensions highlights their capacity to structurally couple bodies to other bodies and to the flows of intensive differences (Vol. I, chapter 1) that flow through organisms and animate them.

Living systems, Mae-Wan Ho (1998: 76) argues, necessitate not so much the distinction between equilibrium and non-equilibrium systems as their coherent space-time organisation. A thermodynamical explanation of the organised complexity of living systems thus requires a theoretical account of stored, not free, energy. Utterances are organisations of process that are shaped by the population dynamics characteristic of a particular historical-cultural community of persons and their languaging practices. They provide an effective means of directing and channelling matter, energy and information in culturally organised and socially functional ways. Energy is captured and stored in the structure of the organism in "gradients, fields, and flow patterns" (Mae-Wan Ho, 1998: 77) of intensive differentiations (Vol. I, chapter 1) that accrue along the trajectories of selves. Low-energy co-performatory and co-exploratory languaging activity between persons enables persons to channel and to orient their energies coherently in ways that are able to mobilize "the entire spectrum of stored energies for work" (Mae-Wan Ho,

1998: 77), i.e., the ecosocial work required to bond bodies into coherent social-cognitive-affective assemblages such that the stored energy capacity of the singular bodies is plugged into larger-scale functioning social wholes. Social life has an organic basis (Vol. I, chapter 2, section 1).

Organism-persons store energy in coherent, socially useful ways (Vol. I, chapter 1). Intensive differences are energy gradients that can be harnessed in socially useful ways. Intensive differences or energy gradients can be formed both within and between persons. Individual persons are local repositories of such stored energy in a socially distributed network of such local repositories. The interactivity of languaging enables the structural coupling of these intensive differences between persons. This structural coupling gives persons the ability to animate, mobilise and direct socially useful flows of intensive differences. Utterances have the capacity to tap into and to feed off socially distributed biological and social gradients whereby persons become local repositories of such gradients (Vol. I, chapter 1, section 2). Pico scale bodily dynamics and their fluctuating intensities are value-weighted (Vol. I, chapter 3, section 14). The capacity of persons, intentionally and affectively, to modulate pico scale body dynamics in value-weighted ways, means that persons have the capacity to bias flows of action, perception, and awareness in determinate ways. Languaging agents thus learn to sensitise to and to tap into value gradients that flow through a population of languaging agents.

Intensifications of these flows produce concentrations of values created by the patterns of socially coordinated and distributed collective beliefs, memories, decision-making, and learning that flow through and are stored in complex forms of cultural artefacts and social relations (Bahrami et al, 2010; Elias, 2000/1939); Ratner, 2012). Communities of languaging agents thus produce concentration gradients formed by their own collective body dynamics in ways that afford their further differentiation and re-differentiation as value-weighted dialogically coordinated possibilities for affecting others and being affected by them. In other words, a social gradient is formed and with it the possibility of using this bio-socially distributed and organised resource for coordinating the embodied interactivity of organism-persons in increasingly socially and culturally saturated ways.

7. Managing the self

Dennett points out that folk-psychology is the only resource we have for reliably predicting everyday human actions and for getting us through our daily dealings with our fellow human beings. Dennett's (1989/1987, 1991) notion of the "intentional stance" is relevant here. As Dennett points out, the folk-psychology "produces a descriptive system that permits highly reliable predictions of human (and much nonhuman) behavior" (1991: 42). Languaging activity provides a culturally stabilised means for persons to orient to each other as selves who think, know, believe, want, intend, and so on. Lexicogrammatical pattern also provides stable means for understanding each other, interpreting situations, talking about our

memories, and very much more. Lexicogrammatical pattern provides our inter-activity with each other with culturally stable reference points and scaffolds that are normative.

When we adopt the intentional stance towards someone's behaviour, we inter-pret it as an action of a self in relation to still wider patterns of actions, behav-ioural dispositions, beliefs, desires, and apperceptions with which it connects. Adopting the intentional stance towards the observed behaviour versus trying to compute every single feature of the bit map of a given behavioural event, pro-vides a reliable though by no means infallible means of coordinating, attuning to, reciprocally understanding, accounting for, and anticipating one's own and oth-ers' behaviours as intentional *actions*. The lexicogrammatical patterns observable in human languaging are patterns that are describable from the intentional stance, and perhaps, as Dennett would have it, "only from that stance, and that support generalisations and predictions" (Dennett, 1989/1987: 25).

Lexicogrammar is then essential to what Heider (1958: 5) calls a "naive psy-chology" that explains, motivates, and makes predictable the goings on of human social life. Lexicogrammar in this sense is a folk-psychological resource that scales up to cultural time-scales of an entire population of languaging agents. It entails more and more layers of culturally standardised and institutionalised constraints on the largely iconic and indexical semiotic dynamics that are deeply implicit in the pre-linguistic infrastructure of languaging activity (Deacon, 2005). Lexicogrammar is, then, a folk psychological resource that we use to reliably predict what people—one's self and other selves—will do next:

> We use folk psychology-interpretation of each other as believers, want-ers, intenders, and the like-to predict what people will do next. Prediction is not the only thing we care about, of course. Folk psychology helps us understand and empathize with others, organize our memories, interpret our emotions, and flavor our vision in a thousand ways, but at the heart of all these is the enormous predictive leverage of folk psychology. Without its predictive power, we could have no interpersonal projects or relations at all; human activity would be just so much Brownian motion; we would be baf-fling ciphers to each other and to ourselves—we could not even conceptualise our own flailings.
>
> (Dennett, 1991: 29)

Persons explain and interpret their own and others' actions and thoughts by attributing intentional actions, attitudes, feelings, beliefs, desires, and so on to narrative selves. The capacity to do so draws on the cultural resources of second-order linguistic pattern. The narrative stance comes in handy because we attrib-ute utterances to *selves* as the intentional sources of utterances. Accordingly, we hold them responsible or accountable for their utterances qua social actions. Moreover, the utterances of selves have the capacity to affect at the same time that they presuppose other categories of persons and other beings who have the reciprocal capacity to be affected by them. For example, the President of the

USA (POTUS) has the capacity to transform someone in the tribal regions of Pakistan into a target for a drone strike. Whatever the highly debatable moral and ethical status of this state of affairs might be, the reality is that the social status of that person is instantaneously changed by an action of POTUS to that of a target for an extra-judicial killing when the POTUS produces an utterance in his role of President of the United States that brings about that transformation of the person's status.

Likewise, if I ask someone to tell me the time, my utterance transforms the person to whom it is directed into an agent who is presupposed to have the capacity to provide me with the information that I want at the same time that a social obligation to do so is placed upon that person (see DeLanda, 2010: 53). The person may oblige by telling me the time, or they may be unable or unwilling to do so. All of these possible responses in turn have the potential to generate reasons that incentivise narrative accounts of the person's response with reference to relevant norms. Persons organise and account for their actions against a backdrop of norms and values in the interpersonal moral orders in which they participate (Harré, 1983).

The process of becoming a self requires joint investment in and collaboration in projects with multiple other selves over the long developmental time scales characteristic of *Homo sapiens*. Persons co-participate in joint projects that require the coordination of their intentions, perceptions, actions, and understandings in order to achieve social equilibria across a wide range of social activities and practices (section 1 above). The attainment of social equilibria requires the stabilisation of peoples' actions and activities around social norms and conventions to which persons commit and on which they stake their reputations, the success of the interactions that they commit to, and so on. Second-order language provides the cultural resources—the meaning potentials (Halliday, 1978)—in which (1) events and behaviours are narrated; (2) marked with reference to the deictic source (self or other, not necessarily human) who is held responsible for the action or event; and (3) these actions and events are evaluated in relation to a fabric of norms and values to which persons implicitly commit themselves when they engage in dialogically coordinated languaging with others. We draw upon norms and occasionally explicitly reference them in order to explain and to motivate the interpersonal coherence (or otherwise) of our own and others' actions.

Utterances operate on and transform aspects of the situations in which they occur. How do we connect utterances to possible future situations? To answer this question, I draw on the concept of *projection* in the work of Ladyman and Ross (2007: 223–224). Projection depends on two properties, viz. perspective and information. Ladyman and Ross define projection as follows:

> "Projectibility" is the concept of information-carrying possibility—applied now not to channels but to models of real patterns and ultimately to real patterns themselves—that we will use.

> Projection is related to counterfactual-supporting generalization by means of a special concept of *perspective*. Consider an observation point X from which

x_L is located by M. The model of X may be either coincident with a region on S, or may be external to S and so referenced from somewhere else in S_p, the superset of all structures endorsed by current physics.

<div align="right">(Ladyman & Ross, 2007: 224)</div>

Utterances are always projected from and are deictically anchored to the viewpoint of a self with which the utterance is indexically contiguous. In this sense, they are perspectival. Utterances are also in part "symbolic" informational models of patterns of data that the utterance is about in some sense and which the utterance indicates and locates in some region of space and time. Utterances are simplex actions that selectively synthesise and compress in their linguistic pattern some aspects of the often much richer patterns of data that they are about.

Imagine a situation in which a mother says of her daughter, "She's got a problem. She needs to see a psychologist." The mother's utterance is a projection from the mother's viewpoint of a particular modal stance. It is also a model of a complex pattern of data in the form of the interactions between mother and daughter. Now suppose that in actual fact much of the source of the problem lies with the mother's way of interacting with the daughter. The mother's utterance partitions the experiential topology by using a simplex utterance that filters out much of the complexity of the real patterns—Dennett's bit map—in order to focus on the specific aspect that the mother's utterance selects and makes salient. Let us further suppose that the mother continues to believe that the problem lies with her daughter and not with her own way of interacting with her daughter.

This raises an important question: how successful would she be in sustaining a healthy and happy relationship with her daughter if she continues to apply this incorrect differentiation to potential future situations? On the other hand, suppose that the mother sees a psychotherapist and in the course of her therapy she learns that her differentiation is substantially incorrect and unhelpful and that she needs to change it. She learns that much of the problem lies in her own ways of interacting with her daughter and that she needs to be aware of and to modify her own ways of interacting with her daughter in order to produce more positive outcomes. Furthermore, she learns that in changing her behaviour in this way she has a better understanding of the situation and what it means for improving the relationship between mother and daughter going into the future. The mother has not simply learned some new information or content about some aspect of the world. She has also learned about some meta-level capacities and skills. These include: (1) the ability to simplify a problem in normatively appropriate ways; (2) the ability to make generalisations to typical cases; and (3) the ability to project what is learned into possible future situations.

On the basis of the mother's attempt to integrate multimodal, environmentally distributed information that is realised by the multiple sources of stimulus information (acoustic, haptic, visual, spatial, movement, etc.) that specify her daughter's behaviour, she attempted to compress this as a linguistic description (an incorrect differentiation) ("She has a problem") that directly contradicts the counter-intuitive information supplied by observers of the dynamics of the interaction

between mother and daughter. The mother attempts to project an inference from her viewpoint in the form of a linguistic differentiation ("she has a problem") that cannot reliably be projected forward to unobserved future cases. The mother's perception of her daughter is, to be sure, a pattern of data, but not one that proves to be reliably projectable forward. Her attempt to compress the data in a linguistic differentiation misfires because it is not a differentiation that facilitates reliable inferencing about anything else—it is not a differentiation that is supported by the relevant environment. For this reason, it is reflected on, found to be incorrect and dysfunctional, de-selected, corrected, and replaced in the course of the dialogue between the mother and her therapist with a more accurate and helpful partitioning of the situation. These questions are discussed in detail in the sections that follow.

8. Integrating the multi-scalar dynamics of agency and selfhood in languaging

In sections 9 to 11 below, I analyse a fragment from a televised press conference that took place at Kangaroo Point in Brisbane, Australia on 22 March 2013. In the press conference, former Australian prime minister Mr. Kevin Rudd provides his account of the party room spill motion conducted on the day before and which saw Julia Gillard re-confirmed as both leader of the Australian Labour Party and Australian prime minister. On that day, Mr. Simon Crean, a senior member of Julia Gillard's minority labour government, called on the prime minister, Julia Gillard, to call a ballot on the leadership in order to end the intensifying media speculation about her leadership. Prior to that day, there had been intense media and political speculation about Ms. Gillard's leadership and Mr. Rudd's intentions with respect to his own leadership ambitions. On the day in question, Mr. Rudd was widely expected to contest the leadership, having unsuccessfully contested the party leadership in February 2012. At that time, he had vowed not to challenge again though with the following caveat:

> "The only circumstances under which I would consider a return to the leadership would be if there was an overwhelming majority of the parliamentary party requesting such a return—drafting me to return—and the position was vacant. I am here to inform you that those circumstances do not exist," Rudd said.
>
> *The Guardian*, 21 March 2013. [https://www.th eguardian.com/world/2013/mar/21/gillard-survi ves-attempt-prime-minister].

Mr. Rudd first became prime minister of Australia on 4 December 2007 when he led the Australian Labor Party (ALP) to victory in the general election against the governing Liberal-National Party coalition, which was led by the incumbent prime minister, Mr. John Howard. Mr. Rudd was replaced by Julia Gillard as prime minister by his own party on 24 June 2010. In February 2012, Mr. Rudd launched his first unsuccessful attempt to unseat Julia Gillard as prime minister. In the light of Mr. Crean's call for a ballot on 21 March 2013, Mr. Rudd declared

just ten minutes before the ballot that he would not be contesting the leadership. Julia Gillard, uncontested, was re-confirmed as prime minister. On 26 June 2013, in another ballot, Mr. Rudd successfully contested the leadership and was sworn in as prime minister for the second time by the Governor General on 27 June 2013.

The press conference that I analyse below is an event that exploits and integrates four main time scales, as follows.

1. The macro scale of the project: Mr. Rudd's political and personal project in relation to the government, the ALP, the Australian public, and the media;
2. The micro scale: what is said (wordings) and done (actions) in Mr. Rudd's self-narrative during the press conference;
3. The pico scale: very fast bodily dynamics that co-ordinate bodies with each other in relations of co-orientation and co-affiliation (milliseconds to fractions of seconds);
4. The sub-personal scale: the shifting coalitions of neuronal modules that affect our decisions, preferences, and actions without our being aware of it.

Languaging can be understood on the basis of a synthesis of the four scalar levels proposed above. I now discuss the four scalar levels in more detail with reference to a short video clip of a fragment of the press conference held by former Australian Prime Minister, Mr. Kevin Rudd, in March 2013. I will explore some aspects of these multi-scalar languaging dynamics in order to illustrate the centrality of self-narrative and self-management to human languaging.

9. The macro scale: Mr. Rudd's project and the press conference on 22 March 2013

Former Prime Minister Kevin Rudd's press conference involves a complex and overlapping set of social and institutional roles that he embodies and presents during the flow of the episode in question. The fragment to be analysed below is part of the outdoor press conference held shortly after Mr. Rudd had declined to contest Julia Gillard's leadership in the party room spill motion that took place on the previous day (21 March 2013). These roles include: (1) former Prime Minister and former leader of the Australian Labor Party (ALP); (2) former Foreign Minister; (3) recent challenger to the current Prime Minister, Julia Gillard; (4) ALP backbencher and member for the Federal seat of Griffith; and (5) a politician who was popular with a large section of the electorate, as evidenced by the opinion polls during the period 2010 to the time of the press conference (March 2013). There is a great deal at stake in a press conference in these circumstances. A politician's personal identity is very much tied up with the public persona that is presented to others (e.g., the representatives of the media present, the television viewing public, Mr. Rudd's parliamentary colleagues, the political opposition, and so on).

A press conference is a ritualised social occasion that fulfils all the requirements of a social assemblage in which the functioning parts are linked to each other by relations of exteriority (DeLanda, 2010: 5). In this way, the relative

heterogeneity of the various functioning components of the social assemblage—the press conference—is retained rather than being subordinated to the emergent whole—the social assemblage that give rise to the occasion of the press conference. Kevin Rudd is positioned at the centre of a gathering of (mainly) journalists and members of the general public at an outdoor location. A number of bodies (journalists, photographers, and others) are spatially assembled in close proximity to Mr. Rudd, who is located at the centre of this space. The assembled persons are gathered around Mr. Rudd and oriented to him. Their attention is primarily directed at Mr. Rudd and the self-narrative he constructs. Processes of territorialisation impose well-defined spatial and temporal boundaries on the event. The event has a clear temporal structure as well as norms that regulate who can speak and when. Spatial boundaries are maintained over the duration of the event by the close proximity of the assembled bodies to each other, the gap between Mr. Rudd at the centre and the other assembled bodies, and the co-orientation of the two parties to each other, as signalled by gaze vectors, general bodily orientation, posture, and the physical distance that separates Mr. Rudd from the assembled audience.

