

# Mastering Language and Extending our Agency in and through the Virtualities of Language: The Interplay of Causes and Constraints in Actualising the World<sup>1</sup>

Original study

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**Abstract:** In a process-ontological perspective, I consider some aspects of the ways in which human languaging enables persons to operate on and to actualize and de-actualize the modal potentials of their world. I examine Johanna Seibt's notion of functional individuals to show how some aspect of the world can be selected and differentiated and thus located in some region of space-time by a particular linguistic (or other) operation. Rather than referring to an already given and present actuality, utterances actualise and situate functional individuals to varying degrees of definiteness, specificity, realness, and so on in occasions of languaging and in texts. Words enable and scaffold de-coupled intentional-semantic registration that coordinate selves and the functional individuals that populate their world. With reference to the nominal group and criteria of Thinghood, I consider concrete particulars and functional stuffs in relation to the capacity of our languaging to activate selective aspects of the modal potentials of the processes that we encounter in the world. This requires a process-ontological account of the world on which and in which we act in and through languaging. Languaging functions to sensitize us to different aspects of the modal potentials that it activates.

**Keywords:** Deixis, concrete particulars, distancing, functional individual, languaging, modal potential, process ontology, real patterns, self-object pole, stuffs, sensibilization

For what you see and hear depends a great deal on where you are standing: it also depends on what sort of person you are.

C. S. Lewis, *The Magician's Nephew in The Complete Chronicles of Narnia* (2000), pp. 51

It matters little for the linguistic future of our language-making species whether or not its academic experts belatedly succeed in developing to their own satisfaction a comprehensive 'science of language' in accordance with the canons of whatever philosophy of science happens to be fashionable. What is important is that people should come to recognise and understand the mythological processes which language itself

engenders. By these linguistic enquiry proceeds, and these it must also transcend. Only then and thus can language makers become language masters, and a society enter into its linguistic inheritance.

Roy Harris, *The Language Machine* (1987), pp. 173–174

## 1. THE MODAL INCIPIENCE OF LANGUAGE AS ACTION SYSTEM AND THE VIRTUAL POTENTIAL OF THE WORLD

The living, animate, feeling body is the basis of our experience of a world that exists beyond our body, but which includes our body (Thibault 2021a, 2021b). The body is a source of both action and viewpoint. Viewpoint is

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deictically sourced at and referable to the singularity of one's embodiment. It provides persons with perspectives on the world. By the same token, my awareness of the perspectives that my body allows me to have on the environment as I move around it and occupy its points of observation with my body makes me aware that others have bodies that occupy different points of observation and therefore, they have different perspectives from my own. I am also aware that others can occupy the point of observation that I am currently occupying so that they can see things as I do. This dual awareness of (1) others' perspectives and (2) the fact that others can also occupy the point of observation that I occupy and thus view things from my perspective makes me aware that the world is not given all at once to my limited perspectives on it.

Instead, the world is made up of virtual presences that are immanent in the world and that can be actualised when I occupy the points of observation that will afford my access to them. The world transcends my experience of it. At the same time, my awareness that others have their own experiences of it incentivises me to share my experiences with others and to learn from and to experience the world as others do and thus to see things from others' viewpoints. In Gibson's (1986[1979]) terms, we do not perceive raw physical stimuli. We perceive the affordances of our world. Our bodies are the deictic source of our actions and associated viewpoints in relation to the affordances of the world that we interact with. Our interactivity with the affordances of the world is therefore always situated. A situation is constituted from our deictically grounded viewpoints as a configuration of *functional individuals* (Seibt 2001, 2003, 2009; section 5 below) that occur in space and time with reference to our embodied viewpoints. Functional individuals, as discussed in section 5, are the generic processes that populate our world. There are patterns of data in the world that can be differentiated and therefore individuated to some contextually appropriate degree of resolution. Where I am now with reference to some configuration of functional individuals is the basis of a situation. Living bodies are anchored to particular places in the world. Action-perception and languaging are functional means of coupling us to the world by virtue of our bodies in situation-constituting ways.

We are accustomed to the popular idea that the term 'virtual reality' refers to a form of surrogate or substitute reality. The widespread use of the term 'virtual reality' in relation to digital media, computer games, and computer simulations has fostered this view. Digital technologies are seen to be a means of producing virtual realities in this sense. A re-conceptualisation of languaging founded on this idea would be another "conceptual impoverishment" (Harris 1987, 172). Languaging is not a surrogate reality. It is deeply enmeshed in and constitutive of the reality that we live in. I draw on the thinking of Henri Bergson (1911[1896]), Gilbert Simondon (1989, 1995), and Gilles Deleuze (2004[1968]; Deleuze, Guattari 1980,

2004[1980]) to develop something very different from this impoverished view. The virtual is a modality of existence that is part of and immanent in reality; it is not a copy or imitation of reality. The 'virtual' on this view is real; it is a modality of existence that has real effects and consequences.

In the work of French philosopher Gilles Deleuze (2004[1968]), the term 'transcendent' does not refer to an extra-worldly domain of forms, ideas, and concepts that exist outside of or beyond the world of experience. For Deleuze, the 'transcendent' is an empirical domain that can be explored, discovered, and actualised. In this sense, the 'transcendent' is a virtual plane of existence that is immanent in the world that we live in. The virtual is actively involved with the world we live in insofar as it is a vast and rich domain of potentialities that can be actualised in a multiplicity of ways. Furthermore, Deleuze was committed to a realist ontology. There is, in Deleuze's ontology, a mind-independent world of becoming that has an objective existence. That is, it exists independently of the categories of human thought and social convention. Deleuze's idea of the 'transcendent' is an empirical domain that refers to an impersonal field of potentialities that can be actualised or individuated so that new possibilities may come into existence. Moreover, the transcendent is not beyond human experience. For this reason, it is 'empirical': it is immanent in experience as latent potentialities – impersonal, pre-individual fields of potentialities that have the capacity to be actualised (individuated) as new forms of becoming and new modalities of experience and reality that did not pre-exist as ideal forms in some transcendent (first sense) code or system of possibilities.

One of the characteristics of all action systems is their *incipience*. The quality of incipience that is characteristic of languaging means that the activation and modulation of virtual forms of experience by means of linguistic pattern in utterances and texts readies or prepares one to act in relation to the affordances of the environmental structures that are so activated in the imagination. All action-perception systems are modal in character on account of their anticipatory nature. They have the capacity to anticipate potential future action and potential future development of an action performed. Moreover, all forms of action-perception are essentially exploratory in nature. They do not act on an already fully given or fully revealed world. Instead, through our action-perception systems we lean into the world, explore it, and selectively discover aspects of it during our time-extended exploratory activity.

The world is not given to us all at once. Instead, its immanent possibilities can be explored and discovered when we make contact with it and intervene in it through our action systems. Languaging has refined this modal capacity of incipience to a much greater degree than other action systems owing to the fine-grained semantic information that is compressed in the typological-categorical possibility spaces of lexicogrammar. Rather than

a surrogate reality, or a stand-in for what is ‘really’ out there, languaging is a highly articulated action system that individuates to varying degrees of modalised actuality the virtual possibilities that are immanent in the human ecology and which languaging serves to indicate and to individuate to varying degrees of definiteness, specificity, reality, and so on. Languaging and learning how to language is a process of enskilment that enables selves to co-articulate themselves with the many faceted 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 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).

Rather than a surrogate reality that ‘represents’ an external world, languaging is, above all, a mode of action that enables us to operate in the zone between self and object and, as Piaget (1954) showed, to increase the distance between the two (section 3). Utterances set up a tensive, values-realizing focus on some object of consciousness. I use the term ‘object’ here and throughout this essay in its original epistemological sense that derives from Mediaeval Latin. Rather than the modern tendency to use the word to designate a thing, I use it in its earlier epistemological sense to refer to something that is “thrown before the mind”, i.e., is made present to or made available to consciousness (Campbell 2015, 8). Utterances serve to establish a relationship between self and object and/or to induce a dialogically coordinated relationship between other selves and their objects.

The increased distance that Piaget identified entails an ecosystemic expansion of both the self and object poles of the relationship between self and object (Thibault 2019). The self articulates an increasing diversity of objects that become more and more detached from the self. This has two main consequences. First, the co-articulated relationship of ‘betweenness’ of the self and its objects gives rise to a world of ‘objects’ that exist independently of the self rather than simply being extensions of its own mind. Secondly, the world that exists beyond the self is not the private possession of the self; instead, it belongs to all as a socially distributed and culturally organised cognitive-semiotic commons that all can share and contribute to the thises and thats that can be pointed to and coordinated with in the collective human world (Tallis 2020, 133–143). It is a world that can be interactively explored from multiple points of view so that its potentialities may be revealed. The relationship between the self and object poles is therefore a tensive modal one.

We will now see that deictic finger pointing is a form of dialogically coordinated (inter)activity that illustrates the ecosystemic expansion of the self and object poles referred to above.

## 2. TRANSCENDING OUR BODIES: DEICTIC POINTING AND THE INTERACTIVE CONSTITUTION OF THE COGNITIVE-SEMIOTIC COMMONS

Languaging, crucially, enables selves to transcend their embodiment while being grounded in its viewpoints and experiences. Deictic pointing shows that in infancy, the infant develops skills and capacities that enable him or her to begin the long developmental process of transcending the perspectives afforded by the singularity of one’s own embodiment in the process of constituting and participating in the semiotic-cognitive commons with others. The semiotic-cognitive commons enables humans to transcend local circumstances. The semiotic-cognitive commons is the collective and constantly revisable historical outcome of innumerable intentional acts of persons who constantly add to, modify, and revise the stock of collective human experience and knowledge. This collective meaning potential – the cognitive-semiotic commons – is grounded in events and the singularity of persons’ embodied points of view, and yet it transcends them. It exists as a collective dimension of cultural constructs, including virtual ones, that individual persons, situated in many different times and places, can access, and actualise to varying degrees of specificity and definiteness in their languaging. The developmental emergence of this capacity to constitute and to share in the semiotic-cognitive commons with others begins in infancy.

Moreover, it begins before language. Languaging builds on and extends these prior capabilities. Deictic pointing is a case in point that will help to illustrate some of the fundamental principles at stake. Deictic pointing contains the essential features of these early capabilities and the role they play in enabling us to transcend the limitations of our bodies and the viewpoints that our embodiment enables. Deictic pointing is an intentional act that draws on and integrates past memories to present circumstances at the same time that it anticipates future possibilities. When I point to show a passer-by who asks me the way to the bus stop, my point constitutes on the fly a momentary situation convention that both passer-by and I uphold to ensure the success of my pointing action. What occurs between us is an interactive occasion, not a behaviour. It is an interactive occasion that is characterised on both sides by normative understandings concerning the ways in which both participants seek a solution to the coordination problem that the passer-by’s initial question to me poses. The occasion is, to be sure, fleeting, but it contains in a nutshell the essence of how social realities are interactively constituted. This is so in the following two ways. First, the occasion implicitly relies on a social convention that is constituted on the fly by the act of pointing to the bus stop in order to coordinate the perspectives of myself and the passer-by in relation to the location of the bus stop. Secondly, my point is an anticipation of future action potential that can be taken up and further developed.

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The act of pointing to something focuses attention on something of interest in the human ecology. Deictic pointing arises as a function of ecological pressures that require and select it as a strategy for coordinating with and relating to environmental circumstances and features. The environment selects for the function that gives rise to the deictic gesture. In selecting something as the current locus of attention and cognitive-semiotic processing that is shared by two or more persons, the point *qua* intentional act sets up and enacts a simulation of future interaction potential. Perception is simulation of potential action. Perception is virtual action, as Bergson (1911[1896]) showed. In establishing something, however momentarily, as the locus of joint perception, the act of pointing creates a shared frame of reference that takes us beyond our own embodiment and its points of view. Our brain enables and supports processes of reality simulation. Rather than making 'representations' of the actualities of a given world 'out there', the brain supports and enables the simulation of the body's actions in the world. Perception is exploratory simulation of the world. In this sense, perception is the simulated anticipation of future possibilities for action and interaction.

Perception is therefore modal though not in the explicitly grammaticalised sense that we find in languaging. Perception makes use of and is constrained by environmental stimulus information. Perception does not take the form of encoded representations of the world. Instead, perception serves to create forms of perceptual awareness of the possibilities for action. Perceptual awareness is of the current moment – the current Now – and its possibilities and potentialities. These possibilities and potentialities are virtual constructs or simulations that take us out of the here-and-now and enable us to lean into the future and thus to anticipate what will be done or what will happen next. The simulations that are created in such acts of joint attention when we focus on objects and events of interest are the foundation on which the simulation of purely virtual entities and events is made possible by the lexicogrammatical resources of language.

Deictic pointing is grounded at a point of view of an embodied agent. This entails many implicit layers of (self-)reflexivity. When the infant points at something with the intention of coordinating his or her point of view with that of the addressee, the addressee's action depends on the infant's awareness that the addressee views the world from a different embodied perspective than one's own. Moreover, it implies that the pointer, again implicitly, can see his or her body as others do. In this way, the pointer is aware that one's own body affords possibilities of action for others if they attend to and interact with its affordance layouts. In this way, the person who performs the point can make available and modulate selected aspects of his or her body in order to make selected information available to others. For example, my nine-month-old granddaughter's curiosity and interest is aroused by something in her environment. Her attending

to a particular phenomenon rather than other potential candidates competing for her attention confers value on it. This is so precisely because *this* event or object, not that, is selected for attention. Something in the local experiential topology is therefore selectively focused on.

The fact that it exists in the experiential topology and has a particular location in it relative to the infant's point of view at that moment presupposes that from the infant's point of view the event or object indicated exists in a public space – an experiential commons – and that others can also perceive it from their points of view. The infant's finger point is a bodily act that serves to modulate my awareness of her awareness of the event or object that she is attending to. Moreover, she is implicitly aware of my awareness of her finger point. Moreover, from my embodied point of view at that moment, I coordinate my point of view with the action vector that is constituted by her point so that I can track whatever it is she is looking at and wants me to look at. The infant is self-reflexively aware, albeit implicitly, that her point is an operation on some aspect of the local experiential topology that I have not noticed or that she wants me to pay attention to. She is therefore able to be aware of my awareness or lack thereof and to modify it. Her point thus serves to modify my awareness. It is an operation on my relation to the given aspect of the experiential topology that the point seeks to modify. In doing so, it creates and coordinates a shared locus of attention (and potential action) that is grounded in the deictically coordinated points of view of the two embodied agents. It is in this way partially removed from the flux of environmental stimulus information and re-located in the deictically coordinated semiotic space that is created by the coordination of the points of view of the two agents.

Deictic pointing is an example of how the affordance potential of the action of pointing one's finger to indicate something of interest or relevance serves to indicate the affordance potentials of whatever it is that is indicated by the point. The point is a higher-level or meta-level affordance with respect to the environmental affordance that is indicated by the point. What is indicated may itself afford further potential actions, and so on. The bus stop affords catching the bus, which in turn affords getting to where one needs to go, and so on. Selves are thus located in complex networks of affordances and (inter) action potentials. If I point to the fridge to indicate to you that that is where the fruit juice is kept, the affordances of my finger point serve to indicate the affordance potentials of the fridge. The affordance potentials of the fridge provide access to the affordance potentials of the fruit juice, e.g., to enjoy a refreshing and cooling drink on a hot summer's day. We are therefore positioned in networks of potential actions in which one action can direct us to the action potential of some other and so on (Campbell 2015, 272). Our relationship to these networks of action potentials is therefore necessarily situated and embodied. The agent's perception of the action potentials

of these possibilities is dependent on and is tied to the agent's embodied points of view in different situations. The agent's finger point is a selective operation on some aspect of the local context from that point of view. The finger point is an operator that selectively and recursively operates on the particular aspect of the context in order to modify – to transform – the addressee's relationship to that aspect. The local dependency relation that is set up between operator (finger point) and operand (that which is indicated) is constrained by the requirement that that which is indicated is available in and is accessible in the local context.

A finger point is a dialogical act that both draws on past memory and anticipates future possibilities. A finger point, like any form of action, is generated by and enacted by the whole organism – the self – rather than a particular body part. My finger *per se* does not perform the act of indicating something. I do. Moreover, it is a goal-seeking act; it is directed at something and therefore has the property of aboutness. The act of pointing to indicate something may pick out the wrong thing. The act may be in error. Actions can therefore fail to indicate correctly. However, if my point indicates to you the wrong building – e.g., the train station and not the bus stop – you do not ascribe the error to my finger, but to me, the person that is the source of the action and who is held responsible for it. Actions are performed by the agent who is held responsible for the action rather than by the body part that realises the action. They are deictically anchored to and referable to the agent that is held responsible for the action rather than being ascribed to the movements of body parts. Moreover, deictic pointing stands out against the background of the rest of the body. The pointer must raise and direct arm and finger along a directional vector. This makes the act of pointing a conspicuous act that stands out against the overall body context at the same time that it enacts a dialogical space that is both egocentric and allocentric. It is referable to the self who enacts it at the same time that it points beyond the self, in the process creating a shared attentional frame with the addressee.

A finger point is a context-sensitive operation that recursively connects the point to a selected aspect of the local context that the point focuses on. When I point to indicate something to someone else, I visually track and monitor my finger point. Moreover, I perceive the effect of my point on the other person or persons to whom the point is addressed. I also perceive the other's response to my point and their response's effect on me. The act of pointing at something of interest to me to indicate it to someone else creates a joint or dialogically coordinated attention frame. The deictically anchored and embodied perspectives of 'you' and 'me' are jointly focused on something that is constituted as an experience that is common to both. In other words, something that the pointer notices in the stimulus flux and draws attention to through the act of pointing becomes an elementary pre-linguistic 'this' or 'that' that others can also point to

as 'this' or 'that' from their own embodied perspectives. In this way, the particular aspect of the stimulus flux that is focused on becomes part of a socially constituted experiential topology that is created and woven together by the innumerable small acts of joint attention sharing that focus on those events and objects of concern to us, i.e., the things that matter us because in some way they affect us at the same time that we have the capacity to affect them and our own and others' relationships to them when we point to them and indicate them as loci of semiotic, perceptual and cognitive processing.