The press conference took place on the day after the uncontested leadership ballot. The call for the ballot had been fuelled by intensive media speculation for several weeks before the day in question. Moreover, the responsibility for instigating the ballot was unclear and opinions and accounts were divided on this issue. Prior to the event, Mr. Rudd had projected the role of the reluctant challenger who would only assume the leadership if drafted by a majority of the Labor Party caucus. In the episode under consideration here, Mr. Rudd distances himself from his ministerial colleague, Simon Crean, who claims that Mr. Rudd supported Mr. Crean's moving a party room motion that the leadership be declared vacant. Mr. Rudd distances himself from this view and seeks to create the impression that he was reluctantly being compelled to challenge Julia Gillard for the leadership because of Simon Crean's unexpected actions. Subsequently, both Mr. Crean and Mr. Rudd produced diverging accounts of their own actions, motivations, and responsibilities as well as those of each other.

On the macro-scale of the general project, Mr. Rudd seeks to provide a coherent account of the events in the party room and his role in these events. In doing so, he displays and thus provides evidence that he is an agent who is in control of his capacity to act as a responsible and reliable self in the political arena. Specifically, Mr. Rudd articulates a narrative script according to which he was moved not to contest the prime ministership in response to Mr. Crean's action, which led to the prime ministership being declared vacant. Mr. Crean's action in calling for the leadership ballot is construed as an unexpected event to which Mr. Rudd was obliged to respond and over which he had no control. This unexpected event precipitates a state of chaos which gives rise to new possibilities, a new bifurcation. Mr. Rudd's narrative provides a model of the events of the past 24 hours (Table 4.6). He puts on display his capacity to provide reasons for the events, including what was said and done by others and his responses to them. He thus endorses his own actions and dis-endorses Mr. Crean's actions. In the process he (1) seeks to block the possibility of future occurrences of the same scenario; and (2) he maintains the coherency of his own narrative, especially in the light of his previous challenge to Julia Gillard's leadership in early 2012.

Table 4.6 Phases of Mr. Rudd's narrative in a fragment from the press conference on 22 March 2013

Narrative Phases	Orthographic Transcription of What Mr. Rudd Said
Serendipity: a chance event perturbs the status quo	I think very few of us were expecting the um spontaneous combustion of Simon Crean's statement yesterday. I certainly wasn't.
Result: A new chaotic state is generated as a result of the chance event	And as a result um things came to a head.
Reason/Explanation: State of chaos generates new possibilities and opportunities	And politics is a bit like that. It's a volatile business ah as well. And um it caught many of us off guard.
New Event: a new state of affairs emerges from the disorder	And so but the consequence is a ballot was held. The Prime Minister was confirmed again in the leadership of the party and therefore in the prime ministership of Australia
Coda: Retrospective evaluation of significance of narrated events and their implications for future commitments	And it's time to draw an absolute line under it.

An important function of Mr. Rudd's press conference is to dispel the widespread view in the community that Mr. Rudd is an embittered and ambitious politician intent on de-stabilising Julia Gillard's prime ministership so that he can be re-instated in the top job. Mr. Rudd is therefore keen to correct the (for him) erroneous inference on the part of others—specifically his critics and detractors—to the effect that the events that took place prior to the day of the press conference are part of a more general pattern that is compressible in peoples' perceptions of the spill motion that took place in the party room on that day, viz., "Mr. Rudd wants to re-claim the prime ministership". The events that took place are independently perceived from a diversity of viewpoints.

In particular, given Mr. Simon Crean's action in calling for a ballot, Mr. Rudd, on the basis of both his privileged spatio-temporal access to the events that took place and other information which he probably happens to know about the situation—information which can enter into inferences about these matters—produces an alternative differentiation (see Table 4.6) to the one articulated by Mr. Crean. Mr. Rudd characterises Mr. Crean's action in calling for a ballot as "Simon Crean's spontaneous combustion". Mr. Rudd then offers his preferred differentiation as a more reliable projection of a general pattern moving forward.

For many observers, the real pattern that is being talked about (the actual events in the party room and Mr. Crean's call for a ballot) compress information about some other pattern (Mr. Rudd's real motives and intentions) that is indexed by this information and which can be reliably projected forward as inferences concerning Mr. Rudd's real ambitions and future intentions. I discuss these concerns in the following section.

10. The meso scale of what is said and done in Mr. Rudd's self narrative: analysis of a selected fragment from the press conference

I now analyse a short fragment from the televised press conference. In the narrative which he articulates in this fragment (see Table 4.6), Mr. Rudd works to show that what Mr. Crean did is, to be sure, a pattern of data, but not one that proves to be reliably projectable forward (section 7). Having control over what is reliably projectable forward is critically important for the game of self-management that Mr. Rudd acts out in the press conference. Mr. Rudd would have us believe that interpretations of Mr. Crean's action supporting the view that Mr. Rudd was its instigator misfire because it is not a differentiation that facilitates reliable inferencing about anything else. That is, it is not a differentiation that is supported by or that will in the future be supported by the relevant (political) environment beyond the question of Mr. Crean's "spontaneous combustion"—his supposed unpredictability—and what this tells us in general terms about the volatility of politics. Differentiations that are not supported by the relevant environment are de-selected by selection-&-variation learning processes of the kind that Mr. Rudd is attempting to install in his audience. In effect, Mr. Rudd seeks to make out that Mr. Crean's action in calling for a ballot tells us more about Mr. Crean's character at the same time that Mr. Rudd seeks to install a counter-narrative that focuses on his loyalty to Julia Gillard as prime minister. Mr. Crean's "unpredictability" is thus implicitly counter-posed to Mr. Rudd's "reliability".

Table 4.6 presents the fragment I have selected for analysis as a narrative-like structure that is presented as a series of stages in terms of which Mr. Rudd organises his account of Mr. Crean's action, its outcome, and its implications for the future.

In his narrative, Mr. Rudd has not simply imparted some new information or content about the events that took place. He has deployed his skills and capacities as a political operator in order to craft a carefully calibrated presentation of his own actions and motives. These include: (1) the ability to simplify a problem; (2) the ability to make generalisations to typical cases; and (3) the ability to project what is learned into likely or desired future situations.

Mr. Rudd seeks to block or reduce unnecessary complexity by: (1) breaking a complex problem into smaller, simpler components or stages by focusing on a particular aspect (Mr. Crean's "spontaneous combustion"; (2) moving from a particular, unexpected case (Mr. Crean's action) to typical cases ("politics is a volatile business"). Here are some examples summarised from the fragment presented in Table 4.6:

1. *Blocking Unnecessary Complexity*: Mr. Rudd refers to the unexpected nature of Mr. Crean's "spontaneous combustion" as a way of blocking speculation about his own intentions (this is not what I expected; Mr Crean's unexpected action is not my doing);
2. *Specify Typical Case*: Mr. Rudd generalises as follows: "politics is a bit like that. It's a volatile business";

3. ***Specify Future Relevance***: Mr. Rudd says: "It's time to draw an absolute line under it" (Mr. Rudd seeks to foreclose the speculation about his leadership ambitions by applying a new differentiation to future possibilities that are designed to influence how others will interact with the relevant environment).

The orthographic transcription of the verbal patterns shown in Table 4.6 cannot suffice as an adequate description of the event that is recorded by the TV news service. Mr. Rudd's expression of his public persona requires a careful attention to his choice of words, his dress, gesture, body posture, and other factors. Importantly, he must project himself as an agent who can provide a coherent self-narrative that demonstrates that he is in control of his narrative. In this narrative, the unit of accountability is Mr. Rudd's narrative-self. The self is the deictic locus of responsibility that can (1) provide a coherent narrative account of one's actions in relation to others; and (2) provide reasons for those actions. Actions do not have to be in the control of the agent; they may be prompted by circumstances, others' actions, etc. What is important is that the agent can provide a coherent account of them. Projecting predictability and stability is the name of the game. This has two sides to it.

First, the self needs to be able to project stable expectations of one's self and the exercise of its capacities in diverse situations. Second, the stories we create and put into circulation about one's self (and other selves) play an important role in the community's storage of the collective memory of a community and the reputations of its members. Thus, Mr. Rudd will be aware that his story will feed back into the collective identity of the ALP and will have the potential either to increase internal cohesion or to disseminate division and conflict (Delanda, 2010: 41). Given that Mr. Rudd's opponents had often accused him of the latter (rightly or wrongly), Mr. Rudd will be aware of the role of his story in shoring up his reputation as a responsible and loyal member of that community.

The practices of creating narrative-selves therefore perform a second articulation (Vol. I, chapter 1, section 4) in two senses. First, these practices stabilise the parameters of the self. Second, they consolidate the collective identity of a social project. However, the semantic resources of lexicogrammar that make this second articulation of the self and its concomitant territorialisation possible also provide the cultural resources for creating new narrative-selves and putting them into circulation. This is precisely what Mr. Rudd is seeking to do in the example to hand. After months of febrile speculation in the media and accusations that Mr. Rudd and his allies within and without the party were intent on de-stabilising Julia Gillard's prime ministership, Mr. Rudd is keen to present himself in a fresh light without jettisoning the internal coherence of his self-narrative. Moreover, the project of creating a coherent narrative of the self is not driven by a single goal or purpose. Instead, it is guided by a fluctuating heterarchy of values and norms. In the present example, these values may be summarised as follows:

1. Displaying one's capacity to deal with the unexpected in a coherent and satisfying way and providing a convincing account of it;
2. Displaying that one is a competent and responsible agent;

3. Endorsing one's own responses to the unexpected situation and dis-endorsing Mr. Crean's actions ("spontaneous combustion") as a lapse in the display of agent-control;
4. Showing sensitivity to and affiliation with the social project ("very few of us were expecting");
5. Putting one's loyalty to the party above personal ambition;
6. Giving unequivocal support to the Prime Minister, Julia Gillard;
7. Putting the past behind and committing to the future well-being of the Australian people, the nation, and the ALP and its future re-election.

Mr. Rudd's narrative articulates a coherent explanation as to why expectation broke down and what was done about it. Mr. Rudd puts on a skilful performance in order to endorse his own narrative-self and its relationship to the events recounted and thus to show how he fits into the relevant interpersonal moral orders as a responsible and accountable agent who can provide reasons both for his actions and his responses to the actions of others. Mr. Rudd's performance is a dynamic, emergent process linking many scalar levels of organisation in place and time that are not reducible to verbal pattern per se (see below).

Contextualisation requires an understanding of interpersonal and cultural norms. Norms can be characterised at many levels of description ranging from personal idiosyncrasies, to ways of relating in close relations and families, to group and institutional practices, and societal and cultural norms. Philosophers have traditionally construed norms more narrowly in terms of proposition-like statements that prescribe how things "ought to be" or how people "ought to behave". However, norms can be understood more broadly in terms of the meaningful ways of evaluating and interpreting the patterns that emerge in closely coordinated embodied interactivity between persons (Goffman, 1959). Persons adjust and modulate their body dynamics and actions to social constraints that are to varying degrees transparent to their interlocutors. In this way, people can experience each other as intelligible and rational agents in relation to the values of the relevant interpersonal moral order.

In the next section, I examine the role of some examples of micro-temporal, or pico scale, body dynamics to show how Mr. Rudd's sustains his skilful performance of himself as a rational political actor who is accountable to the interpersonal moral orders in which his actions, including his body dynamics, are evaluated and interpreted.

11. The micro scale: pico scale body dynamics and first-order languaging

The reduction of human interactivity to text-like transcriptions of verbal patterns loses sight of a fundamental dimension of human languaging: Selves have embodiment. Selves are deictically anchored to the singularity of their embodiment and the perspectives that this embodiment affords. Humans accomplish tasks by drawing on the sensory-kinetic dynamics of their bodies whereby they interact

with the world rather than relying on purely "symbolic" models of the world. Consequently, in the new thinking about languaging the shift in the understanding of social intelligence is away from "symbolic processing" *per se* to situated and embodied interactivity between selves and their worlds. We shape and modulate our bodies interactively to manipulate, to explore, to simplify, and to perform cognitive and values-realising tasks. Moreover, these tasks are distributed between brain, body, and world in distributed cognitive systems (Vol. II, *Introduction*, section 1).

The third scalar level in the present analysis is that of the body and the possibilities that the sensory-kinetic dynamics of our bodies afford for biomechanical coordination with other bodies. This is the level of whole-body sense-making. First-order languaging crucially involves synchronised inter-individual bodily dynamics on very rapid time-scales of the order of fractions of seconds to milliseconds (Vol. I, chapter 3, section 14). Following previous work in this area (see Cowley (2006, 2007); Thibault (2008, 2011a, 2011b, 2011c); Steffensen, Thibault & Cowley (2010), I shall refer to the very rapid time scales of the dynamical properties of first-order languaging as pico scale bodily events. Persons in first-order languaging enact, exploit, respond to, and attune to such events in order to engage with others, to coordinate with them, and to co-construct their worlds with them. Pico scale bodily events are fleeting and persist for only as long as the action that they motivate. Pico scale bodily events are behaviours of the person and they are displayed as such. They are not sub-personal in the same way that dedicated (specialised) groups of neurons are (see next section). Pico scale bodily events are sub-personal in the sense that they are associated with sub-personal projects that may not be endorsed by the whole person, but they are, nonetheless, behaviours that are associated with the whole person and can be integrated to actions of the self and are interpreted as such.

In this way, pico scale body dynamics are integrated to the actions that selves are interpreted to be enacting. Pico scale events are weighted by values, including feelings, and are aspects of the values-seeking activities of the whole person. Pico scale events therefore integrate valuation, salience, and orientation to the perspectives of the self. Pico scale bodily events are aspects of the agent's repertoire of value-seeking actions. They have the capacity to bias action, perception, and feeling. Second-order lexicogrammatical patterns (wordings) "feed off" and are animated or energised by pico scale bodily dynamics. Value-gradients flow through and animate first-order languaging at the same time that the latter is guided and entrained by second-order cultural pattern.

Pico scale body events are emergent patterns of bottom-up activity that nevertheless enable individuals to engage with recurrent patterns and to connect their interactivity to higher-scalar forms of social organisation beyond the body. This does not mean that the bodily activities of Mr. Rudd can be assigned a single, univocal interpretation. The point is that norms entail evaluative standards that allow the members of a group to make social judgments about themselves and others. In this way, higher-scalar semantic control systems emerge which regulate the actions of the individual members. Mr. Rudd's bodily behaviour is not

a matter of "pure behaviour". Instead, it is multiply constrained and enabled in ways that invoke norm-based evaluations and judgments. Vocal tract gestural activity, facial expressions, head nods, hand gestures, body posture and orientation, and eye gaze are recruited to and come under higher-order semantic control in languaging. These bodily resources did not evolve for the purpose of expressing particular meanings. Rather, bodily dynamics have a general potential that can be recruited to higher-order semantic control structures (e.g., wordings) as well as remaining available for a wide range of other activities (Ratner, 2012: 128).

First-order languaging is not reducible to any one organ of the body, including the organs that are co-articulated in the formation of organ-specific constriction actions to create phonetic gestures in speech (Fowler, 2010, 2014). Languaging is a process of whole-body co-participatory sense-making (De Jaegher & Di Paolo, 2007) that can be brought under higher-order semantic control. For example, affect-based interpersonal routines emerge. Facial expressions such as smiling are used in response to emotion-signals that agents experience as intelligible. Timing is crucial here: the agent must use its experience to anticipate the responses of others by acting in ways that are perceived as corresponding to normative criteria of what is intelligible. Infants learn to use aspects of other's responses and accordingly they learn to construe their own and others' actions as purposeful and intentional according to the norm-based standards of some interpersonal moral order.

People learn to identify patterns of bodily events, associate these with a particular feeling state produced by the release of a molecule (e.g., dopamine or oxytocin for the arrival of a benefit and cortisol-releasing hormones for the arrival of a threat), and call up the optimal response to the stimulus (Damasio, 2010: 54; see also Vol. I, chapter 1, section 8). In this way, persons learn to anticipate a particular behaviour, to associate it with a specific value, and to select a response that falls within and is appropriate to the parameters set by the value. Such value-weighted responses are intelligible to other persons who have been sensitised to the norms and values of the interpersonal moral order. Norms and values are thus invoked and oriented to in order to optimise the bodily behaviours required to obtain or to avoid a particular class of response. Values are pre-symbolic in origin and arose long before symbols in both phylogeny and ontogeny. From infancy, humans learn interactively to control their environments and to maintain their environments within a certain range of value-weighted parameters essential for maintaining the structural integrity and well-being of the organism.

The emphasis on affect, body dynamics, value-weightings, and timing rather than text-based models of symbol processing as in discourse-analytical approaches in the understanding of embodied human interactivity helps to advance our understanding of why we experience some behaviours as intelligent, meaningful and motivated. If we take the whole-body sense-making agent as the locus of languaging, we see more clearly that what matters is not so much how we interpret behaviour symbolically, but how flexibility enhances adaptation under cultural (e.g., semantic) constraints. Persons make use of multiple constraints on many different place and time scales to develop ways of acting and meaning that benefit themselves and groups. In this way, actions and decisions make use of norms on many scalar levels within and beyond the body.

Persons are animate and sentient beings who engage in a continuous dynamics of pico scale bodily events. There is no affectless baseline that is then intermittently modulated by expressions of emotion (Ross, 2004: 633–634). Observation of the video recording of Mr. Rudd's press conference shows that there is continuous variation in facial expression, voice dynamics, head movements, shifts in body posture, degree and rate of smiling, modulation of gaze contact, and so on. Ross (2004: 634) points out that these topological-continuous or analogue phenomena "settle into local equilibria to the extent that the agents reach implicit agreement on the modality of their standing relationship to each other" (Ross, 2004: 634; see also Ross & Dumouchel, 2004). This is clearly important for a politician. Mr. Rudd is a popular politician who is recognised as being "media savvy". He attaches considerable value to the management of his relationship to the media and thus to the public. Accordingly, he is coded as a likeable and good-natured person by the folk-typologies that characterise the media discussion and the reception of Mr. Rudd's public persona. This stands in stark contrast to the persistent difficulties that the incumbent, Julia Gillard, who was often saddled with labels like "wooden" and "tinny eared", encountered in this regard. The point is that Mr. Rudd is a skilful user of emotional signalling in the articulation of his self-narrative.

How do pico scale patterns affect persons' perception of interaction flow? The flow of the continuous variation of pico scale bodily events affects understanding and orientation. Mr. Rudd's audience of assembled journalists (and his television audience) participate in the practices of viewing a press conference with a popular politician. We feel, think, and move in real-time in response to pico scale bodily events. Moreover, Mr. Rudd and his assembled audience entrain one another to recognise commonalities and to conform to practices. Persons can attend to the same utterance in different ways. This depends on how bodies coordinate with different activities and modes of understanding. A seasoned journalist with an intimate knowledge of political life in the nation's capital may construe a particular utterance in one way; a member of the TV audience who lacks this knowledge may rely on stereotypical cultural scripts and therefore construe it in some other way. Interpretation is a fuzzy continuum of possibilities, not a fixed point. Interpretation, as Cowley (2008: 320) shows, extends the human sensorium. Interpretations use neural activity that subtends "core consciousness" (Damasio, 1999, 2010; Vol. II, chapter 3, section 2). The "feeling of what happens" depends on sense-impressions based not only on the physical invariants of utterance activity, but also on a bodily and social habitus (Elias, 2000/1939, 2018/1981) of learned ways of acting, perceiving and feeling.

Damasio (1999, 2010) explains that the "feeling of what happens" relates three kinds of pattern in core consciousness (Vol. II, chapter 3, section 2). Core consciousness thus arises because the brain integrates a pattern for the object, a pattern for the organism, and a pattern for the relationship between organism and object. Importantly, this process of integration is continuous in time. This means that the perception (hearing, looking at, etc.) of another person's utterance (the object) is related to one's own body as the brain creates and maintains over time a continuously changing relationship with the object. Utterance interpretation is

a dynamical process that takes place in the real-time of neural processing at the same time that it integrates the physical properties of the utterance, the listener's current attention, and past experience. An interpretation (of an utterance) is thus grounded in a social habitus that links neural dynamics, circumstances, prior experience, the ways we experience other people, and the reciprocal entrainment effects of our interactions with others. The local equilibria that are established by these reciprocal entrainment effects, over time, set up the basis for the standing relationship that Mr. Rudd has with the media and with the Australian public. In this way, Mr. Rudd regularly presents to the Australian public as the genial and likeable bloke described above.

Lexicogrammar has the capacity to evoke and to actualise virtual semantic categories that extend human action, cognition, affect, and perception across places, persons and times. At the same time, lexicogrammar also anchors these semantic processes in forms of deictic co-sensing, co-affiliation, and co-orientation that are tied to our bodies and to the orientational framework afforded by our embodiment (Vol. II, chapter 2, section 5; Thibault, 2011a: 227–232). In other words, the deictic grounding of utterances in relations of co-sensing, co-affiliation and co-orientation links utterances to pico scale bodily dynamics and body feelings in real-time at the same time that utterances have the capacity to evoke second-order cultural-semantic patterns that transcend situations and connect and integrate selves to multiple persons, places, and times on multiple time and place scales.

I now analyse in detail three pico scale bodily events in the fragment under consideration.

11.1 Pico scale event Example 1: the smile and the laugh

Mr. Rudd's vocalising /*Crean's*/ lasts 0.360 s and is precisely coordinated with the clearly audible laugh and the smile (Figure 4.2). The laugh is of the same temporal duration as the vocalisation /*Crean's*/, as is the smile. Both the laugh and the smile are prosodies that hold the articulatory unit /*Crean's*/ in their scope and modify it for interactive and affective purposes. This complex and fleeting prosody is an indicator of a discrete emotion that works to guide and nudge reflective consciousness (Izard, 2007: 271). Mr. Rudd's interest-driven selective attention to Simon Crean's action in calling for the ballot—Mr. Crean's "spontaneous combustion"—and the increase in energy intensity that this entails serves to amplify the current focus of interest and to influence how this focus is evaluated. Degree of intensity is also a determining factor of the emotion's effect on reflective consciousness (Izard, 2007: 273). The pico scale synergy of these three factors— the laugh, the smile, degree of intensity—both deictically anchors this pico scale phase in Mr. Rudd's feeling body—the current "here-now-me"—at the same time that this is linked to and integrated with the self-narrative that Mr. Rudd is in the process of creating.

The pico scale events (the laugh, the smile) are bodily events that are experienced as feelings at the same time that they signal Mr. Rudd's appraisal of a complex situation involving his parliamentary colleague. The pico scale synergy

of the three factors referred to above grounds the mention of Mr. Crean in the feeling body. They enable Mr. Rudd good humouredly and playfully to signal his disendorsement of Simon Crean's statement. The synergy of the three factors thus functions to create a co-orientational alliance between Mr. Rudd and his audience at the same time that it also signals a relationship of co-affiliation between them. Smiles may signal group affiliation, suggesting that Mr. Rudd aims to facilitate social cohesion around his evaluation of Mr. Crean's statement. The fact that Mr. Rudd does nothing to mask his smile and laugh indicates his confidence in his evaluation being intelligible and transparent to his audience insofar as they share the same culture and the norms that regulate public displays of emotion signals (Sauter et al, 2010: 2410).

The smile together with the laugh are not so much the expression of an "inner" emotion state; instead, they are part of a social emotion script that serves to co-regulate and to co-ordinate persons' relationships to aspects of their worlds— aspects that are made salient by the synergy of the feeling in core consciousness, the smile in partnership with the laugh, the vocalisation, and the situation that is semantically evoked by the utterance. The smile and the laugh are features of the pico scale body dynamics that enable persons to perceive aspects of situations in value-weighted ways. Pico scale events of this kind give rise to appraisals when the proto-self in core consciousness is perturbed by an emotion inducer such as a bodily display (Vol. II, chapter 3, section 2: Knowing Level 1). Pico scale events do not simply express "inner" feelings; they also have the capacity to induce them in self and others in ways that guide action, perception, evaluation, and cognition of (aspects of) complex socio-cognitive events.

Figure 4.2 shows the pico scale integration of the smile, the laugh, vocal dynamics, and the wording (*Crean's*) in pico scale event No. 1.

11.2 Pico scale event Example 2: it's a volatile business

Pico scale event No. 2, shown in Figure 4.3, lasts 2.214 s. At the onset of *it's a*, Mr. Rudd's head is turned to his left, but swings round to face his audience during the 0.254 s that it takes to articulate these two syllables. The articulation of the first syllable of volatile (*vola-*) is synchronised with a slight though rapid and pronounced movement forward of Mr. Rudd's head. In synchrony with the stressed syllable *vol-*, the emphatic forward nod of the head functions to emphasise the importance of Mr. Rudd's words (see Poggi et al, 2010: 2572–2573).

During the articulation of this syllable, Mr. Rudd's gaze is directed at his audience, his eyes are narrowed. The final syllable of *volatile* is integrated with two very rapid, emphatic head nods. Mr. Rudd's head both goes up and down very rapidly at the same time that it moves slightly forward as he holds and repeats the head nod.

As the Praat analysis in Figure 4.4 shows, the syllable *-tile* is characterised by a falling pitch contour (172 Hz to 93.85 Hz). The falling pitch and its synchronisation with the two rapid emphatic head nods, together with the forward protrusion of the head, all work together to signal the emphatic mode of Mr. Rudd's utterance.
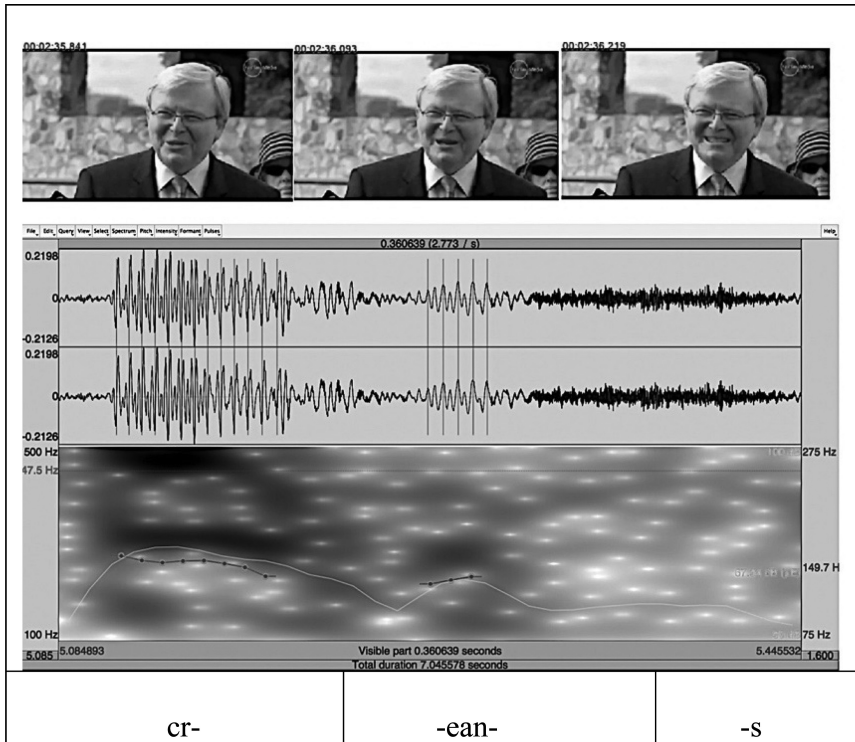
Figure 4.2 The pico scale integration of Mr. Rudd's smile, his laugh, his vocalisation, and the wording (*Crean's*) in pico scale event No. 1; [Source: Network Ten (Australia) television news broadcast on 22 March 2013 of a press conference conducted by Mr. Kevin Rudd before an outdoor audience at Kangaroo Point Cliffs in Brisbane].

The syllable -*tile* is followed by a pause lasting 0.333 s, followed by the first syllable of the word *business*, *bus*-, which is synchronised with a pronounced, rapid forward movement of Mr. Rudd's head. Initially, the head moves down and is then raised over the duration of the articulation of this syllable. Again, the head movement, in synchrony with the stressed syllable *bus*- , functions as an emphatic beat gesture for the purpose of underscoring the emphasis and salience that Mr. Rudd wishes to convey here.

Throughout the articulation of the final syllable, -*ness*, which lasts for 0.331 s and is characterised by a falling pitch contour (146.9 Hz to 103.6 Hz), Mr. Rudd's head moves slightly backwards and tilts slightly to his left. In this case, the head movement coupled to the direct gaze to the audience signals that the speaker (Mr. Rudd) is seeking confirmation from his audience that they follow his point (Poggi et al, 2010: 2573).

Figure 4.3 Pico scale event No. 2; [Source: Network Ten (Australia) television news broadcast on 22 March 2013 of a press conference conducted by Mr. Kevin Rudd before an outdoor audience at Kangaroo Point Cliffs in Brisbane].
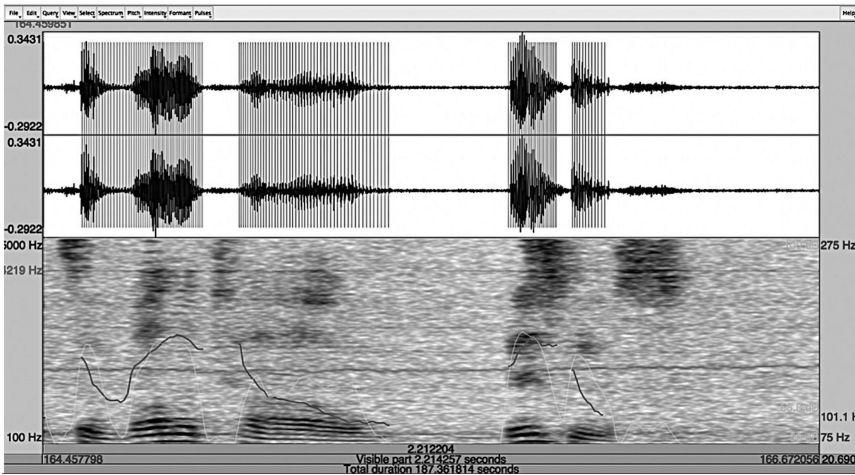
Figure 4.4 Praat spectrogram analysis of pico scale event No. 2, showing pitch contour (172 Hz to 93.85 Hz)

11.3 Pico scale Example 3: it's time to draw an absolute line under it

The detailed pico scale analysis of this utterance is presented in Table 4.7. The analysis presented in Table 4.7 shows that the utterance cannot be reduced to the vocal dimension alone. Instead, head, arm, and body movements together with eye gaze are all synchronised with pico scale aspects of the temporal development of the utterance in time scales ranging from milliseconds to fractions of seconds.

The utterance is an action trajectory that is controlled top-down by a semantic operator—the wording—that develops and modulates the unfolding action trajectory of the speaker's intended meaning at the same time that the trajectory is animated and energised by the bottom-up pico scale body dynamics analysed here. The top-down semantic operator mediates the relations between lower level components and structures and guides the unfolding action trajectory of the utterance. Table 4.8 presents in three phases this unfolding trajectory as an embodied multimodal clause-like structure of action in which the transitivity semantics of the wording (Row 3) operate in multimodal synergy with Mr. Rudd's hand-arm and body movements, described in Row 2.

The top-down semantics of the utterance flows through the entire action trajectory from onset to termination and modulates it, in the process binding all of the

Table 4.7 Pico scale event No. 3, showing the multimodal synergy of head, arm, and body movements, eye gaze, and vocalisation; [Source: Network Ten (Australia) television news broadcast on 22 March 2013 of a press conference conducted by Mr. Kevin Rudd before an outdoor audience at Kangaroo Point Cliffs in Brisbane].

Frame 1: 02:57.500 - 02:58.112	Frame 2: 02:58.112 - 02:58.402	Frame 3: 02:58.402 - 02:59.302	Frame 4: 02:59.302 -	Frame 5: 03:00.312
its	*ti-*	*-me to draw*	*an absolute line*	*under it*

Table 4.8 The unfolding trajectory of the utterance *it's time to draw an absolute line under it*, shown as a multimodal synergy of a wording and movements of the hand-arm, head, and body

Framing Utterance of Evaluation	Framed Utterance	
It's time;Onset of drawing action: hand raised	*to draw*; rightward movement of head, body and hand-arm in synchrony with vocalization	*an absolute line under it*
Carrier-Attribute: Evaluating clause	Process: Material: Action	Goal

bottom-up elements described in the analysis into a coherent action trajectory that is deictically anchored at or sourced at Mr. Rudd's narrative-self, i.e., his current here-now-me. Higher-order semantic operators are not simply the contents of individual minds. Semantic content is always cultural in origin. Culture shapes and provides the possibilities, including the content, of individual intentionality and psychology (Ratner, 2012: 46–51; Thibault, 2011b: 25; Van Orden & Holden, 2002).

   Pico scale event No. 3 concludes the self-narrative that has been the focus of my analysis. Mr. Rudd acts out and mimes the action of "drawing a line" under the political events of the day. Mr. Rudd's body movement asks his audience to move along with him (section 2.4 above) in an act of emulation that joins him to them in a common project. Miming the action of "drawing a line under it" is an act of imitation. Imitation is a meta-skill that enables us to transcend our bodies and to view things and do things as others do. In imitating others, we go beyond ourselves and incorporate into ourselves aspects of the way others perceive and act. Imitation is therefore fundamental to how we learn and thus we join with others in the formation of social projects. As research on the brain's mirror system has shown, when we observe someone performing an action, and when we imitate someone else's action, our brain simulates the action as if we are performing it ourselves. Our observing Mr. Rudd miming the action of "drawing a line under it" means that we move along with him in an imagined simulation from our own embodied perspective of the action of "drawing a line under it".[2]

   As we saw in section 3 above, miming is a form of abbreviated rehearsal. In the present case, Mr. Rudd's whole body dramatises in condensed and incipient form his efforts both to impose semantic closure and to anticipate the future development of his own trajectory and his audience's understanding of it. His action is shaped by his interactions with the many other selves who have been in some way participants in this narrative. His body mimes a prospective action and thus embeds it in a sense of the drama and the ritual that is being played out at the press conference at the same time that the wording explicitly formulates the action as a commitment to higher-order norms and principles that bind him to the project of the ALP and its commitments to the Australian people. However, his body action is not only about himself. In dramatising in this way his efforts to bring closure to the recent political events, he also appeals to the shared capacity of his audience—the media, his colleagues in government, the Australian public—to deal with the future and to judge his motives and actions in the light of his refusal to contest the party leadership the day before. Mr. Rudd is intensely aware that his every move is carefully tracked and scrutinised by multiple other selves, many of whom he will never encounter directly, and who are prepared to evaluate the smallest details of behaviour for signs of narrative consistency or inconsistency. I leave it to the reader to judge whether Mr. Rudd was genuine or not.