The act of pointing is, of course, controlled by the perspective of the person who performs it. In this sense, it is intrinsically egocentric. However, pointing is also a dialogical act that requires both maintaining one's own egocentric frame of reference and shifting to the allocentric frame of reference of the other to whom the point is addressed. When I point at something from my own point of view, I also place myself in the shoes of the other. I am virtual author of the other's point of view, which I track through the shifts in attentional focus that their gaze, head movements and bodily orientation indicate.

Pointing is a selective modulation of attention and awareness. We selectively attend to those aspects of our environment that interest us or which are in some way linked to our desires and needs. Attention is a way of altering focus and interest. When we attend to one thing rather than another, we deploy a simplex mechanism that constitutes whatever we attend to as a 'this' or 'that'. Attention is both selective and differentiating. It both selectively focuses on one thing rather than other things and, in doing so, it differentiates that which is attended to against a background of other competing possibilities. This selective differentiation is how attention confers value on that which is attended to. Attention is intentional activity that anticipates future potential for action and interaction. In focusing our attention on something and thereby in conferring value on it, however fleetingly, we anticipate future action possibilities in relation to the thing attended to.

Attention has a natural tendency to wander over many different things. Both finger pointing and gaze are foundational for the emergence of languaging. They function to regulate the attention of others and of the self-other dyads that they create and structure. The diachronic emergence of dialogically coordinated finger pointing in infants towards the end of the first year builds on and is an expansion of the prior ability to direct and modulate the infant's own attention, which is present from the beginning. The developmental shift towards the end of the first year is a cognitive and semiotic milestone because the infant now seeks to coordinate and thus to share his or her attention with others in elementary forms of triadic intersubjectivity (Trevarthen 1978) that are the precursor to dialogically coordinated languaging. With this development, the infant participates in the joint construction of a semiotic-cognitive commons with others. This development is premised on several other key



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developments. These include the recognition that: (1) others are distinctive selves who have distinctive view points on the world – viewpoints moreover that may differ from one's own; (2) one can view one's body from an external viewpoint and therefore see it as others do as the necessary condition for being able to use parts of one's body as the means of performing actions that others can interpret and respond to from their own viewpoint; and (3) one can simulate the actions of others with one's own body. Finger pointing to coordinate joint attention involves all three of these abilities.

The joint attention that is achieved by finger pointing means that egocentric and allocentric reference points can be coordinated. When you and I jointly attend to something because of my pointing it out to you, we together create an intersubjective space that lifts some aspect of the flux of environmental stimulus information out of the flow and constitutes it as a piece of the semiotic-cognitive commons that we can share. The finger point specifies a locus of perceptual and cognitive-semiotic processing that is of current interest to us. This focus of our interest is not a representation of something 'out there', but an anticipation of its possibilities for action and for the further development of the interaction flow. The semiotic act of pointing is more like a hypothesis that we test against the selected aspect of the world that is indicated in order to gauge its potentialities for contributing to the further development of the interaction flow. In the brief timeframe prior to the performance of the act, the microgenesis of the act in the brain creates a virtual simulation that is progressively pruned and honed until the performance of the act, which is the endpoint of this process of prior microgenetic set up. The brain draws on affects, experiential memories, values, dispositions, habit, and so on to hone a microgenetic trajectory that yields a simulation of the world that is then tested in the world by the action that is performed and the responses that it generates.

It is through innumerable acts of this kind that humans have deposited the reified products of very many acts of joint sharing of experience into the formation of a pre-linguistic experiential topology. The experiential topology is a socially constituted and maintained meshwork of functional individuals and the relations between them that we selectively orient to and act on. The experiential topology is founded on the organisation of processes as its foundational principle. The relational character of the experiential topology means that processes, organisations of processes on many different scales, and interactions between organisations of process that are spread across space-time are fundamental, not ultimate bottom-level particles. The experiential topology is a continuum of dynamic interacting processes in which concrete particulars or thing-like entities no longer have a privileged role. They too are organisations of process that we track across space and time.

The experiential topology is the basis of the human Lifeworld and its phenomenology. Semiotic acts like

finger pointing and in still more complex ways utterances are locators. With reference to the deictically anchored embodied viewpoint of the agent that performs the point, acts of pointing serve to locate things and events in the world in relation to the you-me dyad that is constituted by the point. Pointing at something to indicate it to someone else both locates it in relation to the egocentric and allocentric perspectives of you and me at the same time that it locates it in the temporal flow as that which we are attending to Now as the current aspect of the world with which we are conjoined. Pointing is an entextualised articulatory act that presupposes and jointly creates a *with-world*. The *with-world* consists of me, you, my finger point, your attending to my point, and the aspect of the there-world that is conjoined to us as a shared experience in the current Now. In this sense, pointing is an elementary form of proto-modal stance-taking. The act of pointing constitutes what is pointed to as elementary or primitive pre-linguistic 'thises' and 'thats'. These 'thises' and 'thats' are located at varying degrees of interpersonal distance and with varying degrees of definiteness, specification, and actuality in relation to the me-you dyad in the constitution and maintenance of the relations between self and its objects.

The ability deictically to locate the 'thises' and 'thats' of human experience that are constituted by deictic pointing in space and time means that they are inserted into the historical flow of the human Dialogue. Once they are so constituted, they can be pointed to by others, appropriated by others, and transformed by them in the service of their own projects, assigned a place in time and place and thus woven into a shared history that belongs to the community rather than to individual memory per se. The ability to indicate 'thises' and 'thats' means that we can evoke and to constitute situations. Situations are not the same as circumstances. A situation is an occurrence of functional individuals in some spatio-temporal region. Circumstances are constraints on functional individuals and their possibilities for action, etc. in some situation. In other words, a situation actualizes an occurrence of *functional individuals* to some degree of definiteness and specificity relative to the viewpoints of the agents who participate in the situation. The deictic act of pointing my finger to indicate to my addressee something of interest is situation-constituting in this sense.

Language emerges from deeply implicit interactive strivings that are animated from within by affect and motive as the self seeks to co-articulate with some aspect of the social world to achieve coordinative coherence with it. It is the fact of the deeply implicit character of these strivings, which originate in the unconscious core self (Brown 2005, 2015; Damasio 1999, 2010; Thibault 2021b, chap. 3), that makes possible the emergence of social realities on an implicit subjective ground rather than supposing that they occur on a basic social ground that is explicitly represented (Bickhard 2003, 58).

In section 3, I discuss Piaget's (1952, 1954) theory of distancing and the developmental emergence of the

'thises' and 'that's' of the experiential topology as the objects of the child's world progressively detach themselves from the child.

### 3. PIAGET'S THEORY OF DISTANCING AND THE DEVELOPMENTAL EMERGENCE OF THE EXPERIENTIAL TOPOLOGY

Piaget showed how the developmental trajectory of the child's activity leads to the detachment of things from those activities thereby allowing for the "construction of the object" in a spatio-temporal web of inter-connected and inter-coordinated "substances and of relations of cause and effect" (Piaget 1954, 103). Piaget shows the resistance or friction encountered by the child when the world doesn't go according to one's wishes and desires, or when it throws up difficulties and frustrates one's intentions. Because of this resistance, the object comes to be progressively detached from the activity. It is in this way, according to Piaget, that the child comes to view his or her own body movements as components of a still larger-scale network of relations in the form of an emerging non-linguistic experiential topology consisting of objects, events, causes, space, time, and the self's relations to these. The detachment that Piaget writes about – the increased distance that the child experiences between him- or herself and the world – means that the world beyond the child is populated by objects, events, and so on that can be constituted as the objects of the child's own intentional acts. Objects, events, places, times, and so on are no longer just other objects along with the child's own body. They are intentional objects – semiotic objects – that can be placed in virtual event series in memory and evoked on later occasions. Accordingly, the child comes to understand him- or herself in relation to this larger field or network of relations that extends in space and time:

To the extent that things are detached from actions and that action is placed among the totality of the series of surrounding events, the subject has the power to construct a system of relations to understand these series and to understand himself in relation to them [...] To organize such series is to form simultaneously a spatio-temporal network and a system consisting of substances and of relations of cause and effect [...] Hence the construction of the object is inseparable from that of space, time and causality. (Piaget 1954, 103)

Initially, the infant is confronted with a relatively undifferentiated world in the form of: (1) a non-differentiable flow (Bergson's *durée*) rather than an abstract series of instants; (2) an extended spatial continuum rather than an abstract series of positions 'in' abstract space; and (3) a qualitative subjective field without external causes. The infant's intentional actions upon this field effect transformations of the field that enable the developing infant to isolate and to home in on perceptual invariants

(Bergson 1911[1896], 260–261; Gibson 1986[1979], 254; Robbins 2001, 193–194). Action-perception cycles, as Piaget shows, thus yield a set of basic constructs consisting of objects, causality, space, and time in which the self takes its place as one construct amongst and in relation to all the others. Piaget's account of distancing shows the importance of embodied point of view to the situation-constituting abilities of selves. The 'thises' and 'thats' that I referred to above are not given; they only exist and are interactively constituted with reference to the point of view of the agent who indicates them. These 'thises' and 'thats' are deictically actualised aspects of the virtual potentialities of experience that are constituted in relation to some point of view. This has implications for how we understand the role of the brain in subtending and supporting a person's interactivity with the affordance potentials of the world.

Both Brown (2005, 68) and Robbins (2001, 192–193) show that the brain lays down diversity on a uniform qualitative field. This uniform qualitative field is what the world would be like without the embodied points of view of observers – i.e., featureless and amodal – that interact with it and its potentialities. The potentialities of the world – its affordances – are apprehended and actualised from the deictically situated points of view of observers. Rather than a world of meaningless sensation that is filtered and organised into representations by internal schemata, the self is continuous with its objects. There is no boundary between the two; the mind is microgenetically extended into its objects through processes of progressive differentiation, articulation, and distancing. Value is not projected by the self onto a value-free world 'out there'. Instead, value is drawn into the object (Brown 2005, 148) through the microgenetic processes of differentiation and articulation that progressively individuate the self-object relation during the unfolding microgenetic process.

The affordance potentials of the world relative to different species are desirables, possibilities, probabilities, certainties, regularities, expectations, necessities, predictions, and so on. These modalities can only emerge in relation to the capacities, competencies, and viewpoints of observers of different kinds that attend to them, interact with them, are affected by them, and actualize them. Linguistic modality builds on these first-order modal relations between observers and their worlds. The objective modalities of the world are first-order with respect to the second-order modalities of language (Ladyman, Ross et al. 2007, 119). Linguistic modality models and enables specific kinds of relations between the capacities, competencies, and skills of human selves and the affordance potentials of the human ecology. Other species will in varying ways exhibit proto-modal relations between their embodied viewpoints and the affordance potentials of their worlds.

Robbins writes that the brain is a "modulated reconstructive wave" that is embedded in a universal holographic field, as in Bergson's (1911[1896]) conception.

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This modulated reconstructive wave is a complex pattern of neural activity that enables and supports perception and cognition of the phenomena of the self's world. The wave corresponds to a particular brain 'state', seen as a hierarchically organised series of phases of oscillatory (rhythmic) activity that pulse a particular mental act into existence as the wave unfolds as a temporally unfolding configurational pattern of brain activity in the microgenetic derivation of mental acts (Brown 2015, 74). Robbins (2001, 195) writes: "As a wave travelling through a hologram is specific to a virtual image, this wave is specific to a virtual subset of the field to which the action systems can respond." (Robbins 2001, 195). The brain partitions the indivisible melodic flow of the time-space continuum identified by Bergson (1911[1896]) into the objects and events useful for the body's actions.<sup>2</sup> More correctly, embodied observers, not brains *per se*, perform this partitioning relative to the frames of references that are afforded by their embodiment. Without the points of view of observing selves, Bergson's indivisible melodic flow is a continuum without events, things, qualities, times, locations, and modal potentials. It is a purely implicate order (Bohm 1983[1980], 185; see also Ingold 2011, 160).

The 'real patterns' of the 'material' mode of existence are objective patterns of data rather than the sense data of positivism (Dennett 1991). The structures of these patterns of data and their modalities are represented by mathematical modalities in some formal theory (Ladyman, Ross et al. 2007, 119). The familiar phenomena of the human world – computers, chairs, persons, other animals, etc. – are not then derived from sense data in the positivistic sense. Their existence and their affordance potentials are motivated by empirical stances. They are grounded in human experience. Their empirical structures are embedded in particular semiotic structures such as the semantic differentiators of languaging that enable them to be located and differentiated to some degree of resolution by means of the experiential categories of natural languages. The latter enable the positing and enacting of modalised interactive stances on those aspects of the real patterns that affect us, i.e., those aspects that are attended to and consequently reified as worthy of our attention because of their modal potential for further interaction.

The term 'material' used above must be interpreted with extreme caution. Terms like 'matter' and 'material' are variously and confusedly defined and used in ways that are incommensurate with our current best understandings of the world according to process-ontological theories. The world is not reducible to some ultimate bottom-level of irreducible particles or bits of matter or particularistic thing-like entities. Quantum Field Theory provides a radical and more plausible alternative to the metaphysical view that the Universe is fundamentally

composed of micro-particles (see Campbell 2015, 68). The resulting field metaphysics takes fields as basic. As Campbell (op. cit.) explains, quantization results in the spontaneous emergence of phenomena with some field-like properties. These are not stable and can be created and destroyed. Moreover, some stable interactions amongst quantum field give rise to the phenomena that we take to be the "things" that populate the human world. These things are however derived from underlying field processes; they are not fundamental and have no scientific status. Every thing that exists is the result of some organisation of process and the interactions among organisations of process on different scales and to varying degrees of complexity (Campbell 2015, 68–69).

Traditional predicate logic would have it that a predicate is predicated of a subject, seen as the carrier of the predicate, and that subjects are points in space-time that function as concrete particulars. As we shall see in section 6 below, utterances are interactive samplings of process flows and trajectories that are extended in space and time. We do not interact with abstract points in space or abstract instants in time. Instead, we interact with process flows that are extended in space and time just as we are. The latter fact is no less important and will be returned to in sections 7–8.

The implicate order is primary and basic. The progressive differentiation and articulation of the world with reference to the embodied points of view of observers corresponds to what physicist David Bohm (1983[1980]) calls the explicate order, as distinct from the implicate order. The explicate order gives rise to the articulation of the space-time continuum into the world of the objects and events that populate the human ecology. The affordance potentials of this world only emerge – *can* only emerge – when there is an intentional consciousness to interact with them and to attend to them. Bergson's indivisible melodic flow is only partitioned relative to an embodied consciousness and its viewpoints. The nested hierarchy of scales of the brain's dynamical processes determine the scale of the perceived world (Robbins 2001, 192).

Humans are adapted to perceive at a certain scale of space-time that partitions Bergson's space-time continuum or holographic field into the familiar objects and events, including our own bodies, that our perceptual systems make (Gibson 1986[1979], 7–15). These partitions are made in relation to the scales of time and space relevant to the viewpoints afforded by our embodiment and its possibilities for action. The body's actions are not discrete instants but more like the movement and flow of melody. Bergson's (1950[1889], 100–101) 'pure duration' is the form of our consciousness that does not divide the present state from its past states as one point or instant succeeding another. The latter view spatializes time, now seen as a succession of discrete instants

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2 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."



occurring 'in' time. Instead, Bergson's melodic view of time "forms both the past and the present states into an organic whole, as happens when we recall the notes of a tune, melting, so to speak into one another." (Bergson 1950[1889], 100). Bergson understood that we do not perceive these "notes" as a succession of instants:

Might it not be said that, even if these notes succeed one another, yet we perceive them in one another, and their totality may be compared to a living being whose parts, although distinct, permeate one another just because they are so closely connected? (Bergson 1950[1889], 100).

The body acts on and affects its objects in a vast field of motion in which it too is acted on and affected by its objects. The resulting melody is a qualitative "succession without distinction" in which all the notes of the unfolding melody mutually penetrate each other and are interconnected (Bergson 1950[1889], 101). The developing trajectory of the child in Piaget's account is an intensive or qualitative melodic flow in this sense.

The child's movements through the inter-coordinated field of relations identified by Piaget provide the impetus to go beyond the present of immediate perceptual stimulus information. Initially, the child's actions are tied to very short temporal series that remain dependent upon "constructions characteristic of object, space, and causality" whereby "the time developed by the series necessarily remained linked with present perceptions, with practical memories derived from recent action, and anticipations in accord with action in progress." (Piaget 1954, 391). Subsequently, the child's movement trajectory is extended to actions that are performed on the domain of *virtual* event series. In this way, the relation of *images* of objects to actions enables a more extended virtual past to be constructed (Robbins 2001). Images of past objects interpenetrate present ones in the qualitative synthesis of successive perceptual experiences into "a unity resembling that of a phrase in a melody." (Bergson 1950[1889], 111). In this way, "the past co-exists along with the present!" (Bergson 1950[1889], 112). The past is immanent in the present as in the interpenetration of the preceding notes in a melody with the present one. The past is not a series of discrete instants that disappear forever once they are over. The past persists in the presence (see also Gibson 1986[1979], 246–249). Memory of the past is continuously implicated in the present, is constitutive of experience in the present, and is functional in the continual updating of situation awareness and understanding (Bickhard, Ritchie 1983, 25).