   The multimodal synergy of his wording with the bodily actions analysed above acts out a dialectic of what Kenneth Burke referred to as a meta-rhetoric of "renunciation and advance being fused in the one attitude" (Burke, 1969/1950: 251). In not getting the leadership now, Mr. Rudd is nonetheless getting it later. The killing of his ambition now (and his renunciation of the temptation to kill

off, symbolically speaking, the party leader, Julia Gillard) is the rhetorical means whereby he asks his audience to identify with him in his act of changing himself (see Burke, 1969/1950: 19–21 on the rhetoric of identification as a fusion of interests in what I referred to as the social projects that constitute the weave of social life in section 1 above). Mr. Rudd constructs his self-narrative with an attentive eye on the future. He knows that future stages of this narrative will inherit earlier stages as a result of others' perceptions and expectations.

In seeking to preserve his narrative coherency in the eyes of others, Mr. Rudd knows that future agents that are envoiced by his body and associated with his social reputation will spend his political capital. He therefore has an interest in the welfare of those agents. His recalibration of his self-narrative at the press conference thus serves (1) to stabilise the reputation of the self in the coordination games in which it participates; and (2) to maintain the overall narrative coherency of the self and its commitments in order to avoid the perception of inconsistency and unpredictability in ways that would exclude him from the projects to which he has subscribed. Selves are loci of coordination in often complex social coordination dynamics involving multiple other selves across multiple time and place scales. Mr. Rudd's self-narrative is thus functional in selecting for multiple equilibria that will facilitate his continuing participation in the projects to which he adheres.

The coherency and unity of the self is only ever an approximation both over time and at any given moment, given the multiple, competing sources of variation from above, on the same level, and from below. As we will see in the following section, it is a question of bargaining with the future by sacrificing personal ambition or pleasure in the present in order to achieve the common good or to take care of the self's going into the future. The dynamics of competing dispositions and values, both explicit and implicit, on different scalar levels show the self to be a complex meta-stable narrative function of these competing dynamics.

12. The sub-personal scale: coalitions of interacting sub-personal agents and neurohormonal flows compete for attention and behaviour

Neuro-economists (Ainslie, 2001; Ross, 2006; Schelling, 1980, 1984) have pointed out that the molar dispositions and behaviours of persons are not consistent over time, but rather are the outcomes of the competitive dynamics among competing sub-personal interests at the level of the individual's brain. There are competing information-processing dynamics within the human brain. Different brain regions compete amongst themselves for control of the person's behaviour (Ainslie, 1986, 1992, 2001; Dennett, 2003; Ross, 2005). Sub-personal neuro-agents are smaller-scale component processes of the individual person. For example, Ross points out that addiction arises "when the dopaminergic reward system hijacks the brain and, as a result, guides molar behavior according to its utility function rather than that of the person" (Ross, 2009: 272). The dopaminergic reward system is a sub-personal agent in a game that is played out amongst sub-personal agents in the form of functionally specialised groups or modules of neurons. Such agents, as Ross

explains, are molecular components of organisms. Persons may appear to behave irrationally due to the interactions among the sub-personal agents that pursue their own exclusive interests, often at the expense of the person. To quote Ross:

> Neuroscientists individuate systems in the brain by identifying generic functional responses with relatively encapsulated neurotransmitter pathways. The reward system is distinguished as a pathway that transmits signals using the neurotransmitter dopamine. Activity in midbrain areas that people share with other vertebrates, the ventral tegmental area (VTA) and pars compacta of substantia nigra (SNpc), release dopamine in response to surprising magnitudes of learned contingencies. These signals project most directly to the ventral striatum (VS) and especially to the nucleus accumbens (NAcc). For reasons to be explained later, persistently high concentrations of dopamine in NAcc are a basic neural signature of addiction. The reward system's dopamine signal also projects to pre-frontal cortex (PFC), where it appears to produce, at least in nonaddicts, a serotonin signal that acts as an opponent process.
>
> (Ross, 2009: 259–260)

The reward and threat systems integrate the following functions: (1) sensing and learning the environmental cues that specify reward and threat; (2) using cues to predict or anticipate rewards and threats; (3) discriminating between expected and unexpected cues by degrees of neuron firing and the corresponding degree of release of a molecule such as dopamine; (4) learning to discriminate degrees of rewards and threats; (5) learning to focus attention on cues that predict rewards and threats; and (6) motivating the agent-system to act in response to these cues in the form of the release of a molecule such as dopamine (benefit) or prolactin (threat) in order to obtain the optimal response from the motor neurons so as to obtain the benefit or to avert the threat (see Damasio, 2010: 54; Ross, 2009).

Ross points out that the high costs of the various kinds of addiction (e.g., alcohol, nicotine, gambling) are above all social. Being addicted is good for the sub-personal reward system, but bad for the person. Gambling, Ross shows, provides a source of reward "more reliable than socialization, and just as good with respect to *its* basic currency, surprise" (Ross, 2009: 272). Ross explains:

> Recovery from addiction usually requires that other people assist the beleaguered frontal and prefrontal systems of the addict by helping them form Ainslie-type personal rules through incentive-compatible bargains with other brain systems, and by keeping the addict out of familiar environments so as to deprive the reward system of its prediction cues, thereby starving it of cheap dopamine and allowing prefrontal systems to reassert themselves. In sum, the reward system must be put at an economic disadvantage, its costs raised and its relative bargaining power lowered. This, in general, is how people must try to govern the subpersonal agents in their brains: not by issuing

proclamations, but by facilitating internal logrolling among coalitions. Like other governments that can't rely exclusively, or even basically, on force, they're constrained by the utility functions of systems in their brains because they must satisfy a sufficient number of constituents to stabilize interneural bargains.

<div align="right">(Ross, 2009: 272–273)</div>

Persons assist each other to form coalitions against troublesome sub-personal agents in their brains. In helping each other to form Ainslie-type personal rules, persons give rise to norms that orient action and ground their actions in criteria of accountability and responsibility and the capacities that such criteria assume (see below). The successful following of these rules bring about their own social rewards. The interactions among competing sub-personal agents yield neuro-hormonal outcomes that have consequences for the individual person's decisions and actions though these sub-personal agents are beyond the conscious awareness and control of the person. The self is, then, not the driver of our actions, but the narrative unit of accountability (Harré, 1983; Pettit, 2007: 290). According to the Cartesian theory of mind, behaviour is caused by "inner" mental events. However, actions are intentional; they are not therefore explainable in terms of physical causation. People act for reasons and have the capacity to give reasons for their own and other's actions. The explanation of human agency therefore requires a form of explanation that makes use of notions like agency, responsibility, selfhood, and motive. Reasons make reference to criteria of warrantability or validity that are operational in a particular interpersonal moral order (Harré, 1983).

Such criteria are grounded in the capacities that agents display and recognise in others. Persons develop reflexive understandings of the social situations in which they seek to coordinate with others at the same time that they learn to validate their understandings. Agents are active beings that are in the possession of capacities, powers and dispositions that enable them to assign responsibility to their own selves as well as those of others. This view contrasts with those theories that explain human behaviour as being under the control of stimuli, drives, and instincts, seen as causal factors both internal and external, that control individuals as if they were objects merely pushed around by internal and external forces. At first glance, physical causation appears to be compatible with the fact that individual persons are themselves comprised of populations of smaller-scale sub-personal agents and agencies whose competing interactions and the coalitions they form can de-stabilise the person. On this view, sub-personal agents are the unseen causers or determiners of our actions. We shall see below that the person's narrative self plays a vital role in stabilising the lower-scalar dynamics of the populations of neurohormonal sub-personal agents whose interactions feed into the subjectivity of the person.

The centrality of languaging for an account of the agency of persons should be self-evident. Selves are narrative constructs that function through our languaging both to stabilise each other *qua* selves and, as Ross shows, to stabilise

each other's sub-personal neural dynamics. Whilst I have little or no access to or awareness of the intra-personal interactions among sub-personal agents that compete for attention in my brain, I nonetheless have the capacity to assume responsibility for my actions at the personal and interpersonal levels. I am therefore able to provide coherent and stabilising narrative accounts of them both to myself and to others. Moreover, I have the capacity to expect you to assume responsibility for your actions. This capacity is a cultural achievement rather than a biological endowment. In the cases of addiction discussed by Ainslie and Ross, we see that persons put pressure on each other's narrative selves as socially ratified strategies for stabilising unruly populations of sub-personal dynamics. However, the point is not confined to the unruly and tragic cases discussed by Ainslie and Ross. Sub-personal dynamics shape behaviour in ways over which persons often have little or no control. Akrasia, procrastination, decision-making dilemmas, motivational conflicts, and intra-personal conflicts of various kinds, together with the "intra-psychic" or "internal bargaining processes" (Ainslie, 1986: 163–170) that sub-personal agents engage in, amply testify to this fact.

By the same token, when sub-personal factors, perhaps aided by these intra-psychic bargaining processes, shape the person's behaviour in ways that conform to expectations and social norms, these same sub-personal factors interact with personal, interpersonal, and social ones on higher-scalar levels to make me into an accountable agent in the domain of that behaviour. When things go wrong, as in the case of addiction, sub-personal agents, in pursuit of their resources, effectively usurp the capacity of the person to exercise agent-control at least within the domain in question. It is at that point that persons respond to the need to take care of other persons by helping them to rebuild their narrative selves through *inter*-personal bargaining processes based on the allocation and distribution of rewards and punishments whereby selves stabilise each other. In the process, they also stabilise each other's unruly sub-personal dynamics such that the person, not that person's sub-personal agents, is perceived to be the one who exercises agentive control in the sense of being able to account for their narrative selves with reference to relevant social norms. Persons are sensitive to their own and to others' degree of need for correction (Damasio, 2010: 52). Long before the evolution of conscious minds, living systems had evolved incentive mechanisms—systems of emotional punishments and rewards—for the purpose of guiding behaviour. Damasio explains these incentive mechanisms as follows:

> How did incentives develop? Incentives began in very simple organisms but are very evident in organisms whose brains are capable of measuring the *degree* of need for a constant correction. For the measurement to occur, the brain required a representation of (1) the *current* state of the living tissue, (2) the *desirable* state of the living tissue corresponding to the homeostatic goal, and (3) a simple comparison. Some kind of internal scale was developed for this purpose, signifying how far the goal was relative to the current state, while chemical molecules whose presence sped up certain responses were

adopted to facilitate the correction. We are still sensing our organism states in terms of such a scale, something we do quite unconsciously, although the consequences of the measurement are made quite conscious when we feel hungry, very hungry, or not hungry at all.

What we have come to perceive as feelings of pain or pleasure, or as punishments or rewards, correspond directly to integrated states of living tissue within an organism, as they succeed one another in the natural business of life management. The brain mappings of states in which the parameters of tissues depart significantly from the homeostatic range in a direction *not* conducive to survival is experienced with a quality we eventually called pain and punishment. Likewise, when tissues operate in the best part of the homeostatic range, the brain mapping of the related states is experienced with a quality we eventually named pleasure and reward.

(Damasio, 2010: 52–53)

The agents of these processes are the sub-personal hormones and neuromodulators that have the capacity to act in the pursuit of their own interests rather than those of the person. However, on the personal level of conscious languaging agents, the process is more than a correction of sub-personal neural and chemical imbalances. It is also and above all a modulation of experience and its orientation to positive values experienced either as reward/pleasure that enhance the recursive self-maintenance and self-individuation of the person or negative values experienced as punishment/pain that threaten the recursive self-maintenance and self-individuation of the person (Damasio, 2005: 48–49; 2010: 54).

People routinely regulate each other interactively through the administering of inexpensive emotional rewards and punishments that are functional in the stabilising of one's own and others narrative selves. Affective-emotional rewards and punishments that are administered by languaging agents thus link narrative selves (persons) and the systems of social norms that guide their actions to bodily feeling states that agents interpret and feel in value-laden ways (Stuart & Thibault, 2015). People thus have recourse to reasons that they connect to bodily feelings. Reasons are operators that persons apply to their own and others actions in order to connect body feelings to social norms and criteria of accountability and warrantability. Reasons provide socially ratified parameters such that a person is stabilised as a coherent narrative self that is recursively self-maintained and self-individuated through time. The appeal to socially ratified reasons as the grounds of persons' actions thus provides a synthesis of the present and the past in anticipation of potential future interaction outcomes.

The discussion of Mr. Rudd's performance at his press conference serves as illustration of the ways in which selves are highly sensitive to affects and influences from many diverse scales of place and time in their social worlds, including their virtual internal ecology. Selves are recursively self-maintaining and self-individuating systems that organise and enact changes in their self-environment dynamics and relations in response to felt changes in their own internal dynamics

in ways that are designed to adjust to external circumstances and to produce coherent self-narratives in response to these circumstances and the norms and values that apply to them.

The four scalar levels that I proposed above show that the processes of recursive self-maintenance and self-individuation of selves are multi-scalar and multi-layered in ways that indicate that higher forms of these processes (e.g., the co-articulation of a coherent narrative self and its world) emerge from lower-order ones (e.g., the feeling body and its value-weighted pico scale dynamics) that constitute our feeling of being in and being with the world when we move along with its flows (Vol. I, chapter 3). Languaging is irreducible to the "symbolic" level of verbal pattern *per se* because (1) languaging emerges from the dynamics of the lower-order subvenient bodily and intra-psychic experience; and (2) languaging integrates the lower-order dynamics to higher-order cultural and social dynamics in the moment-by-moment articulation of the "I" against the backdrop of the moving trajectory of the here-now-me deictic field where the "storm centre" of the body so perceptively articulated by William James irrupts into social life (Vol. II, chapter 2, section 5).

13. Knowing levels, affectively charged drama, and the dialogic re-organisation of the self: discussion of an example from James Martin's work on Youth Justice Conferencing

In this section, I refer to a study by Sydney-based linguist James R. Martin (2009) on teenage identity in Youth Justice Conferencing conducted in New South Wales, Australia. I briefly examine an instance of people regulating each other in the sense described above. Specifically, I will examine a fragment of an exchange between the Convenor and the Young Person (YP) who has been charged with an offence. YP had stolen a bag of chips from a shop while affected by drugs and was subsequently detained by the police. The exchange quoted below is the concluding part of a larger-scale macro-genre that is designed to integrate young offenders back into the community (Martin, 2009: 551) in the spirit of restorative justice. The concluding evaluation is preceded by YP's lengthy recount of the incident.

In the fragment that I now focus on, Martin makes the following observations on YP's concluding evaluation, which is included in the quoted text from Martin below:

> The same YP is (sic) also requires much less promoting as far as evaluation is concerned, and commits her own self-criticism, remorse and apology:
>
> *[6] Convenor*: So what have you thought about since, um, since this incident?
> *YP*: How stupid I was. I was just, y'know, I dunno, I was just stupid, I think, at that time. I'll think twice next time (before I do something like that again).
> *[7] Convenor*: So how long after the incident did you have a chance to sort of reflect back on it and think about what happened.

> YP: Pretty much that day (I called home and I was describing to my mum)
> that doing that stupid incident that night because that day I (wanted to)
> go back and apologise cause ( ) I always go there and I felt so bad cause
> um, they're always nice to us and we went and done stupid things ( ).
> Yeah, I was stupid.

> In fact this YP comes far closer to the ideal proposed by designers and advo-
> cates of restorative justice conferencing than other YPs in our study. She both
> recognises and realises the role she was intended to play, in stark contrast to
> the YP in text 3 above, who in Firth's terms was apparently poorly cast for
> his part and did not know his lines.

> (Martin, 2009: 567–568)

Rather than reciting her lines, as in Firth's (1957) account, the YP, I submit, engages in a process of reflective abstraction about the incident under discussion that is both self-referring and self-projecting. Moreover, she does so in ways that reflexively individuate her changing relationship to her social world. In (6) in Martin's transcription, on prompting from the Convenor, she articulates a nega- tive evaluative prosody of her action: "How stupid I was … I was just stupid." Her self-evaluation is a meta-level perspective of the self on the action she performed on a lower level (not explicit in the excerpt above, but available in the recount that preceded the excerpt quoted above). The higher level articulates values (the negative self-appraisal and thus the recognition that the action of stealing the bag of chips from the shop was performed on the basis of conflicting values at the time of its performance that are not in accordance with her current recognition of her "stupid" action.