We develop the ability to *reintegrate* past experience. Reintegration 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 (Robbins 2001; Verbrugge 1980, 94). In this way, the child learns to treat objects and events in the present as symbolic reminders of other objects

and events and to locate them in an action sequence in the past. The infant forges his or her own trajectories of movement through the emerging experiential topology, consisting of objects, causes, space, time, and the self. It is only when these series become 'symbolic reminders' that the self can locate them in a virtual past series. Piaget discusses how the nineteen-month-old Jacqueline uses a blade of grass in precisely this sense:

Jacqueline (19 months) picks up a blade of grass which she puts in a pail as if it were one of the grasshoppers a little cousin brought her a few days before. She says "Totelle [sauterelle, or grasshopper] totelle, jump, boy [her cousin]." In other words, perception of an object which reminds her symbolically of a grasshopper enables her to evoke past events and reconstruct them in sequence. (Piaget 1952, 391)

The blade of grass in Piaget's example thus serves as a symbolic reminder of the grasshoppers that featured as objects in another event series involving Jacqueline's little cousin a few days earlier. In other words, this symbolic reminder affords the possibility of the child's reintegrating a virtual past event series. The blade of grass evokes invariant features of that past event to support a memory that is entertained in the perspective of the self.

For Jacqueline, the blade of grass qua symbolic reminder arises at the intersection of felt, immediate bodily experience and external social circumstances. The distance between Jacqueline (the self as addressor), the blade of grass (sign vehicle), and the grasshopper of a few days ago (the referent), is, accordingly, increased. The blade of grass is deeply imbued with a personal sense that is grounded in bodily feeling and affect. By the same token, this personal meaning strives to find articulation in social settings while 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 by means of the blade of grass in Piaget's example 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) and thus to participate in and to share with others the semiotic commons. The semiotic commons is built up by these early capacities to lift aspects of experience out of the stimulus flux and to reify them as loci of cognitive-semiotic processing that can be de-located from one experience and re-located in others in virtual event series.

Language operates on an already constituted experiential topology in this sense. The experiential topology is the socially produced and continually changing outcome of our collective action-perception, including its unconscious dimension, our registration (sections 7–8). It is a condensed economisation of these behaviours together with the context-sensitive motor-sensory dispositions, skills, and habits whereby we flexibly adapt to

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our environment. Non-conscious perception plays a key role in the shaping and orientation of these dispositions, skills, and habits.

Words such as 'banana' or 'stick' functions in activity-specific ways to point to and to activate an awareness of a configuration of perceptual stimulus information that specifies an affordance array in the currently active part of the experiential topology. The meaning of the word 'stick' is not adequately formulated as a pairing of the linguistic form with a meaning. Such definitions are circular and tautologous because they assume that the two sides of the linguistic sign are internal to language. Consider the word 'stick.' In context-sensitive ways the word serves to activate and brings to the subject's awareness a relevant configuration of perceptual stimulus information that may be present in actuality or made present to the imagination. The word is a compressed typological-categorical possibility that functions in some structure of activity to point to, to provide indications of, and to stabilize a specific configuration of non-linguistic perceptual or other environmental information (see also Ruthrof 2007, 17–18).

At the same time, the word is a lexicalised semantic differentiator that selectively operates on the region of the experiential topology that is indicated in order to differentiate it as distinct from other aspects of the experiential topology to some degree of dimensionality or granularity according to the criterion of distinctness discussed in section 5. In these two ways, the word is a means for specifying the affordance potentials of what it is that the word indicates. Gibson showed that you don't need categorisation to perceive the affordances of something. I perceive a slim length of fallen tree lying on the ground. I perceive that it may afford good snake catching potential owing to its length, graspability, strength, flexibility, usability, etc. In this way, I perceive the affordances of the stick relative to my own bodily capacities. In this way, I perceive the affordances and meanings of the thing perceived, the stick or the banana. These meanings arise before I learn the words *stick* and *banana*. The meanings of sticks and bananas are learned through activity-specific exploration and discovery of their affordances when I interact with them. The words come later in the development of the individual.

The words *stick* and *banana* are typological-categorical possibility spaces that compress cultural-semantic information that can be selectively activated for the purposes of action selection and control. Words are not assigned meanings that are then applied to objects in the world. Instead, the words *stick* and *banana* provide reliable indications, instructions, or anticipations as to how to interact with the object that is indicated by the word. Sticks and bananas are regularities in the human world that specify reliable ways of interacting with them and of making use of their affordance potentials. The words do not 'represent' the world-side object. Words like *stick* and *banana* are not encodings of representations of actualities in the world. They are interactive control strategies that focus attention and awareness on a delimited,

paradigmatically organised set of possibilities that can be selectively activated in activity-specific ways (Borchmann 2018; Thibault 2017). They focus attention where it is needed and on what is relevant for the purposes of some concurrent or anticipated action.

By means of utterances, we do not encode representations of a world 'out there'. Instead, they enable us interactively to control and shape situations by producing actions that yield desirable input. As Gibson showed, perception is the pickup of stimulus information that results from the exploratory activities of the organism. Action (output) yields perception (input). In this way, organisms discover and learn to make use of the affordances of their worlds. The perceived world guides our action in it. This is so in the sense that, through our interactivity with the world, we discover regular and reliable output-to-input transformations when perceived affordances control our actions in ways that bring about expected outcomes and which are beneficial for us. Language builds on and extends this basic action-perception control system.

Calling something a stick focuses attention on the affordances of the piece of wood that I perceive, but I don't need the word to perceive that potential. I just integrate my action-perception skills to the relevant activity-specific requirements. Integrated with activity, the utterance serves, for example, to coordinate the attention of participants on the length of wood in ways relevant to its action/affordance potential in that activity. The affordance potential will vary with the activity: (1) catching a snake; (2) knocking an out-of-reach banana off the tree; (3) checking the depth of a pool of water; (4) poking down a hole to suss out if something is down there; (5) an aid to walking; (6) fending off an attacker; (7) making a rough measurement of a distance, etc. These are all different activities in which the variable affordances of the length of wood are perceived differently.

Calling it a stick does nothing to change that. In the first instance, it depends on the ability to perceive affordances in activity-relevant ways. Different activities set up open-ended paradigms of possibilities. These may be very loosely constrained or very tightly constrained, depending on the activity. A whole range of activities are highly standardised as procedures for this reason so that the paradigm of the states through which the activity must pass for its successful completion are predictable while also allowing for the emergence of contingencies that may force a different activity, e.g., aborting a landing approach and transitioning to a go round if, say, the affordances for a safe landing are no longer available due to a change in the weather or the intrusion of unexpected traffic.

As Gibson pointed out, people do not ordinarily perceive light waves, gravitational waves, the cohesive bonds that hold atomic structures together, and so on. I perceive, for example, a cat crossing the road, a neighbour's lawnmower disturbing my Sunday morning sleep, the four largest moons orbiting Jupiter when I observe them through my 2.4 inch refractor telescope. Gibson argued

that perception is an activity of an intentional agent that interactively engages with its 'object', i.e., something in the world that is separate from and exists independently of the perceiving subject. Moreover, perception is an achievement of the perceiver (Ryle 1963[1949]).

#### 4. THE PROMOTION OF NON- PERCEPTUAL MODES OF AWARENESS THROUGH LANGUAGING

Reed (1996, 174) points out that people are not always in touch with their environments. Awareness of the environment – past, present, and future – is cognitive. Non-cognitive awareness is of, for example, dreams, illusions, imaginary persons, places, and events, mental and verbal imagery that are not part of the populated ecological environment. These phenomena may of course draw on and transform the person's experience of that environment, but they do not serve to put the person in contact with the existing environment – past, present, or future – in the way that perceptual and cognitive forms of awareness do. The phenomenology of non-cognitive awareness is fundamental to human experience and enables us to synthesise and assemble diverse aspects of experience in creative and imaginative ways not constrained by currently available environmental stimulus information. We develop the skills of non-perceptual awareness that enable us to attend to informational invariants that we have extracted from the flux of perceptual stimulus information and can attend to without there being any stimulation of the receptors. I can entertain thoughts while sitting in my study in Norway about my family in Australia, the Franco-Prussian war, the French writer Anatole France, or the world's most venomous land snake (the desert taipan). I can also talk or write about these things without my thoughts or my words depending on environmental stimulus information.

The kinds of awareness and experience that languaging enables and promotes for both self and others can and often do occur independently of the flux of environmental stimulus information. Perceiving, as Gibson (1986[1979], 263) pointed out, is a form of knowing that is based on the pickup of information that is available in the environment of the observer. Languaging builds on this capacity rather than transcends it. Languaging is a socially and culturally organised means for making information available to self and others by means of the linguistic pattern that is detected in utterances. Linguistic pattern affords attunement to not only the world around us but also to imaginary and fictitious entities and events that may or may not survive the reality test. In critiquing the persistent yet unhelpful idea of internal mental images, Gibson defines the reality test with regard to perception as follows:

I suggest that perfectly reliable and automatic tests for reality are involved in the working of a perceptual system. They do not have to be intellectual.

A surface is seen with more or less definition as the accommodation of the lens changes; an image is not. A surface becomes clearer when fixated; an image does not. A surface can be scanned; an image cannot. When the eyes converge on an object in the world, the sensation of crossed diplopia disappears, and when the eyes diverge, the "double image" reappears; this does not happen for an image in the space of the mind. An object can be scrutinized with the whole repertory of optimizing adjustments described in Chapter 11. No image can be scrutinized—not an afterimage, not a so-called eidetic image, not the image in a dream, and not even a hallucination. An *imaginary* image can undergo an imaginary scrutiny, no doubt, but you are not going to discover a new and surprising feature of the object this way. For it is the very features of the object that your perceptual system has already picked up that constitute your ability to visualize it. The most decisive test for reality is whether you can discover new features and details by the act of scrutiny. Can you obtain new stimulation and extract new information from it? Is the information inexhaustible? Is there more to be seen? The imaginary scrutiny of an imaginary entity cannot pass this test. (Gibson 1986[1979], 256–257)

Gibson makes the crucially important point that perception is an active and exploratory process of detecting or discovering ecological information. Moreover, the perception of an object is proto-modal: it can be actualised to varying degrees of definiteness and specificity through the activities of scrutinising and the optimising adjustments referred to by Gibson. Perception and action are inseparable, like the two sides of the same coin. A perception can be verified as correct or true by further exploratory activity in ways that an internal mental image cannot.

Languaging is a form of extended action *and* perception. It not only affords attunement to the world, including the things that can be imagined, but it is also a means of operating on and transforming situations and the entities and events that populate them. It is a highly productive action system that enables people to test imaginary and hypothetical entities and events against reality, including of course the viewpoints and stances of other persons who may challenge, conflict with, and disagree with the speaker. We act on the world, explore it, probe it, and transform it through our activity in ways that enable us to discover it and thus to correct error.

When language is thought of as an extended action-perception system rather than a code inputting sense data to the brain where concepts are paired with sound patterns, it is possible to rethink human languaging as a way of attuning people to their ecological environment and of catalysing forms of experience in that environment, including non-perceptual and non-cognitive awareness. Information invariants and the stimulus flux are not the same; the former can be detached from the latter (Gibson 1986[1979], 256). A perceiver, Gibson

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explains, can extract information invariants from the stimulus flux so that the perceptual system can operate without the constraints of the stimulus flux. This ability means that the person can be aware of things without having the receptors stimulated by environmental information. Perceptual hearing, seeing, touching, etc. is *awareness* of persistent structure in one's environment; it is not a matter of a continuous parade of transient sensations that impinge upon receptors and then recede forever into the past. I can attune to someone's presence in their office down the corridor without seeing or hearing them. I am aware of their presence without my awareness being constrained by the stimulus flux in that moment. Instead, my awareness in the current Now is interpenetrated by, fused with, and dependent on past information that is qualitatively synthesised in the melody of my current awareness.

The forms of non-perceptual knowledge and awareness that languaging supports and promotes in the human ecology require us to consider what it is that we talk about in our languaging. Even when we talk about the things and events that we experienced first-hand by virtue of our embodied interactivity with the first-order reality of objects and events, our talk about them is transcendent with respect to them while being grounded in them. It is transcendent because it lifts them out of the first-order flow of environmental stimulus information and constitutes them as loci of attentional modulation and control that can be deposited in the cognitive-semiotic commons.

As I show below, I can talk about being cut by a tin can and the bleeding and mild pain which resulted in my finger, but my talk about this happening is a higher-order process flow with respect to my embodied awareness of the event. When I tell someone about it after the event, I do not directly or causally connect my languaging to the event. Instead, I evoke a situation by individuating and locating the functional individuals and the relations between them that are constitutive of that situation. My languaging serves to promote forms of non-cognitive and non-perceptual awareness of these functional individuals without the support of the environmental stimulus information that enabled me to see the blood and to feel the pain when the sharp edge of the can cut my finger. Languaging promotes awareness of functional individuals in the situations that are, in part, constituted by language. Functional individuals are not the same as substantive individuals. Functional individuals, not substantive individuals, populate the semiotic-cognitive commons.

Even when I talk about the tin can on which I cut my hand on a particular occasion while putting out the rubbish, the actual tin can that did the cutting is re-constituted as a functional individual in perception as something that I encounter, and which claims my attention. In my languaging it is something that I constitute as an event that I tell others about and thereby deposit into the semiotic commons consisting of countless other events both large and small. The incident in question

is lifted out of the stimulus flux and constituted both in memory and in language as a functional individual that I can locate in place and time in virtual event series as an occurrence of that functional individual. I turn to this question in the next section.

### 5. FUNCTIONAL INDIVIDUALS, SITUATIONS, AND THE COGNITIVE-SEMIOTIC COMMONS

The term "naïve realism" is not an appropriate term to designate the complex ontological commitments that inform theory and practice in the contemporary natural and human sciences. The natural sciences – in contrast to the metaphysical presuppositions of many contemporary philosophers and sociologists of science – are deeply committed to a realist ontology rather than a constructivist one precisely because it is assumed that there is a world that exists independently of our current best understandings of it. The term "naïve realism" refers to the view, no longer taken seriously except perhaps by some philosophers, that mind-independent reality consists of things that are decomposable into their essences. On this view, the world consists of fully formed substantive things that can be defined by their essential properties or perhaps by transcendent entities. However, this "naïve realism" is not how the sciences, as distinct from the metaphysical and out-of-date constructs of many philosophers, work. Dismissal of "naïve realism" does not amount to the wholesale dismissal of the much more sophisticated realist ontologies that currently inform scientific thinking.

Roughly speaking, we can say that ontological commitments fall into three broad groupings. First, there is the view that reality has no existence independently of the human mind, whether seen in terms of *a priori* mental categories or in terms of discourse and social conventions. Constructivism, broadly defined and with many nuanced variants too numerous to discuss, falls into this category. Secondly, there are those philosophers who grant the existence of a mind-independent reality but are reluctant to grant any kind of ontological autonomy to, for example, very small-scale phenomena such as protons and unseen causes. Typically, this position is more interested in the time and space scales on which human life occurs rather than the scales – both smaller and larger – investigated by the natural sciences. Thirdly, realists allow for a mind-independent reality such that what is currently observable and what is not so observable is not a relevant distinction or even a problem for realists. In adopting such a view, realists reject anthropocentric conceptions of reality and hence of what is relevant to scientific enquiry. Realists are for this reason amongst others better able to avoid conflating scientific knowledge with common sense and intuitive understandings of the world. Science of all persuasions needs to be rigorously counter-intuitive in contradistinction to the appeals made by many philosophers to common sense and intuition. The problem with the latter is that they



are grounded, for evolutionary reasons, in the semiotic and cognitive resources that humans have collectively evolved for keeping track of mid-level entities and events in their social-cultural worlds.

We need to find an appropriate way of reconciling the claims of realism that there exists a world that is greater than and independent of the human mind and its categories. On this view, the world necessarily transcends our experience. On the other hand, constructivism can show that it is through our own embodied, constructive activities that we come to know that world. We therefore need to recognise that our world is constituted by our consciousness of it at the same time that the world is not solipsistically limited to individual, subjective acts of consciousness. We become consciousness of a world that acts back on us and corrects us, at times quite brutally, when our consciousness is in some way incorrect or in error. The world is therefore greater than our epistemic stances on it.

A realist ontology provides accounts of the real patterns (Dennett 1991) observed by any specific science (e.g., linguistics, biology, economics, geography, psychology) that are fully consonant with the patterns observed by scientists who study the patterns of the world. This does not mean that the patterns studied by linguistics, biology, economics, and so on are reducible to those of physics. Instead, it means that they can all be explained by a unifying ontology that takes as foundational dynamical processes and their transformations (not things and their purported essences) on the many different scalar levels of the Universe – both currently known and not-yet-known. If this were not so, then each discipline would be confined to its own local ontology without any prospect that each local enquiry could be related to more global understandings of the world that would enable separate disciplines to create mutual understandings between them.

Following the work of Johanna Seibt (2001; see also Rijkhoff, Seibt 2005), it is possible to develop an ontology that abandons the substance-based focus on particulars. It is therefore necessary to sever the link between particularity and individuality. An individual is therefore defined in terms of two criteria: (1) something that we can point to and indicate, for example, in our languaging; and (2) something that can be differentiated and therefore identified and re-identified.

Individuality does not imply the substantive thing-like existence of real (substantive) individuals, but rather “distinctness”, i.e., “something of which we can say ‘this, not that’ (Rijkhoff, Seibt 2005, 116) to varying degrees of resolution and granularity. In other words, *functional individuals* of all kinds are what can be differentiated by language and other modes of perception and cognition. Functional individuals are occurrent in different places and times though they are not limited to a particular place or time. In the ontology developed by Seibt, functional individuals include a vast array of stuffs, activities, and processes. Stuffs, activities, and processes of all

kinds are regular occurrences in the familiar, everyday world in which we live and in relationship to which our languaging takes place. Moreover, they can all be differentiated and identified and re-identified. In taking this stance, Seibt effectively demonstrates that a coherent ontological alternative to the predominant particularistic emphasis on countable thing-like entities can be developed. Importantly, an ontological account of this kind is about the world that we regularly interact with and experience, as distinct from the theoretical abstracta that the physicist deals with.

Functional individuals are not to be confused with embodied experience or with material events per se, both of which occur in particular times and places. I may cut myself on a tin can while washing it before putting the can in the recycling bin. Being cut by the sharp edge of the can is an event that occurred in a definite time and place. A tin can is not a substantive individual but a general organisation of process, i.e., a functional individual of a particular kind – let us call it being-tin-can – that can occur in many different times and places and that can be encountered in many different ways and under many different aspects. A functional individual is a generic process of some kind that can be differentiated from other functional individuals on account of its generic characteristics—characteristics that individuate it as a functional individual in the world ontology. As we see in section 11 below, functional individuals are paradigmatically individuated in relation to the activities and practices in which they function. The notation (with small caps, e.g., snow) used here and throughout this essay indicates a functional individual in the world ontology. Functional individuals may or may be localised (sections 10–11). Functional individuals include things, processes, and stuffs (sections 10–11).

BEING-TIN-CAN indicates that even those aspects of the world that we commonly think of as ‘material’ objects, and which can be treated as countable substantive entities in accordance with the substance ontology, are in fact temporally extended organisations of process. Our encounters with such ‘objects’ are always interactive samplings of some aspects of a temporally extended process. The whole object is never given to the observer in a single instant. Tin cans don’t exist as single points in time, but as temporally extended organisations of process. Furthermore, as Piaget showed (section 3), for something to be an object for a subject, there must be distancing or detachment between subject and object. Distancing or detachment enables abstraction and stabilization in order that the object that is thrown before the mind (sections 1, 6) is placed within effective semantic reach as something that registers on the subject.

The subject “prehends” the objects that populate its world, to use Alfred North Whitehead’s term (1978, 19). Whitehead wrote: “The analysis of an actual entity into ‘prehensions’ is that mode of analysis which exhibits the most concrete elements in the nature of actual entities. This mode of analysis will be termed the ‘division’ of the

actual entity in question. Each actual entity is 'divisible' in an indefinite number of ways, and each way of 'division' yields its indefinite number of prehensions. A prehension reproduces in itself the general characteristics of an actual entity: it is referent to an external world, and in this sense will be said to have a 'vector character'; it involves emotion, and purpose, and valuation, and causation. In fact, any characteristic of an actual entity is reproduced in a prehension." (1978, 19). It is necessary however to point out that Whitehead, notwithstanding his process ontology, still talks the language of entities whereas I have shown why it is important to talk in terms of organisations of process. We thereforeprehend particular organisations, interact with them, and are affected and changed by them. Even a relatively simple and stable organisation of process such as being-tin-can can give rise to an indefinite number of prehensions that yield and therefore actualise different aspects of its affordance potential.

The world that we live in and act on is a world of continual change, flux, and process. The world is a continual flow of continuously emerging, forming, and merging realities that require us to respond to them on the fly with the resources to hand. This is not to say that the world we live in is without organisation. It is however to say that the organisation is one founded on the organisation of process on many different scales rather than a world consisting of static individuals. In their perceptual activity, humans do not attend to static individuals. Instead, they attend to continual changes of state that constitute configurations of perceptual stimulus information that specify affordances. Moreover, perceptual stimuli can be ambiguous in ways that require the perceiver to adapt to the stimuli and to changes in them, as the ambiguous figure/ground images made famous by Gestalt psychologists have demonstrated. We therefore continually adapt to these ambiguities and, more generally, to the changing arrays of perceptual stimuli that specify the affordances of the world.

However, functional individuals do have specific properties such as those that identify BEING-TIN-CAN and differentiate it from BEING-CRICKET-BAT. A functional individual can also be differentiated and located in a specific time and place as a grounded occurrence of the functional individual in question to some degree of resolution and specificity, e.g., in an act of perceptual scrutiny or in the utterance *I cut my finger on a tin can while putting out the rubbish*. The nominal group *a tin can* indicates a non-specific occurrence of the general process BEING-TIN-CAN in the situation that is constituted by the utterance (Thibault 2021c). Utterances specify to varying degrees of specificity and resolution occurrences of *functional*, not substantive, individuals. In doing so, utterances actualize the virtual potentials of the world to varying degrees.

The experience of mild pain that I feel in my finger and the bleeding likewise occurred in a definite time and place. However, when, after the event, I tell my wife about what happened and ask for her assistance in applying

a band-aid to the bleeding cut on my finger, I have made an assertion or a claim about something that has already happened in the first-order experiential world that I encounter through my senses. That happening is now finished as an actuality though it still lives on virtually in my memory. However, the fact that it happened is a reality of a different order with respect to the first-order experience that I underwent. This fact has no tangible existence such that I can see or touch or feel it. It exists as a virtuality that can be actualised in languaging as a situation when I locate an occurrence of the functional individual in question to the extent that is necessary to establish that I am talking about the occurrence that involved me when I was putting out the rubbish. To a large extent, the human world – the human ecology – consists of vast networks of the innumerable virtual constructs that have been woven together over cultural-historical time scales as the collective pooling of a community's knowledge.

The fact that I cut myself and felt some pain can be asserted as an utterance such as *I've just cut myself*, which I say to someone at a given time and in a given place. My utterance does not mirror or encode the first-order event. My utterance uses lexicogrammatical categories to evoke a particular class of functional individual or configuration of functional individuals and to ground them with respect to the time of utterance and the embodied viewpoints of the speaker and the addressee. Functional individuals are general processes until they are localised in particular times and places, or as specific quantities, as particular occurrences of the functional individual in question (Seibt 2001, 2003, 2009). The human world is populated by vast networks of functional individuals and the relations between them. These networks comprise the always social though non-linguistic experiential topology consisting of the collective, historically accumulated products of human action-perception and knowledge creation. Table 1 sets out the orders of reality involved and their relationship to first-order experience in the progression from my first-order embodied experience of cutting my finger on a tin can and my telling someone about it after the event.

## 6. DEGREES OF REALNESS AND DEFINITENESS IN CLAUSE AND NOMINAL GROUP

Human perception is, for ontogenetic, phylogenetic, and cultural-historical reasons, saturated with meanings and values that derive from culture and in ontogenesis become inseparably intertwined with languaging practices. We perceive a certain object as a rock or a tin can, a certain event as a child running across the road, the grass as parched brown by drought, etc. We perceive under a conceptual-semantic aspect. A functional individual is something that can be selected and differentiated and thus located in some region of space-time by a particular linguistic (or other) operation. Rather than referring to an already given and present actuality, utterances actualise and thus situate functional individuals to varying degrees of definiteness,

Order of Reality	Event Type	Relationship to Experience
First-order event	Cutting my hand on a tin can	Embodied interactivity with the affordances of the tin can
Second-order memory series	Relation of mental images of my hand being cut by the tin can; self-location in past event series	The virtualisation of a previously experienced event series and its feeding into an emerging experiential topology consisting of inter-related networks of virtual functional individuals
Third-order semiotic commons	Languaging: <i>I've just cut my hand</i>	The selective locating, differentiating, and evoking of functional individuals and the grounding/situating of them in linguistically constituted situations relative to the deictically grounded viewpoints of the self

Table 1: The orders of reality involved and their relationship to first-order experience in the progression from my first-order embodied experience to the invocation of functional individuals in languaging.

specificity, realness, and so on in occasions of languaging and in texts (Rijkhoff, Seibt 2005).

The grammar of both the clause and the nominal group has resources for indicating the degree of realness or the definiteness of, respectively, events and things. Let's briefly look at events. The transitivity structure of the clause refers to an event that may be actual or non-actual (Rijkhoff, Seibt 2005, 95). An event that is actual is one that is grounded as having been initiated or as having occurred in the world. Examples 1 and 2 below are clauses that refer to actual events:

**Example 1:**

Feminist author Germaine Greer has sparked outrage after calling Princess Diana the "worst f\*ck in the country" during a brutal TV appearance that aired on RT UK last night.

**Example 2:**

2. Higher education represents one of the most important sites over which the battle for democracy is being waged.

In Example (1), the verb *has sparked* in the clause *Feminist author Germaine Greer has sparked outrage* grounds this event as having occurred in and as continuing to occur in the world at the time of writing. In Example (2), the present tense of the verb *represents* grounds this event as currently occurring in the world. The events in Examples (1) and (2) are specified as actual, as having actually occurred (1) or as actually occurring now (2). Events may also be specified as non-actual. Examples (3) and (4) feature clauses that refer to non-actual events.

**Example 3:**

Throw your coat over him. [the coat is not yet thrown]

**Example 4:**

We knew then we would have to kill her. [she is not yet killed]

In Examples (3) and (4), the clauses specify events that have not yet occurred. For this reason, they cannot be grounded at a particular spatio-temporal location in the world that is constituted in the current occasion of languaging.

The grammar of the nominal group has resources for indicating whether the referent of the nominal group is already known and accessible in the world of discourse or not. Definite nominal groups are shown in Examples (5) and (6):

**Example 5:**

I threw out the empty shell and laid the remaining cartridge in the breach.

**Example 6:**

This unicorn was special because he had the power to make anything and everyone happy.

The referents of indefinite nominal groups are indicated to be not identifiable for the addressee. Examples (7) and (8) show this:

**Example 7:**

One day, a little girl came to the land. Her name was Maria.

**Example 8:**

Germaine continued to make a jibe about Diana's love life, ...

The indefinite nominal groups *a little girl* (7) and *a jibe* (8) are used to refer to entities that the addresser presumes are not identifiable by the addressee; they are introduced into the discourse as new entities that have not yet been identified.

The point of this brief survey of a complex area of grammar and semantics is to point out that the grammar of the clause and the nominal group, respectively, have resources for indicating an event (clause) as real or actual

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or a thing (nominal group) as definite or indefinite, specific, or non-specific. On the other hand, indicating an event as non-actual means that the event which is specified by the clause is not yet grounded in the occasion of languaging as an event that has actually occurred, or is actually occurring. Indicating the referent of a nominal group as indefinite specifies a new entity that is introduced in the discourse, and which can subsequently be taken as a discourse referent. Space does not permit a detailed discussion of this important point (see Thibault 2021c) for a detailed process ontological account of 'representation' in systemic-functional grammar in these terms).

### 7. THINGS

On the standard view, reality consists of a collection of concrete particulars (substantive individuals). This is the standard substance-based ontology. On the other hand, I argue that individual things, objects, persons, actions, events, properties, and so on, are convenient and domesticated cognitive-semiotic devices used by observers to keep track of what observers, e.g., human agents, consider to be cogent moments, i.e., patterns that matter to us on the space and time scales on which they habitually operate. That is, some patterns, e.g., the coherency and solidity of familiar everyday objects, are treated as if they were substantive individuals for the purposes of cognitive-semiotic bookkeeping on the human scale whereas the patterns so conceptualized may not be relevant to observers interested in tracking other patterns on other ontological scales of resolution (e.g., in physics). What we habitually refer to as a person on our scale – the scale of our intuitive, domesticated common sense – is a real pattern (not a concrete particular) that we can locate, track, and interactively sample over time with our observer categories, e.g., those of natural languages. That is, we use language and other cognitive-semiotic resources to track and to compress other patterns – both extra-representational and representational – in the world that are of interest and relevance to our human scale perspectives and its pragmatic requirements.

Individual things are metaphysical constructs. They are constructed, socially and culturally, for keeping track of (aspects of) real patterns from some observational perspective. A language is one such resource for doing so. Languaging is coordinated between social agents to keep track of (aspects of) real patterns of interest to and of relevance to those agents, as mentioned above. Language is at least a second-order representational real pattern, as Ladyman & Ross et al. (2007, 243) explain, that tracks some other real patterns – both extra-representational and representational – in the world. The latter, these authors point out, can be of two kinds, viz., 'extra-representational' real patterns and 'representational' real patterns:

Then let us say that a real pattern is 'extra-representational' if it is not second-order with respect to any other real pattern. Real patterns that are not

extra-representational will be called 'representational'. The overwhelming majority of real patterns that people talk directly about are (we will argue) representational. (Ladyman, Ross et al. 2007, 243)

Extra-representational real patterns, in the terminology of Ladyman and Ross, are mind-independent modalities of existence that may or may not register on human perspectives and systems of observation. The apple, the coffee cup, the pens, books, and other objects on my desk as I write are second-order representational patterns in the terminology of Ladyman and Ross. Rather than concrete particulars of the Aristotelian substance ontology, my taking the apple or the cup as an individual thing has more to do with the meaning of the Old High German word *thing* that Heidegger (2001[1971], 172) identified in his essay titled "The Thing":

[...] the Old Higher German word *thing* means a gathering, and specifically a gathering to deliberate on a matter under discussion, a contested matter. In consequence, the Old German words *thing* and *dinc* becomes the names for an affair or matter of pertinence. They denote anything that in any way bears upon men, concerns them, and that accordingly is a matter for discourse. (Heidegger 2001[1971], 172)

The Old German word *thing* or *dinc* means a gathering for the purpose of dealing with a matter that is relevant to or of concern to us.

Rather than taking the Aristotelian view that individual entities are the primary mode of being, the most familiar everyday objects that we register as 'things' such as apples, cups, and pens are interactively constituted when we gather up the flux in some region of space-time as a unity through an essential act of abstraction (Smith 1998[1996], 235). The apple is a representational real pattern that I constitute as a unity for the purposes of coordinating with it. The perceived 'thing', the apple, is the result of a process of selective abstraction and differentiation that resolves as the apple that I see on my desk against a background flux of competing and fluctuating extra-representational real patterns. The resulting 'thing', the apple that I register, is therefore a gathering together into a unity of something that is of concern to me. The apple is extended in space-time. It does not exist as a mere point in space or an instant in time. The apple is an organisation of process that extends over some region of space-time. The same applies to me, the subject, on whom the apple registers its presence on my desk. Like the apple, I do not exist as a single point in space or a single instant in time. Both the apple and I are patterns of process and change along a trajectory. The apple on my desk is an occurrence of a functional individual that we can designate, generically, as BEING-APPLE.

The generic functional individual BEING-APPLE is not a physical entity that occurs in space and time though individual occurrences of the generic functional individual



BEING-APPLE do of course occur in many times and places. A functional individual so understood is an ontological reality uncoupled from the embodied experiences of particular selves in specific times and places. It is a specific organisation of process that is ontologically distinct from others (apples are not bananas) and can therefore be discriminated and identified as such. In particular situations, the self gives rise to endogenous processes of object-formation that work to actualize and stabilize some event in the world as, say, an apple. The object in the world is not therefore a pre-given and objective reality, but the outcome of processes of object-formation that are adapted to empirical data (stimulus information). The actualization and stabilization of the object in the world is an outward movement from virtual potential to its actualization as mental contexts, memories, affects, and values are linked to perceptual objects in the processes of their actualization.

The apple on my desk is a spatiotemporal event in the world. The apple that I now observe on my desk is not a photographic snapshot of a pre-existing objectivity. Nor does the apple occur in isolation. The apple in front of me is the outcome of endogenous brain-mind processes that arise and are constrained by environmental perceptual stimulus information, experiential memory, and situational, social, and cultural dynamics. Endogenous brain-mind process unfolds towards the 'object' in the world and is constrained and sculpted to the object that we perceive as external to us. The gathering up of the perceived apple as a unity – a thing – in the world is the outcome of processes of abstraction, differentiation, and distancing (of subject and object) that actualizes as the 'thing' on my desk that is abstracted from change. The apple that I see on my desk is the end-point of subjective (endogenous) processes of object-formation that are constrained and sculpted to a determinate object that is actualized and stabilized in the world beyond the self.

Likewise, the self is also a trajectory of process and change. The self is extended in space-time. The self does not exist at a point in space or at an instant in time. My registering of the apple on my desk is not a pointwise correlation of the subject/self and object poles (Smith 1998[1996], 228). The object (the apple) is specified out of the self, which deictically anchors and stabilizes the mind-state in a relation of observer to an unfolding trajectory of perceptual images. The self-trajectory is vital to this process for several reasons. First, the self is the source and anchor of the concepts, affects, feelings, values that are embodied in the self's objects. Secondly, the perceptual object that is generated by endogenous brain-mind process is the sculpting and the gathering into a unity of empirical data in the world that the perceptual object constitutes as its object of experience. The empirical data is the extra-representational real pattern of data in the world that constrains and sculpts the endogenous processes of object formation. The perceptual object is in this sense the endpoint or the completion of

processes of abstraction and stabilization that carry the object out into and locate it in the world.

The self is not a separate substance that mediates its relation to an external world 'out there' by means of linguistic 'representations'. Instead, the self and its mental objects are the result of both endogenous and exogenous constraints on a unitary microgenetic process of self-utterance-object development and its embedding in social practices that guide and shape it. Rather than a world of meaningless sensation that is filtered and organised into representations by internal schemata, the self is continuous with its objects. This does not mean that self and its objects are not distinguished. It means, rather, that the mind process is microgenetically extended into its objects in the form of, for example, affects, experiential memories, and values through processes of progressive differentiation and articulation. These processes sculpt the microgenetic derivation of an object that is located in the world from the self's first-person perspective. The self's consciousness of its objects is irreducibly grounded in subjective experience. As the quotation from C. S. Lewis that heads this article points out, how the self perceives the world has a qualitative character that derives from the core of one's character. This also means that the various kinds of mental actions and processes, including languaging, that the self enacts or participates in have a qualitative character that in some way indicates something of the self that produced it at the same time that the mental act is intentionally directed at something that it is about. However, this intentionally directed aboutness relation is also inflected with the same qualitative character that derives from the subjective core. Value is not projected by the self onto a value-free world 'out there'. Instead, value is drawn into the object (Brown 2005, 148) through the microgenetic processes of differentiation and articulation that progressively individuate the object during the unfolding microgenetic process.

Self, utterance, and self's objects are co-articulated as parallel streams of a single microgenetic process that functions as a simplex solution whereby environmental processes are constituted as the self's affective, conceptual, perceptual, and semantic objects. In the case of languaging, this means that the diversity and complexity of the environment is increasingly integrated to and discriminated by simplex processes. To deal with this complexity, the self, I argue, is a simplex construct that is emergent from the integration of complex biocultural dynamics. Thus, co-articulated self-utterance-object operations of 'selving' (Thibault 2019) provide principles of differentiation and hierarchic integration—simplexification—that enable selves to maintain their sense of continuity at the same time that they are renewed by diversity and change.