YP then proceeds to an explicit formulation of a meta-level position ("I'll think twice next time"). This meta-level stance not only provides further evidence of her previously articulated negative self-appraisal, but also articulates, on the higher (meta-) level, a recognition of and a willingness to bring under conscious control the impulse or motivation to behave in the undesirable and harmful way. The preceding recount indicates that YP had poor control of impulses and experienced difficulty in ranking the sequence of events that she recounts in considerable detail in terms of their importance and relevance. Aside from her young age, this will no doubt relate to the semiotic repertoires available to her on the basis of macro- cultural institutional factors. Other macro cultural factors that are potentially rel- evant include: diet; environmental quality (noise, pollution levels, etc.); family, community, and peer relations; housing arrangements; parental involvement and modelling; quality of schooling; media access and quality; and social class.

It is her access to these repertoires which structures consciousness and thus her ability to articulate and organise emotions, feelings, goals, memory, motivations, values, volition, social relations, self-reflection, relations to authority, and so on. The semiotic repertoires that are available to persons are not simply resources that they "use". They actively structure and organise consciousness (Bernstein, 2000; Hasan, 2016a/2005, 2016b/2001; Ratner, 2003; Thibault, 1991; Whorf,

1956/1941; Vygotsky, 1987/1934). The psychology of the individual is dependent on and is organised by the cultural resources that the macro-cultural organisation of a society makes available to people according to their social positioning and the forms of experience that this positioning makes available to them. Cultural and psychological phenomena are dialectically related to and are constitutive of each other. Culture provides access to semiotic repertoires and material resources and psychology connects these to personal experience, intra-psychic dynamics, and life trajectory.

The macro-genre that Martin focuses on sets up and promotes an occasion in which personalities clash in affectively charged dramatic events. These personalities include, in addition to the YP, the YP's support person (often the mother), the victim and the victim's support person, an arresting officer, a police Youth Liaison Officer, and at times an Ethnic Liaison Officer (Martin, 2009: 551). I draw on Vygotsky's (1987/1934) argument that intra-individual or intra-personal higher mental functions first existed and functioned as inter-personal social relations between persons before the social relation is appropriated and reorganised as a mental function by the individual person. In developing this idea, Vygotsky drew upon George Politzer's (1928: 28; see Vygotsky, 1986: 58, 74, n. 12) argument that classical psychology had replaced the drama of the concrete individual with an abstract and impersonal drama. In doing so, psychology affirms the equivalence of the two dramas. Consequently, Politzer argues, psychology and psychoanalysis have focused on abstract and formal elements rather than concrete and lived ones. Politzer's concrete psychology is therefore a productive source for the concrete psychology that Vygotsky envisaged in the notes that were published posthumously as his final published work (Vygotsky, 1986). See Roth (2016) for a sustained development of Vygotsky's conception of a concrete human psychology.

According to Veresov (2004: 19–20, 2017), another source of Vygotsky's concept of "drama" lies in the meaning of the term "category", which Vygotsky appropriated from the pre-revolutionary Russian theatre terminology of Russian theatre director Vsevolod Meierhold (1920). In that tradition, as Veresov explains, the term "category" meant "dramatic event, collision of characters on the stage" (Veresov, 2004: 19). Category in the tradition that Vygotsky most directly drew on is a unit of drama that refers to an emotionally charged relation between actors expressed as a dramatic event on the stage. It is not a mechanical reciting of one's lines! My concern here is not with the theatre, but with the emotionally charged dramas that we experience in everyday life—in families, friendships, schools, workplaces, and so on.

In these emotionally charged dramas, new conceptual-ideational structures emerge that provide persons with new tools for thinking about their situation. In the first instance, these structures are dialogical. In YP's evaluation, we see how, under the pressure of the situation, she not only reappraises things; she also re-categorises them. Appraisal and categorisation are in any case not totally separate matters. Appraisals draw on social categories just as categories also entail some kind of normative judgment. In appraising her action as "stupid" and deciding

to "think twice next time", YP begins the process of re-categorising herself, her action, her relations to others, and thus her responsibilities. Dysfunctional categories that she previously acted out are, under the pressure of the emotionally challenging restorative event, made explicit, examined, and de-selected as part of a learning process that is oriented to the formulation in the dialogue of new categories that can be appropriated and that will serve as heuristic guidance in the formulation of more functional life strategies. YP's evaluation takes her to the threshold of this discovery.

YP in other words begins the process of caring for herself and others in a new more productive way. The processes of re-appraisal and re-categorisation referred to in the previous paragraph institute a process of re-adaptation to the social world that alters her consciousness. The self and its objects (Vol. II, chapter 3, section 1) are re-configured. The development of new, more functional conceptual-ideational structures is a "small drama" (Vygotsky, 1986: 58) in which attention— a higher mental process—is re-organised (see also Veresov, 2017, 2019). For example, when YP refers to "that stupid incident" she is attending to her actions in a new way that begins the process of re-categorisation both of the incident and of her own self in relation to it. Vygotsky argued that social relations are the productive source of all higher mental functions:

> Genetically social relations, real relations between people, underlie all higher functions and their relationships. Homo duplex [a dual person-Latin]. Hence the principal method of personification in the study of cultural functions, i.e., voluntary attention: the one side controls, the other is controlled. Renewed division into two of what had been fused in one (Cf. modern labor), the experimental unfolding of a higher process (voluntary attention) into a small drama. See Politzer: psychology in terms of drama.[12]
>
> (Vygotsky, 1986: 58)

Attention is a structuring of interest and evaluation. In attending to one thing rather than another, the observer imports feeling and value into the object that is attended to (Vol. II, chapter 2, section 3). In microgenetic terms, attention is an unfolding from self to the object attended to over successive phases of the microgenetic development of the object. When we understand attention in this way, we can better see it as a struggle or drama between the subject and object poles (Vol. II, chapter 3, section 1) as both self and the object of attention develop with consciousness and attain clarity in YP's languaging. Vygotsky further points out that "man controls the activity of his brain from without through stimuli" (1986: 59). Self and stimuli are two poles of the drama of consciousness that unfolds in the development and the clarification of the objects of consciousness—the objects that the self cares about and attends to. The self appropriates stimulus information through active exploration of its environment at the same time that it is also constrained by the stimulus information that is picked up. In this way, stimulus information is functional in adapting both self *and* the object attended to to reality. This process of adaptation is a struggle or drama between,

on the one hand, self and object, and the competing possibilities that must be selected from, on the other, in the process of adapting the object to reality. The struggle—the drama—between "the side that controls" and the "controlled" in the quotation above is the struggle between self and object whereby the act of attending to something and thereby constituting it as an object of consciousness is a social struggle or drama that is "transferred to the individual personality" (Vygotsky, 1986: 58).

The theatrical origins of the term "category" in pre-revolutionary Russia indicated by Veresov are taken up by Vygotsky as a way of theorising how emotionally significant social relations in the lives of individuals are functionally re-organised as higher order mental functions (Vygotsky, 1994b/1935). The significance of this definition lies in the ways in which emotionally charged social encounters and social relations between persons have the quality and the feel of a high stakes drama—e.g., a clash of personalities, points of view or values, a dialogical clash of intentions—that impacts on and leaves a lasting impression upon the persons who participate in these social dramas. Encounters of this kind, not any ordinary, low intensity or routine social encounter, have the potential to change persons, both cognitively and affectively, on account of the ways in which intense, emotionally powerful experiences can re-shape and alter the cognitive and emotional structures of individuals. This cognitive and emotional re-structuring leaves them receptive to and can help to constitute new learning experiences of lasting significance in the life of the person (see also Freeman, 1995: 135). Of course, this newfound receptivity, to be of lasting significance in the life of the individual, needs to be supported by access to the semiotic repertoires and macro cultural resources that will enable and support a sustained transition from dysfunctional to functional psychologies of the self.

Drama is a way of sculpting the endogenous dynamics of human agents to cooperative forms of social behaviour and organisation. Rather than the metaphor of "internalisation" used by Vygotsky (and many other researchers since), I argue that the kinds of affectively charged dialogical encounters between persons that Vygotsky theorised as an important component of the explanation of the social origins of intra-personal mental functions in the development of the self bring about intentional and affective modulations and reorganisations of agents' endogenous dynamics. Such encounters serve as technologies "for bonding in groups" (Freeman, 1995: 134). The fact that we can see this in the dramas of restorative social justice bears this out. Freeman sees this 'technology for bonding in groups' as perhaps the precursor technology to all the other major technological revolutions:

> The major technological revolutions in cultural evolution are commonly listed as tool making, agriculture, and manufacturing, each entailing a geometric spurt in population growth. Before them all, perhaps, emerged the technology for bonding in groups, since making tools, fires and shelters required cooperation among brains.
>
> (Freeman 1995: 135)

Building on Freeman (1995), intense social encounters create the altered states of consciousness and body feeling that build affective bonds and relationships of trust and cooperation between individuals Vol. I, chapter 3, section 4). The ability to build such bonds may have led to the socialisation of intentional structures through processes of "repeated unlearning" that lead to the emergence of group identities. The emergence of group identities and the technologies of unlearning, conversion, and bonding that this involves provide resources for the focusing and modulation of the intentional structures required for cooperation between individuals in groups. The capacity of individual agents for group bonding through affectively charged social interaction could have led to the ability to attribute intentional properties to other agents given that other agents have the capacity both to affect in intentionally modulated ways and to be affected.

In other words, YP shows a receptiveness to the "drama" and a willingness to engage with and to make explicit the values and goals on the lower level that informed her action. Consequently, she not only recognises the wrongness of her action and its dysfunctional character; she also works on ways to change it. If the lower level values and motivations remain implicit and are neither recognised nor changed, they will remain in conflict with any higher-level profession of a desire to change. It is important therefore that the self be able to recognise the lower level values that she implicitly acts out by making them explicit on the meta-level and self-projecting them into possible future situations. This is necessary so that she can change her ways of being in the world so that they are aligned with the articulation of higher-level values. If higher level values and goals remain out of alignment with lower level ones that continue to be implicit in how one acts, then conflict and dysfunction will result.

In (7), YP recounts calling home and describing to her Mum what had happened. In her recount, she again picks up on the prosody of the negative appraisal ("that stupid incident") at the same time that she provides a reason/motivation as to why she called her Mum, viz. "that day I (wanted to) go back and apologise". The modality of inclination ("want") indicates a deliberate re-ranking of former priorities. YP is responsive to the wrongness and the "stupidity" of her action and at the same time she articulates an awareness that social norms have been violated. An apology serves both as a public recognition of one's guilt and an act of contrition. In this way, one seeks to be reintegrated to the society whose norms have been violated. Whether one is reintegrated or not depends on whether the offended party recognises and accepts the expression of contrition and is prepared to forgive (Thibault, 2005d). Moreover, the macro-genre of restorative justice conferencing shows that forgiveness is in the first instance a culturally evolved institution (Ross, 2012) that serves to regulate the social relations between offenders and offended.

YP continues with an explicit recognition that she was in some way affiliated with or attached to the place where the incident occurred ("I always go there"). Her going to the shop where she stole the bag of chips is modalised as "always". The modality indicates that the shop was woven into the fabric of her familiar and habitual, day-to-day social life—presumably in her neighbourhood. Implicitly

acknowledging her self-exclusion from this place as a consequence of her stealing the chips, she articulates a negative bodily feeling ("I felt so bad').

This feeling is a somatic marker (Damasio, 1999) that indexes both her sense of shame and her awareness that she has violated a social norm. Her feeling "bad" is explicitly motivated by a reason ("cause um, they're always nice to us") that foregrounds the felt conflict between YP's negative behaviour and her awareness that she has violated a social norm. The bad feeling both modulates and guides her self-awareness of her negative action at the same time that it helps her to articulate a clearer understanding of the conflict between the values and goals that are implicit in her stealing the chips and the need to re-orient these values to more positive values and goals.

Drawing on Maton's Legitimation Code Theory (2000, 2007, 2009), Martin frames YPs positioning in terms of how forthcoming the YP is (a stronger to weaker epistemic relation of admission) and how remorseful the YP is (a stronger or weaker relation of contrition). I do not in any way dispute this analysis. My claim is that the pedagogic discourse of restorative justice that takes place in the youth justice conferencing that Martin analyses is in fact a therapeutic technology of the self. This therapeutic technology of the self focuses on, articulates, and aims to realign the complex and often implicit relations between values and goals on the different knowing levels of the self and the interactive relations between these levels. This is necessary in order to make explicit the conflicts of values and goals on different knowing levels that selves act out in their lives, often with tragic consequences.

The processes of constituting and re-constituting the self so that the usually implicit lower level goals and values are made explicit and understood in the light of higher-level ones is a fundamentally dialogical drama in which other selves play a major role in caring for and regulating the unruly relations between values and goals on the different knowing levels of the self. However, much more is involved that simply reciting one's lines. The processes of reflective abstraction that the self, under pressure from the convenor, is required to engage in require the exercise and the development of one's power of self-reflexivity and self-reflection. If one were simply mechanically reciting one's lines with no "inner" commitment, there would be no reflective abstraction, no reorganisation of the self's values and priorities and what this means for the self's future being in the world and the self's relations with others.

14. Concluding Remarks

In this chapter and the preceding one, I have emphasised that languaging is a highly productive inter-action system in relation to which the self is a principle of narrative coherency and stability that functions as a locus of social coordination dynamics across multiple time and place scales. Post-structuralists emphasised the discursive construction of the subject. Some linguists have talked about "language" as something that we "use" and that our uses of "language" are mediated by supra-individual systems or codes. Uses of language are seen as outputs of systems. Others have focused on systems of "rules" that generate the possible

utterances of a language. Still others focus on the construction of discursive identities. All of these views have consequences for how we view the persons who participate in what I have termed languaging.

I have emphasised that languaging is a highly productive, conscious and intentional form of human action. Action cannot be adequately explained by any of the approaches outlined above. The theories of microgenesis developed by Werner and Kaplan (1984/1963) and Brown (2005, 2015) show that actions involve anticipation, conceptual feeling, experiential memories, imagery, and value. However, this does not mean that microgenesis theory is about the "hidden" and unconscious sources of our actions. Actions are not "caused" by more primitive drives or impulses. The unconscious, as Vygotsky (1930) also understood, is not a cause of actions but a potential from which actions are derived. An action is a trajectory that develops in time. It involves and requires microgenetic set up in which implicit beliefs, feelings, imagery, memories, motives and values are pruned and shaped into an action trajectory that is initiated by largely implicit endophasic processes and terminates as a social action in exophasic social space. Action is the outcome of attitudes, belief systems, conceptual structures, experiential memories and value systems that are organised and directed by a self who is not only the deictic source of the action, but also the deictic locus of responsibility and accountability.

Microgenesis is not the cause of action. It prepares and sets up the possibilities for action prior to the conscious formulation of an intention to act. The formulation of an intention is not the cause of an ensuing action, but part of the process of the development of an action trajectory that terminates in an action performed. Desires, interests and needs are not the causes of action trajectories. Instead, they contribute to the formulation of possibilities of action that may result in an intention or a decision to act (Shapiro, 1981: 17) in accordance with that person's beliefs, conceptual-ideational structures, feelings, memories, and values. For this reason, action is deeply grounded in the character of the self. The functionalist focus on the "uses" of language views needs and interests as the motivators of signs. In my account, a customer who has an interest in buying bananas is not driven by that interest *per se*. Her utterance is not shaped directly by that interest. Rather her interest—to buy bananas—stimulates her awareness of the possibilities of action in accordance with one's beliefs, ideational structures, and so on (section 2). This interest brings forth an explicit intention to act and thus to select amongst the available possibilities of action. The selection of a particular action from amongst these possibilities is shaped by the requirement that the self coarticulates and manages a particular relationship with the relevant environment and its affordance potentials. Her action trajectory—her utterance—is shaped in large measure by the normative requirement that the utterance is constrained and sculpted by its intrinsic social telos. Intrinsic functional constraints thus play their role in the honing of an action trajectory that enables the buyer in the example discussed in section 2 to achieve a functional fit with her current environment.

The "feeling of agency" (Brown, 2015: chap. 5; Damasio, 1999) arises when one selects a particular action from among the possibilities available although

this feeling can be amplified and/or attenuated by many factors that are internal and external to the self. Action is integrated to and organised by the need to resolve conflicts between values—values that arise and are formulated, implicitly or explicitly, on the different knowing levels described in Vol. II, chapter 3, section 2. The competitive dynamics among sub-personal interests described by Ainslie and Ross need not be reified as a war among diverse sub-personal agents or homunculi, but as conflicts among values on different levels of the hierarchy of knowing levels of the self (Campbell et al, 2002: 813). The ideological struggle between the different voices and the values that they articulate in the psyche of the individual that Vološinov (1973/1930, 1976/1927) described shows that the psyche is constituted by the positions that the self takes up or is required to take up in the social structure. The phenomenological experience of the multiple voices that make up the psyche and the ways these manifest themselves both in the forms of mental rehearsal that we perform in inner speech and in subtle modulations of voice dynamics shows that the self is constituted by complex, often conflicting and unresolved relations between values and goals, some implicit, others explicit, on different knowing levels. Subtle modulations of voice dynamics give voice to the relationships between the values and goals on different levels, often in ways that the speaker is not aware of, but which listeners will often attune to and be affected by.

The mother who formulates the explicit goal that her daughter needs to see a psychologist because "she has a problem" takes up an explicit viewpoint and thus an impetus to act on higher knowing levels that may very well be in conflict with the implicit goals and values she has on lower levels. Her uncontrolled outbursts of anger towards her daughter are the result of conflicts between higher level values and goals and lower level ones. Her angry outbursts are themselves the outcome of automatised habits and ways of interacting on lower levels that remain implicit, unrecognised, and unaddressed. Her own perception of her teenage daughter's responses to her are explicit higher-level formulations of goals that may therefore be in error, and in need of change. The mother may need to engage in a major re-ranking of lower-level values and goals that have remained implicit so that they can be properly recognised and, if negative, replaced, and, if positive, restored to their rightful place in the living of one's life with care, purpose and meaning.

The self-in-languaging is fundamental to this enterprise because it is the self, not the abstract identity predicates that we attach to people as members of this or that group, that can engage in the hard work of reflecting on and re-organising the relations between the layers of values and goals, both implicit and explicit, and their envoicings in our languaging practices that impede or enable the weaving of the self into the projects in and through which the self is articulated, defined, recognised, and thus woven into the fabric of social life.

The enlanguaged self is the cultural technology that humans have evolved in order to live in societies of selves and thus to take care of and to bond with other selves as we move along with them in the living of our lives together (Freeman, 1995: 135). In doing so, selves have developed capacities for reflecting on the

complex relationships between the values and goals, implicit and explicit, that inform their actions and choices of actions rather than on discovering the purportedly "authentic" self in the "inner" recesses of their being. Selves are recursively self-maintaining and self-individuating organisations of process that are embedded in higher-scalar ecosystem processes with which they co-evolve and co-develop. The human ecology is itself a living, self-organising, self-maintaining and self-individuating complex system that integrates selves and other living beings to its own dynamics. It is therefore important to avoid the kind of organism-centered biological functionalism that I critiqued in Vol. I, chapter 2. The self-maintaining and self-individuating activities of languaging selves are integrated to and are dependent on what ecosystem dynamics on higher scalar levels require them to do. Selves are participating functional organisations of process that enact ecosystem functions on higher scalar levels. To echo the quotation from Whitehead that heads this chapter, selves are incompletions in process of production whose production—their recursive self-maintenance and self-individuation—depends on their integration to dynamical higher-scalar ecosystemic functions and processes.

Notes

1 Here I use the term "correspondence" in the first sense discussed by Ames (1955) (see Vol. II, chapter 2, section 4). In the text above, "correspondence" is used in the sense of "match" or "be identical to" in contrast to the transactional sense of the term "correspondence" that I developed in connection with the work of Ames and Ingold (2016) in Vol. II, chapter 2, section 4.

2 In one televised news report on Mr. Rudd's press conference at the time, the reporting journalist, in quoting Mr. Rudd's utterance, *it's time to draw an absolute line under it*, also imitated Mr. Rudd's miming of this action. This is a good example of how the journalist qua observer of Mr. Rudd imitated Mr. Rudd's gesture and therefore simulated it from his own perspective for the benefit of his television audience. The gesture and the force with which it is enacted is in interesting ways like the rhetorical figure of *ekfrasi*—bodily enactment of image or sound—that has been used to analyse the ways in which the gestures and body movements of orchestral conductors—Herbert von Karajan in particular—"render visible and audible the energetic content of the work [of music, PJT]. (my translation)" (Benzi, 2019: 180).

Afterword

In the beginning was the not-word.

<div align="right">
-you & me (with the collaboration of St.
John), 0000, p. 0
</div>

Der Gefangene:
Und sperrt man mich ein
in finstere Kerker,
dies Alles sind nur
vergebliche Werke;
denn meine Gedanken
zerreißen die Schranken
und Mauern entzwei,
die Gedanken sind frei!

<div align="right">
- Lied des Verfolgten im Turm (1898), orchestrated
song in Des Knaben Wunderhorn, Gustav Mahler,
1892–1901, arranged from German folk verse
collected by Achim von Armin and Clemens
Brentano
</div>

1. An ontology of living process for languaging terrestrials

Hans Jonas (2001/1966: 9–10) pointed out that modern western thought, which began with the Renaissance, created an ontology of the world based on the notion of pure matter that is "stripped of all features of life". This is the ontology that underpins the modern scientific view of the world. On this view, the existence of life in a mechanistic universe is the problem that needs to be explained, paradoxically, in terms of the mechanistic ontology that underpins the scientific view of the world. However, the mechanistic view is not the world we live in and that we share in relations of community and reciprocity with the other living beings and the many different kinds of process flows that populate the human ecology. We do not live in the lifeless world of inanimate masses and forces, but in a world

that is teeming with what Jonas calls "felt aliveness" (2001/1966: 10). The world we live in—the human ecology—is alive with feeling, meaning and value rather than being inert and lifeless. Living forms of all kinds do not inhabit the world that is studied by physics. Therefore, our understanding of the world of living forms and their interrelations requires an understanding of the meaning flows that characterise the world of the living that we inhabit and share with other living beings (Baldry & Thibault et al, 2020). These meaning flows are not reducible to structural or compositional units and relations of the kind that linguistics and semiotics has focused on. Instead, they are properties of multi-scalar ecosystem dynamics that extend over place and time scales.

The two volumes of this study have mainly focused on embodied languaging that is grounded in everyday familiar situations. We do not live in a separate realm of human Culture that is set against external Nature. Nor do we live in a world of "meaning" opposed to meaningless "matter". The distinction between "meaning" and "matter" implies a physicalism that is based on an abstract even idealist materiality that was never and could never be grounded in a living body and its activities—one that dwells in the soil of the territories in which it lives and moves along its pathways together with others. Rather than an objective material world that is external to and even extraneous to us, a new internalist conception of the material world needs to be developed—one that is founded on a process ontology of affects, relations, and value. The interacting process flows of the world that are encompassed in such a conception and its politics include other species, "things" in Heidegger's (1971) sense (Vol. I, chapter 3, section 10), the air we breathe, lakes, seas and oceans, the soil we dig into and stand on. All of these (and much more) are organised flows of energy and materials that we interact with and which have capacities and powers to interact with us and to affect us. As Bruno Latour (2018/2017: 116) points out, these processes do not exist outside of the human world in some external nature (see Vol. I, *Introduction*, Section 2).

The present study takes a few incomplete first steps towards the development of the following principles:

1 Human languaging is organised process flows that can only be understood in relation to the other process flows with which it constitutes activities and practices across diverse time and place scales in the human ecology;

2 The study of languaging must emphasise these process flows—microgenetic, logogenetic, ontogenetic, phylogenetic--rather than focus exclusively on the reified final products of these process flows;

3 Selves are created by languaging and languaging is created by selves: understanding the self-in-languaging is fundamental to the development of an understanding of the multi-scalar dynamics of languaging;

4 The theoretical constructs developed for the understanding of languaging must be able to provide explanations that account for languaging as a constitutive component process in the human ecology in relation to and in interaction with the other component processes of the larger systemic whole—the human ecology—in which languaging functions;

5 Languaging is constitutive of the many forms of ecological work whereby selves attend to and care for each other and for the other agents and agencies with which they are in relations of community and reciprocity. These agents and agencies affect each other and move along together in the making and living of the life processes that connect persons to other persons, to other living beings, to artefacts, texts, technologies, and social institutions in the human ecology.

6 Our interactivity with others crucially depends on our sensitivity to the ecological information that is made available by micro-temporal or pico scale bodily dynamics. In infancy, humans learn to attune to and to develop biosemiotic skills of interpretation of very subtle aspects of eye gaze, facial expression, gestures, postural orientation, and voice dynamics. We develop biosemiotic skills of attunement to and responsivity to bodily events that occur on time scales of fractions of seconds to milliseconds. These biosemiotic skills are therefore crucial to the ways in which we experience other persons in our languaging (Galosia et al, 2010; Steffensen et al, 2010).

"Language" has been viewed in the language sciences as something that is "far away" and external to the ways in which we live our lives as embodied biosocial becomings (Ingold, 2013) who are the bearers of capacities and skills and whose sociality is deeply rooted in the organic basis of human social life. In the present study, I develop a view of languaging from "close up" and which is, to quote from LaTour (2018/2017: 116), "*internal* to the collectivities and *sensitive* to human actions, to which they [the structures of the world, PJT] *react* swiftly." It is languaging with our feet on the ground and necessarily entangled with the earth systems to which we belong. Such a view is in contrast to the reified and obscurantist abstracta of post-modern ideological celebrations, however ironic, of the imperial, western-led system of global financialised capitalism and the economic, military, and other forms of violence that enable and sustain it.

2. The irreducibility of the human world to naturalistic processes

The human ecology is irreducible to either hard core biologism or to the physical processes studied by physics. Like all living systems, human beings engage in transactions of materials, energy, and information between their organic bodies and their environments. In recent decades, the cognitive and brain sciences have enthusiastically embraced reductionist naturalistic explanations that view humans as just another animal species. The idea of the "extended human ecology" serves to remind us that humans are not reducible to natural processes. Humans have unique and specific characteristics that cannot be explained in reductively biologistic terms. Human culture has enabled humans to transcend their biology. Naturalistic explanations, for example, in seeking to reduce consciousness to brain processes or to genes (see Moss, 2004/2003 for a critical assessment of gene-centered biology), deny the cultural-historical content of human bodies, emotions, and seemingly natural processes such as eating and sexual activity.

Michael Halliday (2002b/1961: 62–65), in what is arguably the first multi-modal[1] analysis in the tradition of systemic-functional linguistics and social semiotics that his work played a seminal role in constituting, showed more than 50 years ago that eating is a culturally patterned activity with its own "grammar". Halliday shows how the grammar of a daily menu specifies what choices are available in each phase of the unfolding structure of the meal and what goes with what in the constitution of any given phase of the meal and of the meal as a whole. The meal is thus conceived of as a communal rather than solitary activity in which its participants co-articulate specifiable "grammatical" relations between units of different kinds on different levels of analysis. The smallest such unit is the "mouthful" on analogy with the morpheme in linguistic analysis. However, Halliday is quick to point out that neither meals nor languaging are simply built up by combinations of smaller constituents into larger ones, as in the immediate constituent analysis characteristic of neo-Bloomfieldian linguistics. Instead, the different classes of units and their syntagmatic arrangement in a meal co-articulate the relations between the participants—the diners—and different aspects of the meal, including not just the food items and their ingredients, but also the eating utensils, the crockery, the setting of the table, the seating arrangements, and so on. Eating a meal and the menu that underpins its organisation is a norm-following activity in which the diners orient to and realise cultural meanings and values.

Carl Ratner (2012: 29) points out that human culture is not simply added to our biology. Cultural artefacts, conceptual-ideational structures, institutions, practices, technologies, and tools organise human biology along cultural lines. Culture is integrated to biology and re-organises it. Culture shapes and permeates human psychology, which is neither reducible to nor explainable in terms of innate, natural programs that, according to naturalistic explanations, determine behaviour. Human biology is a general potential that is saturated and shaped by cultural processes so that it is entrained to, organised by, and consistent with them (Ratner, 2012: 54). This does not mean that human biology and culture are two separate independent variables that "interact". The organic basis of human sociality does not pertain to a separate biological domain that is closed to and sealed off from our sociality. The organic basis of human existence is intrinsically open to sociality out of ontological necessity. For this reason, it is incorrect to postulate an abstract social or discursive realm that stands above the organic facts of our embodiment.

Human biology and culture dialectically interpenetrate and fuse with each other. This does not mean that human social and cultural life floats free of human biology. Human social and cultural life is necessarily grounded in the organic basis of our existence as embodied beings with selfhood (Vol. I, chapter 2). However, the fact of human selfhood extends us beyond the organic basis of our embodiment and into the human world in which we conduct our lives. The human ecology is not just another environment or ecosystem that surrounds human organisms and to which they are tightly coupled by metabolism and sensorimotor routines. Humans live in a world of cultural constructs. These include material artefacts of all kinds, but they also include a vast range of virtual constructs in the form of agreements, beliefs, cooperation, social coordination, intentions, morals, norms,

roles, obligations, responsibilities, social relations, understandings, values, viewpoints, and linguistically constructed things, actions, events, ideas, thoughts, and so on. None of these phenomena is reducible to or is explainable in terms of physical processes though their existence is sustained and supported by matter-energy flows. Such phenomena are (at least) second-order phenomena with respect to the world of physical-material process flows.

The human world is made up of a collective body of activities, artefacts, cultural patterns, conceptual-ideational structures, experiences, genres, institutions, knowledge, norms, skills, technologies, texts, tools, and values that have been built up on cultural-historical time scales as the collective traditions of a community. These collective meaning potentials and practices consist of the weaving together of the many attempts by individual selves to extend into their worlds and to coordinate their actions, emotions, intentions, perceptions, and understandings with other selves across place and time. These collective meaning potentials are both the pooling and the product of the efforts after meaning and value whereby selves—past, present, and future—forge a dialogical (self)consciousness that is grounded in and dependent on the relations of community and reciprocity that define the *we*-world of human consciousness. Individual selves who are of course located by virtue of their embodiment in specific times and places can nonetheless transcend physical setting and embodiment through their dialogic appropriations and transformations of the resources of the collective *we*-world. In this way, the self moves along both actual and virtual pathways with other selves—past, present, and future—in dialogical relations of community and reciprocity that extend the self through time and place.

Human cultural structures can both potentiate and impede the positive development of the living of human life for individuals and societies. Human culture consists of massively powerful large-scale or macro-cultural entities and dynamical processes (Ratner, 2012). These include bureaucracies, capitalism, consumerism, systemic discrimination, exploitation, social class, economic systems, imperialism, managerialism, media manipulation, massive corporations, social institutions, police forces, prisons, legal systems, military coups, poverty, wars, the militarisation and securitisation of social life, corporate and government surveillance, undemocratic oligarchies, vested interests, lobby groups, unfair wage structures, and socially sanctioned forms of punishment, exclusion, and violence, all of which influence and shape our lives in many ways over which individuals often have little knowledge or control. Moreover, these factors also have the capacity to distort, manipulate, and prevent the democratic exercise of human agency, emancipation from oppressive structures, and freedom. All of the factors mentioned here (and many more) are undeniable, often deeply intertwined and integral functioning components of contemporary western (and other) societies. They are often the basis of the many problems—e.g., economic, environmental, psychological, and social—that afflict individuals and communities in contemporary western (and other) societies.

Neoliberals have in the past forty or so years deregulated markets for the purposes of rent seeking and the enhancement and protection of private interests

in contrast to investing in community, productive industry, and the public good. Banks and other financial institutions, instead of serving the productive economy, have financialised it in order that the very wealthy are protected from asset loss and bad loans (Hudson, 2017: 161). Neoliberalism is an ideology designed to protect and mystify the neo-feudal oligarchic concentrations of wealth and power that are characteristic of globalised capitalism. Adami, citing Brommaert (2018), refers to the "enhanced 'polycentricity', 'mobility' and 'complexity' [...] resulting from the fast-changing transnational phenomena connected with migration" (2019: 37). In the context of globalised capitalism, Adami's use of the nominalisation "migration" requires more careful concretisation. The abstract term "migration" homogenises and makes abstract the very different concrete forms of migration that have been occurring. For example, are we talking about the migration of a "globalised" middle class of professional nomads? Or the migration of Africans to Europe due to the military destruction of Libya in 2011 and its annexation to the political and economic interests of the US, France, and Great Britain? Democracy and globalisation at the point of a western imperialist gun as a pretext for military intervention and plunder of resources—notably water and oil in the Libyan case— is a contradiction too far for most post-modernists.

In such circumstances, which have, tragically, become the norm in recent decades, terms like "polycentricity" and "mobility" merely seem bizarrely contradictory with respect to the homogenising tendencies of global capitalism and its "liberalisation" of all limits in order to subordinate everything to the logic of the market. Post-modernists prefer not to draw attention to their complicity in and legitimation of this logic—a logic moreover that is totally incapable of proposing real social and political change and which is largely resigned to the status quo and its reproduction. The humanities must once again start to call things for what they are. Globalisation is "code" for western, US-led, imperialism, which is massively based on the exercise of coercive force in the form of economic sanctions, military intervention, political coups, "democracy promotion", "humanitarian intervention", and other terms and practices in the militarised arsenal of the "culture" of globalisation. Moreover, it is wreaking enormous damage to the human ecology. Outstanding and important contributions to the critical role of the humanities in revealing and analysing these developments include, in my view, Maximilian Forte's *Slouching Towards Sirte* (2012), Don E. Walicek and Jessica Adams' *Guantánamo and American Empire: The humanities respond* (2017) and Carl Ratner's *Macro Cultural Psychology* (2012).