Functional individuals like the process WALKING or BEING-TIN-CAN are representational real patterns. They are second-order with respect to organisations of process and patterns of data that enable their system-identity to

be derived relative to our human perspectives and bodily and cognitive capacities (see below). The differentiation of the functional individual WALKING from RUNNING or the functional individual BEING-TIN-CAN from BEING-CAN-OPENER are second-order with respect to underlying patterns of cohesive bonds that do not register on our normal everyday observational perspectives. The latter are the extra-representational patterns of much higher dimensionality from which the second-order patterns are derived. In so deriving the second-order patterns, we stabilize selected aspects of the forever changing processual flux of our world in ways that enable us to connect with it, to interact with it, to keep track of it, and so on in ways that serve our human purposes. On this view, functional individuals such as those mentioned here are nonverbal orderings of perceptual stimulus information that specify affordances.

Everyday 'things' such as tin cans, rocks, sticks, and bananas and everyday events such as walking, swimming, running, and looking are functional individuals. The second-order character of these individuals results from the way which their existence for us arises by virtue of an act of abstraction from the underlying higher dimensional flux of the extra-representational patterns. A functional individual arises in this sense arises when an observing subject interactively constitutes and stabilizes some spatial and temporal region of the flux of experience as a unity (Smith 1998[1996], 226). This means that the subject attends to and differentiates and filters the irrelevant from the relevant detail so that a particular individual can be particularised and resolved to the extent necessary against a background of competing details and patterns that may claim one's attention. Languageing both presupposes and is grounded in these facts. It could never get off the ground without them.

The capacities for abstraction and stabilization discussed above crucially depend on and are scaffolded by the emergence of languageing practices that give rise to compressed typological-categorical (aka 'digital') possibility spaces in lexicogrammar. If, as discussed in section 2, I point to show you the way to the bus station when you stop me in the street to ask me for directions, my deictic point, and the co-orientation of perspectives that it enables and scaffolds is based on the immediate registration of the location of the bus station relative to our current location in the street. As soon as we break off contact and go our separate ways, the registration of the location of the bus station by means of my pointing gesture is severed.

## **8. DE-COUPLED SEMANTIC COORDINATION OF SELF AND ITS OBJECTS**

Deictics afford coordination *in situ*. The referential centre of speaker and listener is *ego*. Nouns afford languageing that transcends immediate situations. It is not enough to say that languageing (as distinct from non-languageing) features verbal pattern or wordings. The crucial question

is what wordings enable and scaffold. They provide resources for de-coupled intentional-semantic registration that coordinate selves and their objects. Lexicogrammar enables compressed typological-categorical possibility spaces that are not linked to specific action responses (Ross 2007, 714). This semantic decoupling means that cultural-semantic information can be compressed into words and wordings and deposited in the cognitive-semiotic commons as new semantically salient classes of frequently entirely virtual functional individuals that propagate through and populate the human ecology. These semantic processes enable and support processes of niche construction that are downstream from the emergence of the typological-categorical salience classes and the cultural dissemination. The niches so constructed are 'social semiotic' ones that are created through the manipulation of cognitive-semiotic discriminations rather than first-order environmental ones (Ross 2007, 715). The cognitive-semiotic commons is thus built up on cultural-historical time scales. The human ecology becomes a reservoir of accumulated cultural-semantic information in the form of a constantly changing and revisable experiential topology to which information is constantly being added, changed, deleted, and so on. In this way, words like 'apple' and 'banana' are not simply tied immediately available perceptual saliences in the environment.

Whilst such words may of course point to and indicate some object as an apple or a banana, the more important point is that even in such cases they do so on the basis of the ways in which the typological-categorical spaces of words and wordings enable us to track relevant salience classes of perceptual stimulus information and their associated affordance potentials (for action, etc.) even when no apples or bananas are 'physically' present. Rather than saying that the words 'represent' their objects, it is more accurate to say that their typological-categorical possibility spaces are cues or prompts that enable relevant information to be activated or cued by the word so that it functions to orient persons to the affordance potentials of the perceptual and other invariances of the environment in ways that are salient for action, for the retroactive reconstruction and reflection on past action, or for the rehearsal in the imagination of potential future action. Referring to something as a banana specifies some thing about the affordance potentials of the object so indicated.

Human niche construction is cumulative downstream niche construction (Sterelny 2003, 152). Inheritance is no longer exclusively based on the genetic inheritance of the individual organism. Instead, group selection becomes important. An important aspect of niche construction, Sterelny (2003, 153) writes, is "epistemic engineering". Humans change the semiotic-informational niche of the next generation. Given the right conditions, this becomes an important form of ecological inheritance. Sterelny proposes two such conditions: (1) cooperation; and (2) "high fidelity information flow between generations" (2003, 153). A high degree of cooperation within groups is

essential for cumulative downstream niche construction (2003, 154). Halliday's (1978) idea of 'language as social semiotic' also shows how the semiotic-informational character of the ecosocial environment of a population of persons is an important aspect of a lineage's niche. Humans continually modify not only the physical world; they also continually modify the informational-semiotic world in concert with the need to solve new problems (see Sterelny 2003, 154).

Deictics preceded nouns in both phylogeny and ontogeny. The term "pronoun" is a misnomer: nouns are pro-pronouns (not the other way round) (Bréal 1897, 206–208)<sup>3</sup>. As in infant proto-language, primitive dialogue founded on the integration of deixis and prosody enabled the emergence of dialogically coordinated 1st and 2nd persons. The "non-person" in the environment that 1st and 2nd persons pointed to, or were affected by, prompted the emergence of languaging. The domain of the non-person helps to push the relational stability onto the world beyond 1st and 2nd person. Nouns play a key role here. In the domain of the non-person, nouns and nominal groups fix and individuate what is being tracked as a discrete individual that is, to varying degrees, distinct from the self and therefore located in the wider world of the nonself. The self must let go of and distance itself from the object. How does one maintain coordination across a break in coupling? As we saw above, it is a question of distancing or separation while maintaining intentional-semantic directedness and orientation so that the world is selectively made present to us in focused ways relevant to what we do, can do, or might do.

The deictic field of 1st and 2nd persons is inherently fluid. As soon as I cease to be a signpost for the benefit of the other person and we go our separate ways, the relations between our respective selves and objects will also change. To maintain focus and coordination with something in the domain of the non-person that is distant in place and time, some principle of stabilization is needed. Languaging brings two key items to bear on this problem. First, wordings enables selves to establish and maintain a stable pattern of coordination that can be

returned to and utilized on other occasions to sustain the overall coordinative relations. Consider Example 9 below:

**Example 9:**

*A volcano in central Ecuador has spewed up a column of hot ash and smoke 10 kilometres high, increasing fears of an eruption (The Sydney Morning Herald 2014).*

Example 9 appeared in a news report in the *Sydney Morning Herald* dated 5th April, 2014. The example directs my attention to a very specific region of space-time that I have no direct access to. The lexicogrammatical resources of the nominal group are used to specify occurrences of two functional individuals, viz. *a volcano in central Ecuador* and *a column of hot ash and smoke 10 kilometres high*. The two individuals are related to each other by the verbal group *has spewed up* such that the first entity is construed as performing an action that results in the production of the second entity. In other words, two functional individuals and the relationship between them differentiate and locate an event in some region of space-time that I am able to orient to, think about, talk about with others, and so on, without my having any real-time perceptual access to that event.

The nominal group *A volcano in central Ecuador* points to and individuates something in the flux by gathering it up and treating it as a unity.

The orienting self, e.g., myself as reader of the text, must therefore focus on what is taken to be the same or in common across the constitutive spatial-temporal region at the same time that variation and flux is filtered out. One effect of this is a necessary loss of detail in order to maintain coordination: language abstracts and negates in this sense (Burke 1966; Esposito 2019[2018]). For example, the nominal group abstracts from exactly how many pebbles and stones littered the volcano or how much lava flowed from it in order to establish and maintain stabilities and regularities at higher orders of abstraction. The domain of the non-person and the nominal group enables separation of self and object in order that the former not be overwhelmed by irrelevant detail

3 Bréal writes: "L'espèce de mot qui a dû se distinguer d'abord de toutes les autres, c'est, selon nous, le pronom. Je crois cette catégorie plus primitive que celle du substantif, parce qu'elle demande moins d'invention, parce qu'elle est plus instinctive, plus facilement commentée par le geste. On ne doit donc pas se laisser induire en erreur par cette dénomination de « pronom » (*pro nomine*), qui nous vient des Latins, lesquels ont traduit eux-mêmes le grec ἀπὸ τῶν νομίων. L'erreur a duré jusqu'à nos jours. Les pronoms sont, au contraire, à ce que je crois, la partie la plus antique du langage. Comment le *moi* aurait-il jamais manqué d'une expression pour se désigner? A un autre point de vue, les pronoms sont ce qu'il y a de plus mobile dans le langage, puisqu'ils ne sont jamais définitivement attachés à un être, mais qu'ils voyagent perpétuellement. Il y a autant de moi que d'individus qui parlent. Il y a autant de toi que d'individus à qui je puis m'adresser. Il y a autant de il que le monde renferme d'objets réels ou imaginaires. Cette mobilité vient de ce qu'ils ne contiennent aucun élément descriptif. Aussi une langue qui ne se composerait que de pronoms ressemblerait au vagissement d'un enfant ou à la gesticulation d'un sourd-muet. Le besoin d'un autre élément, dont le substantif, l'adjectif et le verbe furent formés, était donc évident. Mais il n'en est pas moins vrai que le pronom vient se placer à la base et à l'origine des langues: c'est sans doute par le pronom, venant s'opposer aux autres sortes de mots, qu'a commencé la distinction des catégories grammaticales." (Bréal 1897, 206–208).

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at the same time that both self and object are stabilized so that extended tracking and coordination can take place. The entire event in the world – the eruption of the volcano in Ecuador – is both distanced or kept separate from the self at the same time that the wording of the sentence achieves the required degree of abstraction so that attention is focused on the object of interest while irrelevant detail is filtered out.

The second key contribution that languaging brings to bear on this process is the self pole of the self – object relation. The self is a functional whole in the sense that the actions it performs are organized and integrated in relation to a cohesive and functioning whole (the self) to which its actions are referred. The self is a recursively self-constituting and self-maintaining functional whole that maintains its existence and structural integrity over time despite being far-from-equilibrium. It is a cohesive organization of process spread across brain, body, and world whose interactions produce dynamic bonds between different component processes to give rise to a felt sense of a cohesive whole that is individuated with respect to its environment. Selves, in other words, are recursively self-constituted and self-maintained by reflexive loops linking the functional whole—the self—to specific intra-individual and inter-individual processes necessary for its functioning and then looping back on to the whole to impose self-referential closure (Thibault 2004, chap. 9). Self-referential closure means that selves are internally linked to both bodily and environmental processes that are interpreted as having personal relevance for the self as well as functioning to define the identity of the self.

The self is a simplex construction in the following two inter-related senses. First, the narrative construct that we call the ‘self’ serves to organize and integrate the component sub-processes and actions of a person around a specific locus of responsibility and accountability. Secondly, selves are recursively self-constituting and self-maintaining agents. Their interactivity with their environments takes place according to simplifying principles that are functional in reducing the complexity of the self’s intraindividual and interindividual dynamics to a more manageable simplicity. In this way, selves can integrate past interaction experience and anticipated future interactions to a cohesive and functional whole that can operate in a distinctive and unitary way. Additionally, the self as a distinctive organization of process is individuated as a distinctive self who is different from and in important senses unique with respect to other selves. The organisation of the self in this way works to push back on the world and to insulate the self from the myriad ways in which the object can buffet the self.

Smith (1998[1996], 241) writes of the necessity of the self to “deconvolve the deixis” of the object pole so that the self is able to shift attention to the world of the non-person. The typological-categorical compression of the volcanic eruption into the possibility spaces of lexicogrammatical distinctions places boundaries around a high-dimensional event (the volcanic eruption

in Ecuador) and its component parts and in so doing it gathers it up from the high-dimensional flux as a distinctive object of focus. In this way, the typological-categorical possibility spaces of lexicogrammar constitute linguistic affordances that people selectively activate in order to bring coherence and focus to the objects of interest in their worlds. By the same token, and this is where the self is a fundamental and intrinsic part of how languaging works. First, selves must order and interpret the phenomena of the world in ways that are consistent with their own and others’ narrativised takes on the world in accordance with community level interaction histories and norms. Secondly, they must do so by operating and adapting the semiotic repertoires that they have access to in the communities of practice in which they participate. It is through participation in languaging and other practices that the individual biological self-organises and self-narrates themselves into a coherent narrative self. This means that higher-scalar cultural dynamics play a major role in determining the available degrees of freedom of the self along its life trajectory.

As with the cat that I perceive crossing the road, the achievement of observing and imaging newly discovered exoplanet HIP65426b means that, in both cases, observers/perceivers have established an intentional-semantic relation between perceiver and perceived. You and I cannot look up into the night sky and see HIP65426b, but it is now registered on human consciousness and constituted as part of the experiential topology that is our semiotic-cognitive commons. As Smith (1998[1996], 194) points out, registration, or the capacity to register something, is broader than but includes perception. To register something such as the cat crossing the road, my father in Australia, or HIP65426b means to successfully operate an intentional-semantic relationship to it (Smith 1998[1996], 194), i.e., between registering subject and registered object. Registration thus entails a co-participatory dance of the subject and object poles for it to be brought off.

This intentional-semantic reach is directed by and extends from subject to object. Registration therefore requires the distancing or the separation of subject and object so that the “transcendent aspect of objectivity” (Smith 1998[1996], 209) can be achieved. Registration is an intentional-semantic relation between subject and object that is based on a non-effective, non-causal, and non-physical relation between the two. A further requirement is abstraction, which is necessary for the transcendent objectivity mentioned above. The simpler and more basic case of effective tracking, on the other hand, relies on the maintenance of a constant flow of coupled interaction of perceptual between subject and object. For example, if I observe a bird flying overhead, the retinal activity of my visual system moves in concert with the movement of the bird. There is effective coupling of subject (me) and object (bird). The bird and I are effectively coupled as my visual system continually adjusts to the movement of the bird through the air.



This condition of coupled interaction between myself and the bird is a case of simple tracking. However, should the bird fly behind a grove of trees, the informational loop maintaining the connection between me and bird is severed. In such cases, Smith (1998[1996], 220) explains, it is now incumbent on me, the subject, to take over the responsibility for maintaining the focus on the bird. No longer guided by the flow of information connecting me and bird, I must rely on internal infrastructure to maintain the focus on the bird and for example to anticipate its reappearance once it emerges from behind the trees. In such cases, when the effective connection between subject and object is attenuated or eliminated, and the object is no longer within effective reach, the responsibility for maintaining long-distance coordination falls squarely on the subject. The resulting distancing or detachment of subject and object must be compensated for by the intentional-semantic directedness that is dependent on the activity of the subject pole of this relation in maintaining coordination between subject and object. This directedness means that the subject is outwardly oriented to the object.

As we will see below with respect to an exoplanet imaged by the James Webb Space Telescope in 2022, this coordination can extend over enormous distances, even cosmological ones. The imaging of the exoplanet in the infrared spectrum depends on the ability selectively to focus on the remote object and to filter out that which is intermediate. As in the case to hand, this very often depends on complex technologically extended systems of observation and measurement embedded in distributed cognitive systems involving cultural infrastructure, theories, mathematical and other modelling, sophisticated systems of calculation and measurement, and so on.

Consciousness is a relation between a self pole and an object pole. The self's objects individuate through a series of qualitative phasal transitions from unconscious core through the conscious self to the outer world of the self's objects described above (Brown 2015). The separation or detachment of self and its objects means that the phasal transitions from unconscious core to outer world terminate in the self depositing its objects as discrete objects that are detached from the self. This outwardly directed movement from core to outer world entails an act of abstraction. The depositing of an object qua individual in the outer world means "gathering up an extended region of the flux and treating it as a unity" (Smith 1998[1996], 226). Smith explains as follows:

This implies that the subject must stand in relation to what is the same or in common across the constitutive spatial region, and by the same token must ignore or set aside the multitudes of internal variation attendant to its parts, or across its life. (Smith 1998[1996], 226–227)

The subject's ability to treat the given object as a unity in the way described here is an act of simplexification

(Berthoz 2012[2009]). Consider now the case of exoplanet HIP65426b briefly mentioned above.

In September 2022, astronomers announced that the James Webb Space Telescope had imaged for the first time an exoplanet, catalogued as the gas giant HIP65426b orbiting its star HIP65426. The James Webb Space Telescope directly imaged this exoplanet in four different bands of the infrared spectrum. In this way, the exoplanet in question registered on human systems of observation, measurement, and perception for the first time. The relevant point here is that exoplanet HIP65426b existed as a real pattern of data in space and time prior to its imaging by the James Webb Space Telescope. The imaging of this exoplanet in the infrared spectrum means that technologically extended human techniques of observation and perception have successfully discriminated aspects of an extra-representational real pattern and resolved these aspects in ways that constitute a representational real pattern that we have individuated and named exoplanet HIP65426b. We get a sense of these processes of discrimination and resolution of the salient real pattern against a background of competing alternative possibilities in the following words of one of the astronomers who conducted the analysis of the infrared images:

"Obtaining this image felt like digging for space treasure," said Aarynn Carter, an astronomer at the University of California, Santa Cruz, who led the analysis of the images, in a NASA release. "At first all I could see was light from the star, but with careful image processing I was able to remove that light and uncover the planet." (Schulz 2022)

In this way, HIP65426b is individuated as a functional individual occurring in some region of the universe for the purpose of keeping track of it. HIP65426b has successfully been incorporated into the human world as something with which humans can intentionally engage as an 'object' of human consciousness. The infrared imaging of this exoplanet is an actualisation of some aspects of the virtual potential of the real pattern that makes this possible. Gibson's (1979[1986]) conception of affordances emphasises their objective physical characteristics. On the other hand, several of Gibson's predecessors, including Gestalt psychologist Kurt Koffka (1935), psychologist and linguist Karl Bühler (1990[1934]), phenomenologist Maurice Merleau-Ponty (1945), and psychologist Heinz Werner (1957[1940]) emphasised the subjective, physiognomic, and intersubjective aspects of perception. Objects or situations may be perceived as demanding or inviting action. A mess demands tidying up, and so on (Thibault 2019).

Perceived objects are subjectively perceived as having expressive and conative dimensions that prompt for action. A messy room may annoy or irritate one person and leave another person indifferent. For the person annoyed by the messy room, a modal friction is set up

between that person and the messy room. This modal friction entails a felt relationship of disharmony or dissonance that calls out for and selects for action that will enable the transition from modal dissonance to a new consonance. The friction is resolved as a newly established consonance when the room is tidied up. Action selection takes place in relation to a paradigmatically organised and open-ended set of possibilities. The choice of one action rather than some other is not however a choice from a pre-given menu or network of options, but is shaped and guided by subjective motives, desires, and values that emerge in interaction with a given array of affordances as we explore, discover, and activate its virtual potentials.

The quoted text above that is attributed to astronomer Aarynn Carter illustrates how skilful action in a field of competing possibilities, including the obfuscating light from the star, had to overcome obstacles before the exoplanet was revealed. The action selection, e.g., careful image processing, is emergent and evolving in response to the modal friction that the given field of competing possibilities presents. The analogy that Carter draws between this process and “digging for space treasure” highlights the grounding of perceptual discriminations and judgments in anticipatory motor-sensory imagery aka “digging for space treasure.”

## **9. FUNCTIONAL INDIVIDUALS IN THE WORLD**

Following Bhaskar’s (1979) critical realist account of the ontological stratification of the world into the levels of the Real, the Actual, and the Empirical, extra-representational real patterns pertain to the Real. The Real consists of underlying causal and generative mechanisms. Causal mechanisms interact to generate events – events are the domain of the Actual. The Actual is where things happen. Events are co-determined by interacting causal mechanisms such as the interaction between an observer’s categories and aspects of real patterns. Some events are accessible to human cognitive, perceptual, and semiotic capacities; others are not. The infrared imaging of some aspects of the real pattern HIP65426b belongs to the Actual. The Empirical consists of experiences. Experiences are causally generated in the Real and take place in the Actual. Humans are adapted to and interact with a range of space-time scales. This interaction gives rise to the populated human world – populated with the things, events, etc., that constitute the human ecology. In interacting with those aspects of real patterns that register on our systems of observation and measurement, humans interactively constitute the functional individuals that populate the human world. The human capacity to interact with the infrared images yielded by the James Webb Space Telescope and thereby to experience this distant exoplanet takes place in the Empirical.

A virus on its scale and a chair on its scale are not substantive individuals, but patterns of data – real patterns – that observers can interactively sample and track

relative to their measuring systems and the observational viewpoints that these provide. The fact that the chair that I am sitting on while I type this text is a solid object does not change this basic fact. Rather, it is by virtue of my particular kind of embodiment that I am able interactively to sample it. I can see it and touch it. I feel the support that it provides me when I sit on it. Sensory and kinaesthetic information are the means whereby I interactively sample the affordances of the chair and constitute it as a middle-sized solid object with respect to my bodily capacities and viewpoints. The fact that I can relate to the chair as an object of a certain kind is an outcome of the ways in which my bodily capacities and viewpoints interact with the given real pattern to constitute it as a solid object.

The familiar “objects” and “events” of the everyday Lifeworld which we humans inhabit, with its narrow bandwidth of space and time scales, is in part imposed by human biological and cultural evolution. Thus, computers, chairs, pencils, kitchen knives, and Heideggerian hammers are such objects. They are in some, though by no means all, senses constituted in situated practical human activity on the familiar time and space scales of the human Life world. Such objects do exist. I do not question that. What I question is their metaphysical status. The fact that a chair has a stable physical identity that yields a solid object that remains pretty much the same from one encounter to the next, putting aside issues of wear and tear, is a function of a specific cohesive organisation of processes that is a property of the chair-system as a whole. It is on account of this system-level cohesiveness that I can differentiate and thus individuate the chair with respect to other objects in my study such as the desk, the floor, and so on. In this way, the chair has a spatiotemporal integrity (Campbell 2015, 142).

However, as Campbell points out, this spatiotemporal integrity is a derived feature in contrast to those theorists who argue that spatiotemporal continuity alone guarantees the identity of a cohesive system. A chair is cohesive within a specifiable range of internal cohesive bonds, external forces, temperature, and so on. If I throw the chair on the fire, it will burn up and cease to be a chair. If I take to it with a hammer and smash it to pieces, likewise it will cease to be a chair. In both cases, though in different ways, the cohesive bonds that enable its system-identity to be derived are destroyed. It is this system-identity that constitutes an objective mind-independent pattern of data that I can interactively sample. When I do so, I effect a partition of the time-space continuum that individuates the chair as an ‘object’ that is useful for my body’s actions in the way that Bergson showed (see above).

My interactivity with the given pattern of data made available by the system-identity of the chair, relative to the capacities and viewpoints afforded by my embodiment, means that the chair is partitioned and thus individuated by my action-perception systems as an ‘object’ that affords certain action possibilities with respect to other

features of the surrounding environment. Moreover, the chair is something that I can attend to, point to, indicate, and share with others. It is in this sense that the chair is constituted as a functional individual that is deposited in the semiotic commons as one object amongst others, including myself, in an emergent experiential topology in which I am situated. When I sit on the chair, carry it to another room, explore its surface with my hand, accidentally bang into it while groping around in the dark, and so on, I constitute and act out action-perception vectors that connect me to the chair in various ways.

The chair *qua* functional individual is thus constituted as an artefact. An artefact is an organisation of processes that arises in and through human activity at the same time that it is embedded in and is used in human activity. The same basic point applies to the rocks that I can see outside my study window. You may object that a rock is a natural object rather than one that arises in human activity. Rocks are not manufactured objects in the ways that chairs are. However, the basic point is the same. The fact that I can partition and individuate rocks by virtue of their stable system-identity means that I can constitute them as artefacts that have affordance potentials relative to my embodiment and its capacities and viewpoints. Furthermore, I can point to and indicate them to myself and to others as aspects of an experiential topology of objects, events, relationships, location, time, and my own body's relations to these. In this sense, rocks no less than chairs are functional individuals that can serve as artefacts in human activities and that can be shared with others. I perceive a chair and a rock. I do not perceive the cohesive bonds on the molecular and atomic scales that bind them into cohesive entities.

However, rather than saying that the latter processes are observer-independent, I would rather say they are an objective modal potential that pertains to the implicate

order (Bohm 1983[1980]). Real patterns therefore have the modal potential to be co-articulated to human perspectives and thereby made explicate provided we have the means to register them and connect with them informationally speaking. Humans devise systems of action-perception, semiosis, and technologically extended measurement and observation systems that enable us to couple our meaning systems to aspects of real patterns. The question is: which aspects are regularly and typically made and recognised in a given community? Their distinctive forms of system-identity make available patterns of data – real patterns – that I can sample and track to some degree of resolution in relation to my body's action-perception and semiotic capacities and viewpoints.

The chair and the rock, on the other hand, are second-order with respect to their respective real patterns. The chair and the rock are generated by the interactions between selected aspects of the real patterns and the capacity of my body-brain to resolve and thus to partition the given aspects as a 'thing' that has the capacity to affect me in some way. The 'thing' that results is an emergent outcome of these interactions. The 'thing' so defined is a second-order perceptual-cognitive-semiotic differentiation that is deposited in and takes its place in the time-extended melody of the experiential topology of all the things that populate the human ecology. Linguaging operates on this. It does not usually operate directly on the real patterns though it can do so. Figure 1 models the relations between the three domains discussed above of: (1) the objective modal potential of real patterns; (2) the non-linguistic yet socially constituted and maintained experiential topology of functional individuals *qua* artefacts resulting from the embodied interactivity of persons with aspects of real patterns; and (3) the operation of linguaging on the experiential topology.<sup>4</sup>

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4 The three-way distinction made here has much in common with Mikhail Ilyin's insightful discussion of Hjelmslev (this volume). Hjelmslev's (1969 [1943], 52–53) purport (in Danish *meningen*) is an objective modal potential in the world that a self intentionally (psychically) orients to. Purport is transformed by a specific content-form (e.g., a pattern of wording) in an act of linguaging into a content-substance that we apprehend and interact with under a given semantic aspect. The semantic contents of linguaging are the outcomes of transformational operations that persons perform by means of linguaging when purport is transformed into content-substance. Rather than a dichotomy of 'linguistic' form and extra-linguistic substance, we see here that the very material and sensuous operations of linguaging incorporate the material-experiential world into the inner workings of linguaging. Linguaging thus works by selectively activating the modal potentials of purport as content-substance in acts of sensibilization. The constitution of a given content-substance thus serves to sensitize persons to specific modal values in the world and thereby to dispose them to act and perceive in relation to them on the basis of the modal capacities and dispositions that the activated content-substance brings forth in linguaging selves. However, and *pace* Hjelmslev, extra-linguistic purport is not unformed until language operates on it. The world that we live in has pre-linguistic meaning and organisation. Moreover, the relationship between content-form and purport is non-arbitrary. Our experience of purport is non-arbitrarily grounded in a sensory-kinetic matrix that is both prior to language and which language operates on. In doing so, language becomes a constitutive part of this same sensory-kinetic matrix. As Bolinger (1949) argued, the taste and smell of a lemon is an aspect of a sensory-kinetic matrix to which we can become sensitized prior to language (Thibault, 2021b, 10–16). The word *lemon* is learned in conjunction with these non-linguistic processes of sensibilization. The capacity of the word *lemon* to evoke a virtual experience of, for example, the smell and taste of lemons arises because the word is learned in relation to the sensory-kinetic matrix at the same time that it has the capacity to evoke it, for example, when no lemons are

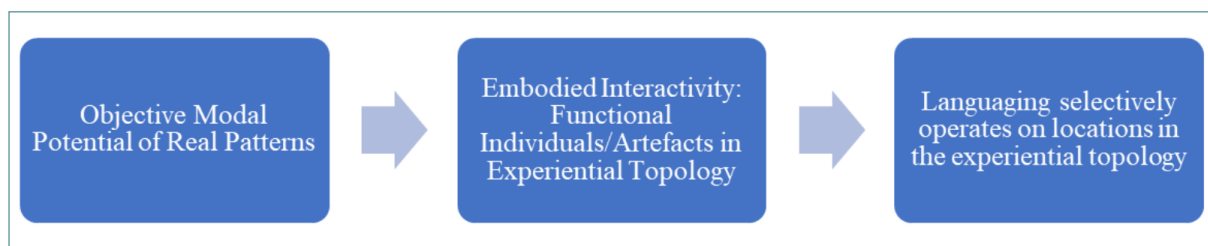


Figure 1: The relations between real patterns, functional individuals, and languaging

Perspectives such as those afforded by human perception, languaging, and by mathematical modelling serve to direct attention to regions of space-time on some appropriate measurement/observation scale. The discovery of the protein + RNA properties of viruses in 1935 was enabled because the relevant observational technologies (electron microscopy and x-ray diffraction imagery) connected scientists to the relevant space-time region at the relevant measurement scale. It was the progressive honing of the evidence and inferencing from other cases from the tobacco mosaic virus onwards that established the boundaries – upper and lower – within which the necessary informational connectedness could take place. Once this occurs, the previously unknown virus is embedded in and used in human activities and practices. They become functional individuals in the world ontology that can be indicated, attended to, interpreted, talked about, and thus deposited into the semiotic commons as artefacts that can be interacted with.

#### 10. BEYOND ESSENCES: UNIVERSAL SINGULARITIES AND INDIVIDUAL SINGULARITIES

What we habitually consider to be substantive things or entities (concrete particulars) according to common sense are, in fact, interactively constituted normative constructs that are “built for second-best tracking of real patterns” (Ladyman, Ross et al. 2007, 242). The books, camera, clock, phone, pens, and other assorted paraphernalia on my desk are things in this sense. They are interactive samplings from my observational perspectives and with my perceptual, cognitive, and semiotic categories of aspects of real patterns (of process) which I reify as substantive things for pragmatic and normative purposes relative to my observer’s categories on the space-time scales with which I engage with the world. My attending to one of these objects and my being aware of these objects lying on my desk is an event that is co-determined by the time-extended interactions between the real patterns that subtend these objects and my perceptual, cognitive, and semiotic categories and

observational perspectives. The real patterns of process are constraints on the generation of such events. What I perceive as a particular thing – the clock, for example – is not a substantive individual but a reification of those aspects of the generation of such events that give rise to experiences of them in the domain that Bhaskar calls the Empirical. Real patterns selectively interact with the virtual potential of the self to actualize events that give rise to experiences. What we experience are functional individuals, which we situate as occurrences to some degree of resolution relative to our embodied perspectives and observer categories.

This view is different from the more usual assumption that individual things like clocks and books belong to and really exist as substantive things in first-order reality with respect to their second-order (linguistic and other) representations. On the contrary, individual things are themselves second-order constructs with respect to the real patterns of process organisation that subtend them. For example, the individual “Paul Thibault” (the person, not the proper noun) is just such a second-order pattern – a “thing” in the standard metaphysic – that functions as a locator for establishing diagnostic correlations with some subset of real patterns in the universe. These patterns are sufficiently robust that they register as cogent moments on the possible observational perspectives of beings such as us who are equipped with the perceptual, cognitive, and semiotic resources for tracking and anticipating the behavioural patterns that constitute the historical-biographical trajectory of the person individuated by that name – the individual person named “Paul Thibault”. A fictitious individual like Pinocchio, on the other hand, is “second-order only with respect to other representational real patterns” (Ladyman, Ross et al. 2007, 243) such as those in Carlo Lorenzini’s story, the numerous abridged and adapted versions of the Italian original and its translations, the Walt Disney film, the many Pinocchio-related intertexts, and so on.

Real patterns impose constraints on the familiar human world of middle-sized objects such as rocks, spiders, fridges, cars, computers, chairs, and so on. I reject the idea that mind-body-world relations are reducible

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physically present. The creation of a specific content-substance when a content-form of a given language operates on purport is a process of sensibilization to different paradigmatic aspects of that purport. Purport is itself paradigmatically organized in activity-specific ways in accordance with the general thesis that the world we live in is a world of meaning and value (Borchmann, 2018; Thibault, 2017).



to one or other version of reductive or non-reductive materialism or physicalism according to which mental life is strongly supervenient on fundamental physical facts. Real patterns are the “relatively enduring generative mechanisms and structures of nature, initially hypothesized in the scientific imagination, but sometimes subsequently discovered to be real, which produce the flux of events.” (Bhaskar 1991, 7). They are modal potentials that may or may not be accessible to and connected with human meaning systems and viewpoints. The things and events that populate the human ecology are generated by endogeneous mind process that occurs in a functional relation to the exogenous constraints of real patterns. The endogenous and exogeneous dimensions co-exist in an organic functional relation with and for each other. The endogenous and exogenous dimensions, rather than a split between ‘inner’ and ‘outer’, exist for each other in a reciprocal functional relationship that Whitehead (1926, 185) called “compenetration” (see also Roth 2020, 20–24). For example, ‘things’ like rocks, spiders, pens, and persons are not substantive entities, but organisations of process that give rise to functional individuals relative to the perspectives grounded in our subjective experience and our embodiment. That is, these functional individuals can be detected, differentiated, and located by our perceptual, cognitive, and semiotic systems as the ‘things’, stuffs, events, and processes broadly defined, that populate the human world. The real patterns of data are the generative mechanisms that constrain our perception of them relative to our human scale, for example, as ‘things’ such as books, cups, phones, rocks, trees, and so on with their affordance potentials. The notion of ‘thing’ (not the word) is itself at least a second-order constraint on my perception of, say, the houses that I see out of my study window or the objects cluttering my desk. The houses are ‘things’, not in the substantive sense, but time-extended patterns of data (real patterns) that I can interactively sample from the observational perspectives available to me on account of my embodiment and the skills and capacities that have accrued to my embodiment.

Language functions in part by pointing to and locating a given pattern of data in some coordinate system that is of high enough dimensionality to enable its disambiguation from other real patterns (see Ladyman, Ross et al. 2007, 121). Nouns and nominal groups are one class of linguistic differentiator. They have the functional capacity to bootstrap and to individuate, semantically speaking, some real pattern so located as concrete particular or a functional stuff that is distinguished to some degree of dimensionality from other real patterns. The cognitive-semiotic resources of languaging enable agents to discriminate aspects of real patterns and to resolve them and to individuate them as functional individuals – things, events, etc. – for the purpose of keeping track of them. Real patterns have an objective existence; they exist independently of our mind-dependent conventions and categories. This does not mean that all real patterns

are observable or accessible by means of human perceptual, cognitive, and semiotic systems. Many are not and some others are only observable through specialised technologically enhanced measurement devices and mathematical abstraction.

No system-instance or type-token distinction is required. There are locators/differentiators for each of ‘the orchid in my living room’, ‘Sydney rock lily’, ‘Australian rock orchids’, ‘orchids’, ‘flowering plants’, and ‘plants’ (see Ladyman, Ross et al. 2007, 122). Each of these linguistic terms can be used to differentiate and to locate and hence to individuate a given real pattern that exists on some spatiotemporal scale. The differentiator ‘Sydney rock lily’ directs our attention to a pattern that we resolve as a species of lithophytic orchid (*Dendrobium speciosum*), noted for its inflorescences of small white flowers, that is native to much of eastern Australia except the coldest most southerly regions and is typically found on damp rock ledges as well as in suburban gardens.