Post-modernist ideology, I submit, is integral to and necessary for the ideological reproduction of globalised neoliberal capitalism. For example, the dissolving of community bonds into more "flexible" and "fluid" social arrangements, the privileging of the private sphere, and the hypostatisation of "discourse" as the locus of identity formation, seen as the effects of discursive practices, have led to the negation of the individual person in the name of the ideological justification of the "collective", of market-driven consumer lifestyles, and of the impersonal flows of money and good and services in the market as the permanently liquid foundation of human society. The latter is based on the anthropological figure of *homo oeconomicus* in contrast to the Aristotelian conception of what it is to be

human, i.e., a being endowed with language and reason who has the capacity to participate in and to form the social and political life of a community of selves. This anthropological development has given rise to forms of ungrounded hyper-individualism that constitute the ideological ground for the restoration of ultra-capitalism in recent decades. Initially, this took the form of neoliberalism since the 1970s and in the past two decades the "precarity capitalism" (Azmanova, 2020: chap. 5) whose contradictions and injustices COVID-19 is currently laying bare.

It is also important to stress the irreducibility of human culture to the subjective structures, individual agency, and interpersonal transactions per se that are emphasised in post-modernist discourse analytical, social semiotic and socio-linguistic approaches. Brommaert points out how many individualistic, non-mainstream identities go "hand in hand with an exuberant and highly self-conscious neoliberal (and, thus, mainstream) consumerism, scaffolded by a globalized 'tight fit' fashion industry. This quest for individualism results in a remarkable, global, degree of uniformity" (2018: 70). I fully concur with Brommaert's astute and relevant analysis, but I think we need to go further if we are to understand the ecological implications of the globalised conformity of consumerist self-identities that Brommaert's analysis reveals. Post-modernism is the ideological homologue of the neoliberal appropriation of and the directing of flows of energy and resources from the extractive economies of the periphery to the economies of the core, which are based on the production and consumption of goods (Bunker, 1988/1985; Hudson, 2003/1972). These intensified flows from periphery to core have a number of destructive and de-stabilising consequences for the world-system that post-modern celebrations of "diversity", "exuberant self-conscious identities" and the "polycentricity" of global capitalism tend to overlook at the same time that such notions are idealogically specular to the lived insecurity, instability, precariousness, and uncertainty of the lives of those peoples who are negatively affected by these flows.

First, the periphery economies and the majority of their peoples are subjected to increasing exploitation and depletion of their resources—resources which are theirs and which they have the right to develop to enhance their own social and economic development. Second, the appropriation by the core economies and their elites of the periphery economies and their peoples is producing an ecologically destructive over exploitation of peoples and resources in the periphery countries. Third, the increasing stratification of the world system of the past four decades has led to immense concentrations of power and wealth in the global elites and corresponding homogenisation of their interests in contrast to the increasingly precarious and uncertain lives of more and more peoples and their communities not only in the periphery countries but also and increasingly in the working and middle classes of the core countries. Culture is all of this too. It is not reducible to post-modernist individualistic celebrations of difference, mobility, and polycentricity. Military coups and mass surveillance are two examples that I will now consider as illustrations of undemocratic and destructive macrocultural formations that are put together by means of highly coordinated, massively powerful deployments of artefacts, persons, institutions, technologies, and so on. A military coup is as much a cultural construct as are the self-conscious neoliberal/post-modern consumerist identities that Brommaert discusses.

3. Cultural construct Example 1: The military coup in Bolivia in November 2019

The military coup which took place in Bolivia in November 2019, and which removed President Evo Morales and the Movement for Socialism (MAS) from power whilst I was completing this text, was in large measure motivated by the resource nationalism of the government of Evo Morales. Since 2006, this government worked to nationalise the country's energy and mineral wealth so that the impoverished indigenous peoples of Bolivia could benefit from the wealth generated by resource extraction rather than seeing most of the wealth appropriated by transnational corporations and the local elites who do their bidding. The impoverished indigenous peoples of Bolivia doubtless have more pressing concerns than the cultivation of their self-conscious neoliberal consumerist identities, given the recent annexation of their country's resources and the "mobility" of these resources to global capitalism in the core economies so that neoliberal consumers in the core economies may enjoy their polycentric screen time. The timing of the coup is interesting. The decision of the Morales government to nationalise the mining of the mineral indium, of which Bolivia holds the world's largest deposits, took place one week before the coup. Indium is regarded as a strategic metal that is crucial in the manufacture of computers, tablets and mobile phones.

Needless to say, the West's corporate media tended to gloss over all of that. Post-modern ideologies of "polycentricity" and "mobility" etc. are productions of the creators of knowledge in the universities and the media institutions that serve and disseminate the interests of the global elites in the core and the professional classes who serve them. Post-modernism is entirely integral to and complicitous with these developments. Contrary to the post-modern manufacturers of neoliberal consent in the universities, think tanks, and corporate media, most people do not want the endless anxiety, de-stabilisation and precarity that post-modern neoliberals celebrate as the lot of most people (and for which there is, neoliberals assert, no alternative). Rather, people want stability in their lives and communities, a good standard of living, a sense of place and community, and the right to be recognised that Hegel so magisterially articulated in his *The Philosophy of Spirit* (2001). This brings me to my second example of a massive highly coordinated cultural construct that serves corporate and government power at the expense of the psychic health of the self.

4. Culture construct Example 2: Surveillance capitalism

The self, its emotional life, and its informing motives are the latest frontier in surveillance capitalism's drive to employ and perfect its "foundational mechanisms—rendition, behavioral surplus, machine intelligence, prediction products, economies of scale, scope, and action" (Zuboff, 2019: 537). The rendition of the self's emotional life is already underway. Zuboff (2019: 539) writes of a start-up named *Realeyes* that won a 3.6 million euro grant from the European Commission for the following project: SEWA: Automatic Sentiment Analysis in the Wild. The

growing new domain of affective computing, emotion analytics, and sentiment analysis (Zuboff, 2019: 540) undertakes forms of multimodal pico scale emotion analytics that taps into and reveals the unconscious motives where feelings are formed in microgenetic processes prior to the generation of any kind of languaging behaviour. Zuboff writes:

> If this project of surplus from the depths is to succeed, then your unconscious— where feelings form before there are words to express them—must be recast as simply one more source of raw-material supply for machine rendition and analysis, all of it for the sake of more-perfect prediction. As a market research report on affective computing explains, "Knowing the real-time emotional state can help businesses to sell their product and thereby increase revenue."
>
> Emotion analytics products such as SEWA use specialized software to scour faces, voices, gestures, bodies, and brains, all of it captured by "biometric" and "depth" sensors, often in combination with imperceptibly small, "unobtrusive" cameras. This complex of machine intelligence is trained to isolate, capture, and render the most subtle and intimate behaviors, from an inadvertent blink to a jaw that slackens in surprise for a fraction of a second.
>
> Combinations of sensors and software can recognize and identify faces; estimate age, ethnicity, and gender; analyze gaze direction and blinks; and track distinct facial points to interpret "micro-expressions," eye movements, emotions, moods, stress, deceit, boredom, confusion, intentions, and more: all at the speed of life. As the SEWA project description says,
>
>> Technologies that can robustly and accurately analyse human facial, vocal and verbal behaviour and interactions in the wild, as observed by omnipresent webcams in digital devices, would have profound impact on both basic sciences and the industrial sector. They… measure behaviour indicators that heretofore resisted measurement because they were too subtle or fleeting to be measured by the human eye and ear.…
>
> These behaviors also elude the conscious mind. The machines capture the nanosecond of disgust that precedes a rapid-fire sequence of anger, comprehension, and finally joy on the face of a young woman watching a few frames of film, when all she can think to say is "I liked it!"
>
> (Zuboff, 2019: 540–541)

Surveillance, rendition, and prediction of the feelings and motives that animate selves not only further the neoliberal project's continuing destruction of "our democratic values and critical capacities" (Di Leo, 2017: 87), it also amounts to a totalitarian assault on what it means to be a self and to live in a society of selves. The drive to prediction and rendition is premised on the view that big data "gives us immediate access to the world" (Di Leo, 2017: 87), including access to the "inner" world of the unconscious feelings and motives that inform and generate what we say and do. Di Leo and Zuboff both point out that huge investments of money and intellectual resources are now being invested by corporations and

governments in the monitoring, prediction, and rendition of our bodies and minds, both on the individual and on the group scales (Zuboff, 2019: 542) in order to advance neoliberalism's reduction of everything to the market. The positivistic reduction of society and self to mere data is a denial of the betweenness in which knowledge and agreements about knowledge are constituted in the dialogical encounters between selves.

In the world of emotion analytics, the very things that define us as living selves and which enable and animate selves and the emotional bonds between selves and the forms of social cohesion that these bonds enable are turned into dead data. Selves, the interpersonal and social bonds between selves, and society are depersonalised. The same applies to the relationships between selves and the living environments with which they seek to co-articulate the functional fits that are essential for the recursive self-maintenance and self-individuation of selves. The embodied and implicit fabric of the very subtle pico scale bodily dynamics that animate, energise and sustain the flows and the fluctuations of the languaging between selves would be reduced to abstract, entirely predictable codings of bytes. The kinetic melodies that bind people in implicit, pre-conceptual relations of community and reciprocity and which form the basis of the relations of trust between selves are converted into abstract information that is removed from embodied experience and its intuitions. The bodily capacities and skills that are underpinned by the kinetic melodies that sustain and give direction to our movement in the world would be transformed into decontextualised and disembodied information that is removed from our embodied, first-order interactivity with the world (Knowing Level 1 in Vol. II, chapter 3, section 2). The qualitative feel for things is replaced by mere quantity. Explicit entirely abstract meta-representations replace whole-body co-participatory sense-making.

Editor-in-chief of *Wired*, Chris Anderson, claimed in his article "The end of theory: the data deluge makes the scientific method obsolete" (2008) that big data spells the end of theory. In response, Jeffrey R. Di Leo writes:

> "The Google model does not know," comments Anderson, "and the Google model maybe can't know." "But," continues Anderson in his interview, "what the Google model might be able to do is to allow us to act in the absence of knowledge." Excuse me, but isn't acting in the absence of knowledge also called acting from ignorance? If this is the contribution of the Google model, that is, to encourage people to act more from ignorance, then we lose more than theory with the ascent of big data. We also lose the will to separate knowledge from opinion—and science from fiction.
>
> (Di Leo, 2017: 89)

Anderson's play to ignorance in the above quotation undermines what I have argued in this two-volume study to be ontologically foundational to what it means to become a self in a society of selves, i.e., the capacity to enact and to participate in dialogically coordinated processes of stance-taking in and through our languaging with others. Selves are fundamentally and intrinsically dialogical in character.

The "betweenness" and the "relationality" that I emphasised in this study means that languaging is the ontological ground of the capacity of selves to participate in, take responsibility for one's participating, and being held responsible for one's participating in the flows of languaging in which we go along with and attend to others in the living of our daily lives. Writing in the pre-Google era, Bakhtin (1986b: 138–139) pointed to the de-personification of languaging (see Bakhtin (1986b); see also quotation in Vol. I, *Introduction*).

The self is deeply grounded in unconscious intra-psychic process at the same time that the self also creates simplex narrative models of the ways in which we go along with each other in the living of our lives together. The multimodal emotion analytics discussed above, and associated practices of rendition and prediction, turn intra-psychic processes and thus the motives that inform the actions of selves into an extreme, even extremist form of Bakhtin's type 1 relations. The determination of the self in intersubjective relations (Bakhtin's type 3) is replaced by the dissolution—the unselving—of the self in the form of massive hordes of data about multimodal pico scale bodily expression that unself the self into mere datum (Bakhtin's type 1) (see also Di Leo, 2017: 86). The ontological grounds in and through which knowledge is constituted in the dialogical coordination of selves and their stance-taking and the "compassionate imagination", to use Pankaj Mishra's (2018) felicitous term, that informs their stance-taking, is replaced by an intensified effort on the part of surveillance capitalism to create a capitalist dystopia in which big data renders the deepest levels of the self as surplus value to be extracted and manipulated in the creation of profits and capital.

5. Languaging, the human ecology, and the creative destruction made possible by COVID-19

At the time of writing in the era of the COVID-19 pandemic, mandatory "social distancing" is the order of the day. People are exhorted to avoid social contact, including bodily contact. As with many other things concerning the worldwide COVID-19 pandemic, "social distancing" is more than just a protective health measure. The new social rules of self-isolation are a metaphor for the isolation and the solitude of globalised capitalism itself that is expressed in the germ cell of capitalist commodity exchange that Marx analysed as the formula M-C-M. This formula expresses the idea that a capitalist class emerges that uses money (M) not to sell a commodity (C) in order to buy what one needs, but to buy in order to sell at a profit. Rather than the cooperative buying and selling of goods and services in order to satisfy human needs, under capitalism, the production of *commodities* is oriented to the accumulation of capital. The increasingly speculative accumulation of capital is treated as an irreversible and totalising progress (Hudson, 2017: 184). The impersonal logic of capitalistic production and consumption and its globalised flows of capital and commodities is ideologically homologous to the de-centred and free-floating post-modern subject whose bodily energies and cognitive and emotional capacities have been liberalised so that they can participate

in and be connected to the impersonal logic of capitalistic production and consumption. The producers of goods and services are thus alienated—"socially distanced"—from the products of their own labour.

The language of "social distancing" is an enforced isolation that disempowers us and requires us to submit to a standardised top-down technocratic language, not of our own making. In doing so, it turns us back on ourselves and reminds us of our personal limits, the fragility and finitude of our bodies, and thus of our mortality though in ways that divert attention from the potential for self-transcendence in relations of community and reciprocity with others. What can the COVID-19 pandemic and our responses to it teach us about the need to develop an account of languaging in the human ecology?

The COVID-19 pandemic enables us to make good use of Joseph Schumpeter's idea of creative destruction. COVID-19 has ushered in social changes and social arrangements that require us to think in new ways. One thing that COVID-19 shows is that human sociality cannot be divorced from its organic basis. The two volumes of my study have emphasised the dialectical inter-penetration of our organic and social being, as encapsulated in Ingold's (2013) term *biosocial becomings*. Post-modern ideologies of the "discursive" construction of reality and the subject have induced many people to make deeply mistaken assumptions about this relationship. Moreover, post-modernist doctrine does not provide a reliable basis on which to evaluate erroneous thinking. In part, this is so, I submit, because post-modernism is the official ideology of a globalised consumer capitalism that pretends to be non-ideological.

Consider the implications of those theories that adhere to the view that "language" is comprised of formal abstracta, which in their modern form we can trace, directly or indirectly, to Saussure. Saussure sought to institutionalise a new science of synchronic linguistics. This meant setting up the rules and procedures of the new academic game. Saussure was a holist in his social thinking, but his views on the *sujet parlant* are individualistic. Saussure provided no account of how people use the social-semiological system of *la langue* to think, to pose and solve problems, to make decisions, and so on in social life. An account of languaging in the human ecology must therefore show how persons, in their languaging, draw on intra-psychic processes that are shaped by social and cultural dynamics in order that they can co-articulate themselves with their worlds in productive ways.

In the first instance, these processes enable infants to develop their capacities to participate in early forms of pre-linguistic intersubjective communion with caregivers. Infants have innate mental capacities that predispose them to and prepare them for sociality. As Vygotsky showed, the basis of our cognitive capacities is profoundly and intrinsically social in nature and origin. Thinking is social in nature, is shaped by social processes, and has social consequences. Thinking is embedded in multi-scalar ecosocial dynamics. Modifications to these dynamics can therefore affect thinking processes and be integrated into the psychology of the persons in particular cultures (Ratner, 2012).

Saussure's disembodiment of language as form not (bodily) substance is homologous to capitalism's metaphysic of the unlimited, of unrestrained growth, of infinite horizons. The germ cell of this logic is money, seen as the general symbolic form of the unlimited on analogy with the endless differential play of linguistic terms in *la langue*. Language, like money, becomes a disembodied virtual system that is removed from our bodily experience of the world we live in and its personal and ecological limits. Money is the mode of "social distancing" that alienates us from bodily experience, from relations of community and reciprocity with other persons and with other living beings, and thus from our sociality. The "social distancing" of money is a higher-order semiotic system, to echo Michael Halliday (1978), that embeds all other semiotic systems, language included, within its logic and dominates them. Language becomes more and more Global rather than Terrestrial. The embedding of human life in the higher-order semiotic of money yields an ever proliferating number of abstracta and virtual constructs— increasingly abstract language, abstract work, abstract selves that are dislocated from concrete time and place. The proliferation of virtual theoretical objects that I mentioned in the *Introduction* to Volume I has resulted in the hyperspecialisation and branding of specialised academic subregisters. This might be good for the speculative marketplace of the post-academic neoliberal university, but it is less clear that it has helped us to create what Gregory Bateson (1973: 409–410) called "systemic wisdom". How might Bateson's idea apply to human languaging and its place in the living of human life in the human ecology and the forms of experience that languaging enables, supports, guides, and stimulates.

An ecology dominated by money is a simulation that abstracts from concrete particulars and converts everything into abstract exchange value. Money thus transforms concrete social relations, embodied experiencing, feeling, languaging, and human social life into a commodified virtual realm that has no concrete identity based in place and historical time, concrete embodied experience, and concrete relations between persons. Whereas language-as-form is abstract, immaterial, ungrounded and detached from the living of human life, embodied languaging has its feet in the earth that we dwell in. It is immersed in the qualitative flows of the many personal and community histories in which it is born, grows, lives, ages, dies, and is reborn (Thibault, 1881). Abstract money is mere quantity. It increases and decreases according to the speculative fluctuations of capital, but it has no qualitative becoming.

Saussure (1971/1915: 159–160) analogised linguistic signs to a currency [*une monnaie*] that is circulated, exchanged, valued, and devalued. The value of this linguistic currency is not fixed, but is dependent on the floating rate of exchange of the relations between signifiers and signifieds. (Thibault, 1997: chap. 8). Saussure's *la langue* is the invisible semiotic hand that is stored in the brains of the speakers of a given language. This invisible semiotic hand ties speakers together as a single homogenised *mass parlante* as distinct from the *visible* semiotic hand of the felt and always social and political relations of community and reciprocity that are the real foundation of a society of languaging selves.

Language-as-form is not only disembodied. Its differentialist logic is profoundly anti-dialectical. Argument, conflict, dialectic, feeling, heteroglossia, point of view, and selfhood are subordinated to an abstract and internalised central bank—Saussure (1971/1915: 30) called *la langue* a "treasure" [*un trésor*] stored in every speaker's brain - that is the guarantor of pairings of forms with meanings that are detached from the selves who are their source and animator. Concrete languaging, like coins, not abstract money, lives and dies in historical time. As my great-great grandfather, philologist and language teacher, Étienne Thibault (1881) pointed out, words "resemble our coins, which are received till, their effigies becoming worn and defaced by use, they drop into disuse" (1881: 320; see *Introduction*, Vol. I.).

COVID-19 has given rise to an impossible double bind between the health of our bodies and the health of the economy. The health of our bodies is not only hostage to the virus, but also to that of the economy. This impossible oscillation can only be resolved if we move to a higher or meta-level of contextualisation that reinstates the fundamental importance of the organic basis of our being and hence of our sociality. Both "language" and "the economy" have been disembodied and made into virtual constructs that have separated us from the grounding of both persons and society in the entangled process flows of our organic life. The virus is seen as a violent attack by an alien intruder on our bodies when in fact our bodies are themselves societies of many organic forms (Vol. I, chapter 2). From its viewpoint, the virus is embarking on the creative destruction of the society of our bodies. The normal rules of immune response often seem not to apply. The range of symptoms seemingly keeps on expanding. Under neoliberal financial capitalism, both language and economics are overpopulated with virtual constructs that have held the organic basis of our personal and social being hostage to the impossible double bind mentioned above. They are the virtual constructs that we live and die by according to neoliberal capitalism.

From our human viewpoint, the virus is a form of creative destruction that is bringing about rapid and unanticipated social changes for which the rule book has no answers. The creative destruction that is being wrought is thus an opportunity to discover and examine the errors in the assumptions that have thus far guided the actions and decisions not only of individuals but also of entire societies. One such error, I submit, is the deeply ingrained epistemological assumption that the health of persons and the health of societies can best be determined by the virtual truths of the market and what the market tells us is best for us. However, the market of speculative neoliberal financial capitalism, together with its ideological homologue post-modernism, is founded on the erroneous assumption that we can float free of the organic basis of our biosocial becoming and thus that there are no natural limits to what humans can do or be. We have, as Maximilian Forte (2020) points out on the *Zero Anthropology* web site, fetishized "the artificial products of our own artificial processes." Moreover, neoliberal financial capitalism, like the virus, is itself a parasite, as Michael Hudson (2015) shows, that feeds off and destroys the host societies that it attaches itself to. This has consequences for how we think of our own selfhood and our own languaging.

6. Nature and culture: a dichotomy worth transcending in the struggle to rehumanise the human ecology

The human world—the human ecology—is not explainable in terms of the dichotomy of Nature and Culture. Humans do not live in a Culture that is opposed to a Nature that is assumed to be external to Culture (Vogel, 2016). Nor is it a matter of saying what is self-evident—that humans are grounded in and depend on natural processes at the same time that their cultural being transcends purely natural processes. My point is that it is impossible to conceptualise a Nature that is independent of human consciousness. The category of Nature, like that of Culture, exists because humans have constituted the distinction between these two categories as distinct foci of attention and concern that are both internal to the human ecology. It is by virtue of human sense-making that the scientific view of the natural world could be posited and enabled. In this way, Nature was differentiated into different categories of events, the causal relations that connect them, the general patterns and tendencies that specific events instantiate, and so on. The idea of a pristine Nature that existed prior to the appearance of *homo sapiens* (and that maybe we might return to that pristine state of nature if humanity ceased to exist) is absurd. Prior to humans there was no Nature. Nature is an invention of human frames of reference—of our world-constituting capacity—that is inescapably rooted in the human world, the human ecology, that humans have built as the collective historical outcome of their own agency. Both Marxist and capitalist frames of reference have operated the distinction between Nature and Culture. Nature and Culture are what Delanda (2010) calls "reified generalities" that are of little explanatory value. Their function is largely ideological. Nature was often seen as a domain of raw potential that could be converted or reprocessed into cultural products. On this view, Nature provides the raw materials for what can be produced, marketed, and consumed by Culture.

Nature viewed thusly is a set of unactualised modal possibilities and potentials that could be actualised by human selves and their technologies as Culture. It is only by means of the world-constituting viewpoints and actions of human agency and consciousness that the world takes on modal values of possibility, potentiality, predictability, certainty, necessity, reality, and so on. The world prior to subjectivity and its viewpoints is amodal. The affordances of the human world are modal. This is so because the positing of these affordances and their modalities of existence and their possibilities of actualisation are dependent on human (and other) consciousness and its grounding in our bodies and the viewpoints and the forms of enskilment that our bodies enable. Nature and its contents are not an external world of meaningless matter that pre-existed the emergence of human subjectivity and its viewpoints. It is only through human interactivity that Nature and its contents emerged as part of the human world, not something external to it. Nature and its contents are no less an aspect of the socially constituted experiential topology of actions, affordances, capacities, objects, events, processes, causes, locations, qualities, persons, potentials, times, and so on that human sense-making, including languaging, operates on. We need to develop a new understanding of

the human ecology in which Nature is not a category that is external to Culture. Instead, Nature is a category whose functions are internal to the human ecology.

Economics has replaced theology as the source of the virtual truths that serve to define the currently ideologically dominant view of human society and the individuals that comprise it. Economics produces the virtual truths that the powerful groups and corporations that control the globalised market economy fabricate and disseminate via the universities, think tanks, and the corporate media in order to justify the enormous concentrations of power and wealth that flow to the elites who control (most of) the world-system. A science of the human ecology on the other hand needs to generate theory and analysis that is able to identify and explain the component processes and the interactions between these processes that comprise a functioning human ecology. Such a science, to echo the quotation from James Lovelock that heads the *Introduction* to Volume I, needs to discover the truths of the actual workings of the human ecology and its potential for change. It is important, therefore, to identify the ideological role of the ecologically dysfunctional virtual truths which economists have fabricated about the market as the model for both social relations and individual psychology under globalised neoliberal capitalism.

Moreover, the human ecology is one in which people constitute and interpret their world through culturally constrained and enabled meanings and practices. Humans not only live "in" an environment; they also actively constitute and interpret it in ways that affect and direct flows of energy and materials in the human ecology on many different spatial and temporal scales. Humans to a far greater extent than any other species semiotically engineer and manage the human ecology for both present and future generations. The human semiotic footprint therefore matters. How we interpret and understand our world, which interpretations are privileged, and why, and which are disregarded or marginalised, impacts how we understand our relations to the human ecology and therefore how we manage the organisation of the human ecology and the direction and rate of its process flows. We can only become better managers of the human ecology if we can learn more about how we interpret and understand the human ecology and our relations to it (see also Halliday & Glaser, 2011: 4). Norgaard (2006/1994: 106) identifies the destructive effects of two cardinal components of post-modern neoliberal ideology—liberal individualism and globalism—on communities, cultures, and local bioregions.

The prevailing atomistic-mechanistic ideology of social relations under globalised neoliberal capitalism is an economistic one based on fabricated virtual truths that do not correspond to and cannot address the real needs of humans in their relations to each other and to the human ecology that they live in. Arran Gare (2002) insightfully explores many of the same concerns as Norgaard. Gare (2002: 134) points out the utility of returning to the historical origins of ecological thinking in which the complex and interwoven relations between living systems that form a community, or a home, were emphasised. Gare emphasises the usefulness of such notions for re-thinking the human ecology as one in which humans qua cultural beings create and maintain "community structures and social dynamics"

on spatial and temporal scales that have no parallels in other species. Gare (2002: 135) envisages a science of the human ecology as one which has its historical roots in the anti-mechanistic naturalism of thinkers like Goethe, Herder, and Von Humboldt, whose insights constitute the beginnings of the view of life forms as self-organising, temporally extended organisations of process—or dynamical processes of becoming.

However, as Gare also points out, this tradition of anti-mechanistic thinking, in which culturally constituted persons both transcend the limitations of their biology at the same time that they are grounded in it, has been "blunted" by the prevailing naturalistic reductionism in much of the natural and human sciences. For instance, Culture, is seen as an instrument of control (c.f. the "culture wars"), as the transmission of memes, and as the dissemination of atomised and corporatised social identities of ethnicity, gender, and race by the universities and corporate media. Without denying the fundamental importance of establishing one's personal identity, the prevailing post-modern identity politics is individualistic and based on self-interest in ways that serve the dominant ideological order of neoliberal capitalism. The focus on individualism and the promotion of the interests of some groups over others subverts the social institutions, practices, and forms of community life that sustain social solidarity and the formation and maintenance of community. This development has negative consequences which the post-modern celebration of individualistic, unconstrained social agency only affirms and reinforces. These regressive developments damage the forms of interdependence between persons, between persons and other living beings, and between all living systems and the other non-living systems and processes that are necessary for the maintenance and survivability of the complex ecological community—the human ecology—which humans share and create with other persons, with other living systems, and with the non-living world.

A vital part though only a part of this much bigger enterprise is to develop new understandings of the human ecology that can explain how humans become persons with selfhood that depend not on solipsistic post-modern individualism but on what Hegel (2001) called the "struggle for recognition" (see also Gare, 2002: 138). Humans participate in cultural processes of individuation and identity formation that give rise to selfhood. Selfhood is embedded in one's experience of a personal identity that has continuity over time. This time-extended phenomenology of the self is fundamental for the development of the forms of social organisation and community and the realisation of the norms and values that are needed for the development of an ecological knowledge based on understanding and wisdom that has the true measure of things rather than control, domination, exploitation, and self-interest. Human languaging, as defined in my two volume study, plays a central though by no means exclusive role in the individuated and collective processes through which persons with selfhood coordinate with each other in culturally promoted fields of action and awareness that enable them to constitute communities of selves who recognise each other in their interactions with each other. Communities are larger-scale organisations of process with respect to the individual selves that comprise them. As such, human communities give humans

far greater agentive, cognitive, and semiotic reach over far more space and time scales compared to other species. For this reason, it is important to understand the role of languaging in the human ecology and how it is functional in constituting self-reflexive persons with selfhood who participate in societies of selves and their historical development.

Linell (2011/2005: 213, 216) writes of the situation-transcending practices of languaging and the linguistic resources—the meaning potentials—that agents orient to and appropriate in their languaging. These practices are "situation-transcending" because they constitute historically sedimented and culturally solidified regularities and continuities of practice that have emerged on long, slow cultural-historical time scales. They are culturally shaped and collectively owned resources and continuities that link the first-order languaging of individuals on a given occasion to the human world of artefacts, conceptual-ideational structures, institutions, practices, norms and values. These resources enable humans to transcend their bodily existence and to live in an extended human ecology—a human world that is constituted by the interweaving of collective and individual meaning, purpose, and value. The latter are the historical products and processes which humans have developed in their efforts to create, not always successfully, a world that is fit for the living of the human way of life in the human ecology. Like the Fourth Gospel alluded to at the beginning of this *Afterword*, words and deeds are of this world, embodied in our flesh, at the same time that they take us beyond our bodies to fashion a semiotic commons that places us in a shared history that we, like John, can witness from our respective viewpoints.

7. Conclusion

Languaging is our human way of living with and in the world. To language is to dwell in the human ecology and to grow into its ways of doing and its ways of realising values. Languaging favours cooperation, intelligence and adaptiveness over rigid formal schemes, flexibility over rigidity, sensitivity to others over authority. Languaging anticipates future possibilities rather than reactively encoding past actualities. Languaging is ecological and normative without being authoritarian and prescriptive: it attunes us to affordances that we can use for good and for ill in the making of our own and other's lives. Languaging is action, not event. It is a form of enskilment in and through which selves move along with other selves in the ecosystemic processes of movement, growth, and becoming to which selves commit when they engage in the languaging practices that enable them to build their worlds together. Languaging is intentional, flexible adaptive activity that extends action and perception into virtual realms that we create in the imagination. It allows us to move along its pathways together with the others who participate with us in the journey we undertake in languaging. It is grounded in the embodied viewpoints of selves and their values. It is therefore infused with body dynamics, feeling, movement and energy. Languaging also enables us to transcend our embodiment. Languaging is context-making and context-sensitive. Languaging draws on and transforms past memories, enables dialogical shifts in

perspective, and supports the coordination of selves, artefacts, institutions, technologies across diverse places and times. Languaging enables us to become selves and to participate in societies of selves. It is therefore deeply informed by character. To language is an ontological commitment of world-making.

In this two-volume study, I do not claim to have created a comprehensive "science of language". Instead, in putting the emphasis on "languaging" rather than on "language" and the mythological processes that the belief in the latter has generated, I hope to have shown the importance of transcending the mythological processes which "language" has engendered even if I do not fully succeed in doing so. My own efforts are necessarily incomplete and imperfect. Languaging has been made to conform to the straightjacket of the object of study, "language", with the consequent conceptual impoverishments that Roy Harris wrote about (1987: 171. It is my hope that the language sciences can transcend their current limitations and expand their terms of inquiry so that our understanding of languaging in its many and varied manifestations is seen as central to what it means to be human and to live in the human ecology. That such a transcendence is not only necessary, but possible, has animated my writing of this project. That much excellent work is already furthering this possibility is a reason for considerable though careful optimism.

Note

1 Some people working in the area of multimodal social semiotics that draws on and is underpinned by theoretical constructs and analytical methods first developed by Michael Halliday have criticised him for not doing multimodal analysis. This criticism is manifestly inaccurate and unfair on two levels. First, it fails to account for the very considerable theoretical sensitivity and analytical subtlety that Halliday's pioneering work on early infant proto-language demonstrates with respect to the various "modalities" of embodiment that contribute to the development of the infant's sensemaking and linguistic capacities. Second, this criticism evidently does not appreciate that Halliday's ground-breaking linguistic and social semiotic research opened up and made possible an entire area of enquiry without which multimodal social semiotics would not exist in its current form. In recognising this fact, it is noteworthy that Hu & Dong make the important claim that "Halliday was a pioneer in the practice of multimodality" (2005: 2).

Appendix I

Transcription of Frames in the "apples" Phase of the Transaction between the Buyer and the Greengrocer in Table 4.4

Frame 1:

B: *one two that's lovely* + bends down and puts oranges in basket
Focus: alteroceptive stands up and faces G + *and some apples ... which are nicest apples?*
G: *daydream are the nicest*

Frame 2:

Focus: exteroceptive
B: *these ones are the nicest?* + turns and points at apples behind her
G: *yes*

Frame 3:

B: *I'll have four apples* + takes first apple in hand

Frame 4:

Focus: alteroceptive
B: turns to G + *do you need to see those?*
G: *we do for weighing please*

Frame 5:

B: turns to G and hands him first apple + *one*

Frame 6:

Focus: exteroceptive
B turns back to apples, reaches and holds one in hand + *that's two* + turns and hands it to G

Frame 7:

B: *and that's three and four* + grasps and holds two apples

Frame 8:

Focus: alteroceptive
B turns to G and hands him the apples

Frame 9:

G: *thank you very much* + takes apples in hand

Appendix II

Transcription of Frames in the Episode Featuring Ida and Blinky Bill in Table 4.5

Frame 1:

Ida: Enters room + blows raspberry at me
Me: chuckle + *where's Blinky Bill?*

Frame 2:

Ida: turns towards Blinky Bill on the bed and picks him up, ready to throw at me
Me: *oh there's Blinky Bill* + Ida gets ready to throw Blinky Bill at me
Ida: throws Blinky Bill + Me: *aw you threw Blinky Bill at me* + laughing

Frame 3:

Ida: picks up doll and throws it at me + Me: laugh

Frame 4:

Ida: picks up and throws a toy named Angelina wallaby at me
Me: *Angelina*!

Frame 5:

Ida: picks up and throws toy named Little Doggy
Me: *no no that's Little Doggy*
Ida: throws Little Doggy at me

Frame 6:

Ida: goes towards door + Catherine enters
C.: *not Little Doggy*
:. : gaze directed at C. + long smile followed by laugh
Me: laughing + *there's little Doggy*

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