There are no such things as ‘dogs in general’ or ‘orchids in general.’ There are only large populations of individual dogs and individual orchids defined by properties that emerge from the continual interactions among component processes of various kinds and on various scales. Each dog and each orchid are a unique individual singularity. Moreover, there is inherent variation such that it is impossible to argue that all dogs, say, are essentially the same. When we consider an entire population of orchids, the statistical form of this variation is a real pattern that contains information (data) about the real historical processes that produced the variation. Rather than an ontology of Aristotelian essences, this historical information is a real pattern that exists objectively on a particular spatio-temporal scale. It is a real pattern that can be pointed to, located, and individuated by some measuring instrument to a given degree of dimensionality. The common noun ‘orchid’ specifies the real pattern to a much lower degree of dimensionality as compared to the nominal group ‘the Sydney rock lily in my greenhouse’. However, both locators have the same basic capacity to point to, to locate, and to individuate (some aspect of) the occurrence of some real pattern to some degree of granularity or dimensionality.

According to the Deleuzian ontology, a problem is defined by the distribution of the singular and the ordinary, the important and the unimportant, the relevant and the irrelevant (see also Delanda 2002, 127). Deleuze further observes:

Ideas are not simple essences, but multiplicities or complexes of relations and corresponding singularities. From the point of view of thought, the problematic distinction between the ordinary and the singular, and the nonsenses which result from a bad distribution among the conditions of the problem, are undoubtedly more important than the hypothetical or categorical duality of truth and falsehood along with the ‘errors’ which only arise from their confusion in cases of solution. (Deleuze 2004[1968], 203)

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On this view, a properly articulated problem space gets these distributions right. Moreover, the solution is efficacious in proportion to how well articulated the problem space is. Rather than an overarching semantic category that unifies all instances of 'fire' or 'snow', what matters is not linked to a semantic or other essence of 'snow' or 'fire', but to the values-realising activities that take place in relation to these functional individuals within the context of a multiplicity, i.e., "in relation to the ideal events that constitute a problem." (DeLanda 2002, 129). It is the distribution of the singular and the ordinary which defines the correctness of a problem (DeLanda 2002, 131).

Languaging is a skilled, values-realising activity (Hodges 2007a, 2007b) that meshes with bodies, artefacts, activities, and social practices in ways that can enable agents to achieve the right or the appropriate distribution of the singular and the ordinary, the important and the unimportant, the relevant and the irrelevant. The functional individuals that populate the world are endlessly complex and varied such that they do not have closure *per se*. We must ask: it is 'snow' with respect to what?, rather than just: is it snow? Snow or having the properties of snow are properties with respect to some complex of non-localisable differential relations and associated practices that enable us to recognize and make sense of these properties.

A generic process like SNOW is a Universal Singularity in Deleuze's sense of this term. Deleuze's distinction between the universal and the singular replaces the more usual distinction between class and member or type and token. In linguistics, this distinction is also encompassed by the distinctions between *langue* and *parole* (Saussure 1971[1915]; 1993[1907], 1910–11), system and instance (Halliday 2004[1985]), and schema and instance (Langacker 1987). In all these cases, general categories specify the core properties that are used to identify any given instance despite the variations between instances. In this way, the core properties are preserved over time as the essences that define the identity of a particular phenomenon. On this view, a given instantiation of the mass noun *snow* to the stuff I must clean from the driveway can be said to specify the stuff blocking the driveway as instantiating the set of core properties that define the essence of the category 'snow'. Deleuze's idea of universal singularities replaces this view with one that is based on larger scale spatio-temporal patterns of processes that emerge as a (largely unintended) statistical consequence of the patterns of interactions between very many smaller-scale individuals of various kinds.

On this view, localised occurrences of a given generic process are individual singularities. Individual singularities are the component processes that form the parts of the larger scale spatiotemporal whole that constitutes a Universal singularity. The different historical manifestations of snow, rather than being seen as instantiations of a general essence that is encoded in a transcendental linguistic category, can be seen to operate according to very different principles while they are all governed by

the same Universal Singularity. A Universal Singularity in Deleuze's sense is not a transcendent essence that exists on a different ontological plane with respect to individuals. It too is an individual on a different spatiotemporal scale, e.g., of the population scale dynamics of an entire population of occurrences of, with respect to individual persons and the snow they encounter and must deal with. The latter are component parts of these larger-scale individuals, not instantiations of a more general type or schema and its essential properties.

### 11. THINGHOOD AND THE NOMINAL GROUP: CONCRETE PARTICULARS AND FUNCTIONAL STUFFS

Linguists such as Halliday (2004[1985], 325–328) and Langacker (1987) have defined nouns and the nominal group in terms of the semantic category of Thing. Prototypical things are physical objects designated by their respective nouns. However, most nouns do not designate physical objects. A more encompassing conception is needed – one which includes nouns that designate physical objects but is much broader. Langacker proposes that a thing is a bounded, timeless region in some domain. Physical objects that occupy positions in three-dimensional space are just one of the patterns that might be located and tracked by the semantic schema (differentiator) [THING]. As Langacker points out, "not even all bounded regions in three-dimensional space are physical objects" (1987, 190). He provides various examples to support this contention, e.g., sphere, area, region, location. Langacker comments:

Let us then consider some bounded regions in domains other than three-dimensional space. The objective is both to furnish enough examples of diverse character to establish the initial plausibility of this definition of count nouns, and also to note certain subtleties that arise in regard to bounding. Ultimately, the notions region and bounding require explicit description; the phrase bounded region must be interpreted abstractly enough to overcome the limitations of its spatial origin. For the moment, though, I will take this phrase to be self-explanatory and its import to be relatively obvious, since our initial concern is with the domain in which bounding occurs. (Langacker 1987, 190)

Consider the example BEING-APPLE discussed in section 7. The small caps are a shorthand notation to specify the generic process qua universal singularity. We are dealing with unactualized and unlocalised potential. As noted above, the relation of universal singularity to individual singularity is whole to part. The unactualized and unlocalised potential of BEING-APPLE is a virtual potential. This virtual potential is an incipient category based on shared features and shared production processes that pertain to the whole, the universal singularity. The virtual

potential of BEING-APPLE gives rise to possible derivations that are actualised as final objects both when the pruning of competing alternatives is completed and when the grounds for further partition of the virtual potential of the incipient category are exhausted. When these two conditions are met, the succession of parts that derive from the initial whole (the virtual potential) achieve closure in the form of a definite object that takes on real properties that have causal efficacy in the world. Prior to this final closure, there is a succession of mind/brain states that transition from virtual potential across a series of virtual items developing across contrasts in the category. The mind/brain forms its objects, which are deposited in the extra-personal space of the external world.

Contrasts in the category may, in the case of BEING-APPLE, result in derivations in which the category shifts aspect from countable particular to a functional stuff that is measurable according to amount, not number. The standard distinction between count nouns and mass nouns will not suffice to explain this shift (Halliday 2004[1985], 326). The examples in Figure 2 show that the ontological category of apple can be a countable particular or a functional stuff. The lexeme *apple* alone does not and cannot specify the ontological category. Instead, the lexicogrammatical, textual, and contextual environment provides indications that enable one to infer the relevant aspectual meaning. Figure X shows two ways in which the virtual potential of the incipient BEING-APPLE can be actualised in more definite and specified ways as objects that take on real properties and which have causal efficacy in the world in relation to different kinds of social activities and practices.

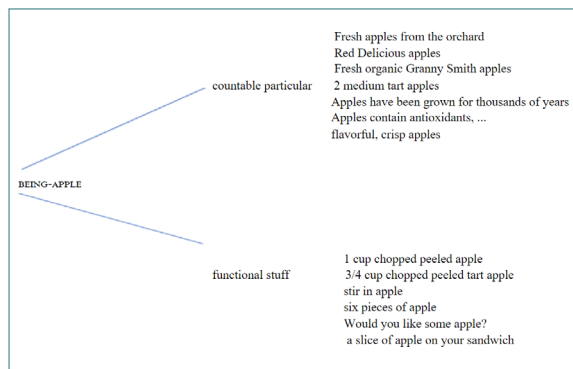


Figure 2

Consider the following text about using apples in a food processor:

**Example 10:**

Once your knife is sharpened and ready to go, start by cutting off (10a) **one end of the apple** so that you have a flat surface to work with. From there, cut (10b) **the apple** in half and then each half into thirds. When you have (10c) **six pieces of apple**, it's time to start slicing them thin. (Haque 2023)

Example 10 is about the preparation of apples before putting them into a food processor. Examples 10a and 10b are focused on cutting the apple, seen as a concrete particular. Viewed under this aspect, the apple is seen as a bounded object that can be cut. On the other hand, Example 10c entails a shift in aspect. The outcome of the prior process of cutting is a measurable amount of a functional stuff (six pieces of apple). Now that the apple qua concrete particular has been cut into a number of pieces, we no longer have a concrete particular because any given piece of the apple does not count as a whole apple. An apple qua concrete particular cannot be like parted. If you cut an apple into six pieces, the result is not six apples. Instead, we have six pieces of the functional stuff 'apple'. Once the concrete particular is cut into a number of pieces, it is transformed into an amount of a functional stuff that is ready for the next stage of their preparation: slicing them thin. The example shows how the ontological category is in many respects licensed by the social practice in which the apple participates and the kinds of actions that it undergoes in this process.

The ontological distinction between apple as countable particular and apple as functional stuff derives from a prior virtual potential that becomes real and temporal when, as the two sets of nominal groups in Figure 2 show, the incipient category becomes definite and specific in ways that are commensurate with the subjective aims of the self, who strives for coordination with some aspects of the world. Virtual potential is directed by subjective aim along particular pathways of selection and pruning of alternatives until an individual singularity is actualised as a more determinate content.

Individual singularities correspond on the other hand to localised occurrences of generic processes in specific times and places. Localised occurrences are derived from the universal singularity through a process of specification involving a series of phasal transitions whereby parts are derived from preceding wholes. In this way, virtual potential is progressively honed and pruned until it is actualised as a content in the form of a more specified sub-category. For example, concept transitions to word and word transitions to object. In this way, a concept becomes an object that is perceived to exist as an actuality in the world. Words are typological-categorical possibility spaces that function as repositories of a culture's history of interactions with the given object. The possibility space of a word is open to differential activation of its latent virtual potential. While an occurrence of a particular word is an individual singularity, it is important to keep in mind that behind every word is a prior category (a prior whole) that gives rise to the word that gives rise to the object. Differential activation of the possibility space arises in and through the conscious activities and practices that shape and direct the social group, giving rise to a co-constructed and socially distributed consciousness that I call the experiential topology. This consciousness gives humans a far greater control over their bodily activities that is

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the case for most other species. Language operates on and extends these processes because it trifurcates self into I and me and the self's objects.

Rather than saying that the linguistic term 'apple' constructs a given phenomenon of experience and that the given phenomenon so picked out from the noumenon has no mind-independent or objective existence, I would say that there exists an objective, historically created real pattern that can be pointed to, located, and identified to varying degrees of dimensionality by linguistic terms such as *apple* and *the Golden Delicious apple* or *fresh apples from the orchard*. This reification of some aspects of the constraints of the real pattern on human action, perception, and cognition gives rise to an actuality that is abstracted from the flux of stimulus information and constituted as something that can be attended to in the semiotic-cognitive commons. The fact that we can say that 'apple' is the more general term and 'Red Delicious apple' a more specific one or that 'apple' is a common noun and 'three Gala apples per day' is a nominal group, is itself an artefact of the fact that language can recursively operate on itself. The real pattern has an objective modal existence that is not necessarily in phase with the phenomenal forms and appearances that the pattern generates (Bhaskar 1991, 164). The actualities that populate the human ecology are objects of thought that are the products of historically developing social and cultural dynamics. The latter are the expression of our historically developing knowledge of the world as virtual potential and subjective seek to adapt to the world.

Canonical things are concrete particulars or substantive entities in the Aristotelian ontology. They can be picked out and identified by the demonstrative deictic *this* and classified as instantiations of the category of thing that is specified by the Thing element in the nominal group. Moreover, they are countable. Canonical things include, for example, bananas, computers, phones, rocks, pens, and so on. All these items are individual concrete and particular entities. An individual dog or an individual banana occur uniquely in a distinct spatiotemporal region as well as being concrete and particular. Moreover, they are countable. In the substance ontology that harks back to Aristotle, metaphysical priority has traditionally been assigned to entities (concrete particulars) in this sense.

However, it soon becomes clear that many presumptive 'things' are not in any meaningful sense 'things'. A vast number of nouns specify the many different stuffs and processes that populate the world. Stuffs and processes are not concrete particulars. However, both stuffs and processes can be discriminated the one from the other as different sorts of stuffs and processes just as concrete particulars can. Stuffs such as wood, wine, petrol, iron, and nitrogen are discriminable as different kinds of stuffs. The same applies to different sorts of processes such as fire, decomposition, growth, snow, and so on. Stuffs include many tangible kinds that we regard as 'material', but they also include intangible ones such as data, ozone, software, talent, etc.

Whereas concrete particulars are countable, stuffs and processes are not. We can ask: how many computers are in the classroom? Or how many dogs do you own? Concrete particulars are quantifiable by number. On the other hand, quantification by number does not apply to stuffs and processes. We do not usually ask how many oxygens are contained in the cylinder, or how many petrols are in your tank, but how much oxygen or how much petrol. Stuffs and processes are measurable according to amount, not how many. We usually talk about the amount of petrol in your tank (e.g., ten litres of petrol), the amount of steel to be loaded on the truck (e.g., a ton of steel), or the amount of milk to buy at the supermarket (e.g., a litre of milk), and so on. If, on the other hand, we say: how many wines are there in your cellar?, we have in effect shifted aspect. Wine, normally treated as a functional stuff, is now treated it as countable that can be related to some activity or purpose.

Two points need to be made here. First, there is no one-to-one correspondence between lexical semantic category in language and the ontological category of functional stuff in the world. Secondly, aspectual shift can occur, as here, when wine is treated as a countable individual rather than a functional stuff. The reasons for such aspectual shifts are contextual and activity-related. In the present example, it may be necessary to catalogue the number of wines for the purposes of updating an inventory. The maintaining and updating of an inventory of items is an activity or social practice that requires the itemizing of the contents of the inventory as countable individuals aka concrete particulars relative to the methods and purposes of the inventory.

Processes occur over some temporal duration and in some spatial extent in some region. Processes are delimited by the amount of some process in this sense: how long the process lasted (amount of time), and over what spatial extent (amount of space). Furthermore, processes too have specific concrete properties and powers (Campbell 2015, 77). Consider the process noun *fire* in Example 11 below:

### Example 11:

After intense fires in the Amazon captured global attention in 2019, fires again raged throughout the region in 2020.

Fire is a type of process. It is not a concrete particular. Fires are of course countable:

### Example 12:

We tracked nearly 600,000 individual fire events in the southern Amazon and surrounding biomes, including 25 fires that were larger than 500 square kilometers (190 square miles) in Bolivia, Brazil, and Paraguay, putting them on par with the size of the largest fires in California in 2020.

The nominal group *25 fires* specifies twenty-five occurrences of the process FIRE in different spatial regions.



However, fires, unlike concrete particulars, do not have distinct spatial boundaries that separate them from their surrounds in the way that a computer or a dog has clearly defined spatial boundaries that separate such concrete particulars from their surrounds.

Fires move around. For as long as they burn, their boundaries are constantly shifting until the sources of fuel and energy that maintain the fire are exhausted and the fire is extinguished. Fires cannot readily count as concrete particulars because they lack the stable, well-defined boundaries that license us to say that they occur in some well-defined spatiotemporal region in the way that computers, pens, and dogs do. Of course, the latter qua countable concrete particulars can move or be moved from one spatiotemporal region to another, but that is not the point here. The point is that processes like fire are of indeterminate spatial extent and temporal duration. They lack the intrinsic stability of a pen or a computer that license us to say that the pen on my desk is a concrete particular that I have used to write my signature with.

Linguists and philosophers often make a distinction between the general and the particular, the abstract and the concrete, the particular and the universal, class and member, type and token, and the system and the instance. The logic of these distinctions is founded on the assumption that a given entity either belongs to the category of particular entities, or to the category of universal entities (Campbell 2015, 78).

Fortunately, recently developments in ontology are yielding powerful alternatives to the problems posed by an ontology based on concrete particulars and the kinds of dichotomies outlined above. Two such alternatives are the Ontic Structural Realism of Ladyman and Ross (2007) and Johanna Seibt's (2001, 2003, 2009) General Process Theory. Both theories accord no privileged metaphysical status to the things (concrete particulars) of the substance-based ontologies that have dominated the western tradition since at least the time of Aristotle. For present purposes, I derive four main principles from these observations, as follows.

First, we have established that even concrete particulars like tin cans, bananas, and dogs are in fact organisations of process that do not exist at single points in space or at single instants in time. Instead, they exist as spatio-temporally organisations of process that have both spatial and temporal extent. Secondly, this suggests that concrete particulars are in fact a subset of the processes that populate the world and which we interact with and regard as 'things' for a set of pragmatic purposes in the human world. Thirdly, humans, like all other living beings, are also temporally and spatially extended organisations of process that have capacities and powers that enable them to interact with aspects of many other organisations of process that we encounter. Fourthly, as Seibt shows, processes and stuffs may and regularly do occur in specific times and places, but they are not confined to specific times and places. The point

is that while stuff and processes only exist as occurrences in specific times and places, where they occur is not important for their identity. They may occur and recur in many different places and times. In this sense, they are like universals. Fire can occur in someone's kitchen in Sydney yesterday and in a forest near where I live in Norway today. Both are occurrences of the generic process FIRE in specific times and places.

By the same token, as we saw above, processes, while general in the sense defined in the previous paragraph, also have specific properties that enable one process to be discriminated from some other. FIRE is a generic process with distinct properties that enable fire to be distinguished from rain, another process. Running is a biomechanical process with identifiable properties that are discriminable from those of walking. Processes and stuffs have discriminable concrete properties that enable them to be discriminated (differentiated), the one from the other. In this sense, they are identifiable. They can be identified as 'this' not 'that'. In this sense, they are like the concrete particulars that we consider to be things.

Stuffs, processes, and things (concrete particulars) are all organisations of process. Rather than saying that language functions to 'represent' the actualities of an already existing world, an alternative, more dynamic, and far more plausible explanatory framework is available. Utterances are modes of both action and meta-action. They are a means of acting on the world to make things happen. In this sense, languaging is a form of action. Utterances also point to and locate in the world other often non-linguistic actions or events performed by someone or something or undergone by someone or something, or potentially performed or undergone by someone of something. Languaging can thus evoke previously performed actions which occurred in the past, rehearse possible courses of action that may or may not occur, anticipate potential future actions, and so on. In this sense, languaging serves to indicate and locate actions and events in the world and their consequences. Like all forms of action, languaging is inherently modal in character because of its anticipatory character. All forms of action are oriented to their future development and therefore the future interaction potential that they generate. By means of languaging, we couple with the modal potentials of the world. Languaging is a means of indicating these modal potentials and activating or actualising and/or de-activating and de-actualising them in varying ways and to varying degrees. Instead of encoding, referring to, or representing already given actualities, languaging qua system of actions and meta-actions, serves to actualise/de-actualise and to situate/de-situate the functional individuals that populate the world.

Languaging in the first instance operates on what I have referred to in this essay as the non-linguistic experiential topology (see also Thibault 2021c). It can also meta-linguistically operate on itself, but that does not change my main thesis here (Thibault 1994). In doing so, languaging activates or seeks to activate the virtual

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modal potentials of the world to varying degrees of actuality/nonactuality, definiteness/nondefiniteness, specificity/nonspecificity, realness/unrealness, and so on (see section 6). In section 6, I briefly discussed how the lexicogrammatical resources of the clause and the nominal group enable this. In other words, languaging is a system of actions and meta-actions whereby persons couple their modal capacities, dispositions, and powers to those of the world. In doing so, we tap into, actualise, and harness the virtualities—the modal potentials—of the world while also actualising, enacting, and extending our own capacities, dispositions, and powers in concert with those of the world.

Subjecthood was traditionally defined as the means whereby a sentence picks out something located at a definite point in space and time so that something can be predicated of it. This view relies on the substance ontology and its obsession with concrete particulars that I am explicitly rejecting. Given that we couple to and interact with spatially and temporally extended organisations of process, we need a different and more satisfying account. Subject in the clause deictically points to and indicates some organisation of process that we interact with. In other words, Subject points to an occurrence of a trajectory of process organisation that is extended in time and space. Owing to the processual and extended character of this trajectory, we can say that Subject selects an occurrence of a functional individual to some degree of dimensionality or resolution.

A functional individual, it must be kept in mind, is an organisation of process, not a concrete particular. Functional individuals are not static, timeless individuals in the traditional sense. They are process flows that are forever changing. A canonical ‘thing’ no less than a complex process organisation that is a person is a process flow in this sense. Process flows therefore vary considerably in historical depth and complexity. Through our utterances we recursively and selectively operate on the functional individuals that populate our world to couple with them and thus to coordinate with them and to coordinate others with them. The process flow of a thing such as a tin can or a person such as Paul Thibault, the author of this paper, can be interactively coupled to and sampled from a diversity of observational perspectives that yield varying degrees of and levels of access to the patterns of data that make available information about the given trajectory. A functional individual qua process flow (let’s not forget!) can be defined as an open paradigmatic set of local and mutually exclusive occurrences of configurations of perceptual stimuli and other information that specify a changing layout of affordances as the functional individual unfolds, changes, and develops along its trajectory over the course of its existence as an effective trajectory (Borchmann 2018). Consider Example 13

### Example 13:

*Paul Thibault was awarded the degree of PhD by the University of Sydney in 1985*

The utterance featured in Example 13 posits the person Paul Thibault that is specified and indicated by the proper noun *Paul Thibault* as a trajectory of process with spatial and temporal extent. The linguistic term – the so-called proper noun, *Paul Thibault* – is a typological-categorial possibility space. It points to and selectively activates aspects of the functional individual PAUL THIBAULT identified by the linguistic term. The functional individual so indicated an entire and, at the time of writing, still occurrent trajectory, in space-time. Rumours of the trajectory’s imminent demise are strenuously denied by the author! Think of it like this. The trajectory of a person such as myself is a complex multiscale organisation of process that presents a changing array of affordance potentials to those who interact with me from their respective and always partial observational perspectives and varying social positionings in an array of diverse activities and practices. In interacting with me, other persons are aware of me as an entire trajectory in space-time even though no one including myself has access to the entire trajectory or to the totality of its affordance potentials. This point has been well made by Smith (1998[1996], 230–234). There is then a massive amount of paradigmatic variation in the trajectory that can only be sampled selectively. On the other hand, the amount and degree of variation in the trajectory of a tin can is far less by a good margin. Persons have historical depth, inner complexity, and many layers of reflexivity that tin cans do not have. It’s much more interesting to interact with other persons as compared than tin cans though tin cans do also play their part in the human world.

The remainder of the utterance given above (i.e., *was awarded the degree of PhD by the University of Sydney in 1985*) selects and specifies a particular aspect or state of the trajectory that the speaker seeks to coordinate with the listener/reader. In other words, it specifies a particular occurrence of some configuration of stimuli (the awarding of the PhD, by which institution, and when) that specifies or provides indications of current or future interaction potential. The utterance actualises to some degree of dimensionality a selected aspect of the overall functional individual for some interactive purpose or for its future interaction potential. The past tense (*was awarded*) indicates a process (awarding of PhD) that is completed rather than ongoing. In this sense, the process is construed as a completed event that occurred in the past.

I now look at a small set of examples featuring fire, snow, and wood to illustrate different aspects of the discussion so far.

FIRE

### Example 14:

The fire broke out at around 9:30 a.m. and was placed under control by noon, FDNY officials said.

Example 15:

## Thibault

A specific occurrence of the functional individual (the generic process) FIRE is actualised as an event that started at a specific time and continued until the termination of its trajectory approximately two and a half hours later when it was brought under control.

### Example 16:

The fire has since been put out and we are working with the New York Fire Department to take precautionary measures to ensure the safety of our employees and clients.

In Examples 14–16 A specific occurrence of the functional individual (the generic process) FIRE is actualised as a now completed process that started at some unspecified time and continued along its trajectory until the termination of its trajectory. Following French linguist Gustave Guillaume (1970[1927]), the present perfect indicates a new completed imminent phase (the past activity of putting out of the fire) and the transcendent phase (the consequences or results of that activity: the fire is now out and the NYFD is now working on the precautionary measures referred to).

### Example 17:

According to Florida Highway Patrol spokesperson Sgt. Steve Gaskins, Fournette was driving northbound on Interstate 275 at 10:35 a.m. ET in Tampa when his 2021 Dodge Durango caught fire due to a mechanical issue.

In Example 17, a specific occurrence of the functional individual (the generic process) FIRE is actualised as the consequence of a non-specific mechanical issue that is posited as the cause of the fire in his Dodge Durango. In this case, the generic process FIRE is placed in interaction with the modal potential of the mechanical issue to cause Fournette's Dodge Durango to catch on fire.

### Example 18:

Fire officials now confirm that 12 people – eight children and four adults – died in the fire on N. 23rd Street.

A specific occurrence of the functional individual (the generic process) FIRE is actualised in the prepositional phrase *in the fire* as the causal circumstance that resulted in the deaths of the twelve people mentioned. The process FIRE is indicated as having occurred at a specific location (*on N. 23rd Street*).

Examples 14–18 above show the generic process FIRE localized in some temporal and/or spatial domain. They are all examples of specific occurrences of the process FIRE. Specific occurrences therefore involve the actualization of the modal capacities and powers of fire.

In contrast, the examples below show examples of FIRE as a generic process in Seibt's sense. The generic process FIRE can occur in many different places and times.

However, when and where it occurs is not necessary for the definition of this generic process. On the other hand, FIRE does have specific concrete properties by which it is identifiable (Campbell 2015, 80).

### Example 19:

Fire happens when a material rapidly oxidises, or loses electrons, and releases a great amount of energy.

Example 19 features FIRE as a generic process that is not localized in time and place. Instead, the selection of the simple present tense (*happens, releases*) indicates that the focus is on the virtual potential for fire to happen under certain conditions. These conditions are generic and make no reference to specific spatiotemporal regions.

### Example 20:

Fire can be started by heating a material in many different ways.

In Example 20, the modal operator *can* indicates the virtual potential for fire to be started given the condition specified by the prepositional phrase *by heating a material...* Again, the generic process FIRE is not localized as an actual occurrence in a specific spatiotemporal region.

### Example 21:

Wood fires can usually be put out with water because water absorbs heat, but metal fires are too hot for water to absorb enough heat to put out the fire.

In Example 21, wood fires and metal fires are more specific than fire, but they are still generic processes that are not localized in specific spatiotemporal regions as occurrences of the generic process. The modal operators *can usually* specifies the virtual potential for fires of this kind to be put out by water. In contrast, the second clause features the gnomic present tense. As in Example 20 above, this tense specifies a virtual disposition of metal fires that applies generically, i.e., irrespective of specific spatiotemporal regions.

## SNOW

Snow can be viewed under different aspects either as a process that occurs in the world, or as a stuff.

## OCCURRENCE

### Example 22:

December is the month when a number of hill stations in India get covered in snow. There are several places in India where **it is snowing right now**.

### Example 23:

**It's snowing** for the end of the season. No lines.

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Examples 22 and 23 above feature occurrences of the generic process SNOW. In these two examples, The Subject “it” has been described as a dummy subject that has no meaning and is simply a formal placeholder. This explanation is incorrect. However, it is also inadequate to claim that “it” is a pronoun that refers to the external situation. Following Bréal (1897, 206–208; see section 8), the Subject “it” in constructions of this kind is not a pronoun, but a deictic that points to the domain of the non-person and locates an occurrence of the generic process SNOW in that domain.

### Example 24:

A Winter Weather Advisory remains in effect for much of central Wisconsin tonight through Sunday. **Expect snow to start** in the west this evening and spread east overnight.

### Example 25:

On Wednesday, **snow also blanketed parts of Syria, Lebanon, Jordan, Libya, and Israel**, covering areas it has not reached in years.

### Example 26:

Heavy, wet snow will continue to fall across parts of the Upper Midwest throughout the day

Examples 24 to 26 point to and locate specific occurrences of different states of the generic process SNOW in specific times and places. Example 24 sets up an expectation about a predicted future occurrence of the paradigmatic state type ‘start’ and locates the expected occurrence in time and place. As said above, processes are trajectories that have temporal (and spatial) extent. In this case, the utterance focuses on the (expected) period when the occurrence will start. Example 25 locates an occurrence of the state type “blanketed” in the past as well as specifying the spatial regions in which it occurred. Example 26 predicts the continuing occurrence of a concurrent state of the generic process SNOW, i.e., falling.

Examples 24–26 select SNOW qua trajectory of paradigmatic variation and then pick out a particular occurrence of one of the paradigmatic state types (*start*, *blanketed*, *continue to fall*) among the open-ended paradigmatic set of state types that are associated with the functional individual (i.e., the generic process) SNOW. A given occurrence of SNOW qua trajectory extended in space and time can thus be viewed under different aspects. As here, we can focus on the start of the trajectory (Example 24), what it does or what effects it has on the spatial region in which it occurs (Example 25). In Example 25, a given spatial region is “blanketed” in this sense. SNOW has the capacity to “blanket” (aka cover) the terrain on which it falls. Example 26 focuses on yet another possible paradigmatic state of the SNOW trajectory. In this case, an occurrence of falling is indicated. Again, falling is one of the paradigmatic state types that is associated with the overall SNOW trajectory.

## AMOUNT

### Example 27:

For instance, Amarillo, Texas, has had **more than 15 inches of snow** – surpassing Green Bay, Wisconsin, which has had 11, as well as Chicago and Grand Rapids, Michigan, with about **9 inches** each.

### Example 28:

Great day of skiing at Bear. There is **so much snow** and great conditions.

### Example 29:

Skied all day on 2/17. **Ton of snow...** all powder. Kept snowing all day. Great day

### Example 30:

Sunday produced some great skiing in the trees on the back of **about 4”** that fell overnight.

### Example 31:

**A total of 23.5 inches of snow** was recorded at Boston Logan International Airport on Saturday, the second highest total ever in the month of January, CBS Boston reports. The weekend storm became the seventh biggest in Boston’s recorded history.

### Example 32:

After a week’s worth of sunshine and clear skies, Wisconsin saw **a burst of snow** overnight and into Monday with **more than 10 inches of snow** dumped onto the western part of the state.

In Examples 27 to 32, the items in bold are nominal groups that feature snow as a stuff. Without going into the specific detail of each example, I wish to draw attention to the focus on the amount of snow in each of the highlighted nominal groups. The examples were selected from texts concerned with weather forecasting (Examples 27, 31, 32), skiing conditions (Examples 28–30). In both cases, we are dealing with the same kind of stuff (snow), but in relation to different kinds of social activities and practices in which the amount is salient.

## GENERIC

### Example 33:

Snow develops in clouds that themselves are part of a larger weather system.

### Example 34:

Snow comprises individual ice crystals that grow while suspended in the atmosphere—usually within clouds—and then fall, accumulating on the ground where they undergo further changes.



**Example 35:**

Snow typically melts seasonally, causing runoff into streams and rivers and recharging groundwater.

**Example 36:**

Temperatures have been one of the main contributing factors, because without cold air, you can't have snow.

In Examples 33 to 36, SNOW is presented as a generic process rather than as specific occurrences that are localised in particular spatial and temporal regions. Instead, Examples 33 and 34 focus on thoroughly generic aspects of snow seen as a pattern of data that occurs multiply in localised occurrences, but which can be individuated as an entire pattern of data existing on spatiotemporal scales of much lower dimensionality. Examples 35 and 36 provide information about the capacities, dispositions, and tendencies of the generic process. That is, these are virtual potentialities that are real, but not actual. When localised as an occurrence of the generic process, as we see in the preceding examples, we can say that the virtual potential of snow is actualised in some way.

Example 33 specifies the circumstantial constraint ('in clouds') that is a generic condition for the development of snow whenever it occurs. The gnomic present tense also points to the virtuality of the generic process. The presence of clouds is indicated as a constraint that has the capacity to give rise to the development of snow. Example 34 initially focuses on the composition of snow-ice crystals. Example 34 then proceeds by presenting a virtual event series in which SNOW is revealed as a generic process that transitions through distinct paradigmatic phases from its inception as ice crystals in clouds to the further changes it undergoes once it falls on the ground.

Example 36, in identifying the key role of temperature in the formation of snow, points to the de-actualisation of the potential for snow to occur in the absence of a key condition, viz. cold air.

**12. DIMENSIONS OF MEANING POTENTIAL: A SALES TRANSACTION**

In this Section, I will draw on an instance of a Sales Transaction (Table 2) borrowed from Hasan (1985[1989]).

Let us now consider the first speaker's utterance:

**Example 37:**

Can I have ten oranges and a kilo of bananas, please?

An utterance such as *Can I have ten oranges and a kilo of bananas, please?* might be viewed as involving the assigning of a representational meaning to the experiential structure of this utterance. On this view, the experiential grammar is the encoding of a representational content. But that is not how linguistic 'representation' works. The experiential structure of the utterance is a differentiator that functions to set up a consensual domain of consistent semantic and other relationships. It works by attentional modulation, focusing on a particular locus of interest while irrelevant or unimportant aspects are filtered out. On this view, experiential selections are value-weighted semantic differentiators for focusing on salient aspects of the local experiential topology that they indicate and operate on. They are relevant to action selection insofar as they provide semantic indications of future interactive potential (Bickhard 2004a, 2004b; Thibault 2005a, 2005b, 2012, 2014). Thus, the experiential structure I (Carrier) + HAVE (Process: Attributive: Possession) + THREE BANANAS (Attribute) both specifies potential action and modulates salience and attention by directing attention to a particular region of the currently active experiential topology.

The experiential semantic of this utterance is analysed as follows. The experiential role relations are shown in bold:

**Can I have ten oranges and a kilo of bananas please?**

Carrier Process: Relational: Possession Attribute

Attributive processes are operators that establish relations between arguments belonging to the functional class of Carrier and the class of Attribute (Halliday 2004[1985], 219–226) in attributive clauses. Carrier and Attribute are the two inherent functional roles in attributive clauses. In Example 3, an attributive relation of the possession type is construed between the Carrier and the Attribute. The experiential semantics of the clause does not encode either a pre-existing perception of the non-linguistic environment or a thought or a mental state

<i>Transcribed Dialogue</i>	<i>Moves (Act Types)</i>	<i>Language Used</i>
<b>Buyer:</b> Can I have ten oranges and a kilo of bananas please?	Purchase Bid	Interrogative clause
<b>Seller:</b> Yes, anything else?	Compliance with Purchase Bid + Bid for New Sale	Minor clause(s)
<b>Buyer:</b> No thanks	Decline New Sale	Minor clause
<b>Seller:</b> That'll be a dollar forty	Sale: state price and payment	Declarative clause
<b>Buyer:</b> Two dollars [gives too much money]	Purchase	Minor clause
<b>Seller:</b> Sixty, eighty, two dollars. Thank you [gives change]	Change Handover	Minor clause

Table 2: Transcription of a Sales Transaction; borrowed from Hasan (1985[1989], 54)

in the speaker's mind into linguistic form. The experiential semantic structure of the clause does not therefore encode an already well-defined representation that is known in advance. Instead, the experiential semantic structure is a semantic differentiator that enables the participants in the situation to differentiate or to partition some aspect of the local experiential topology as the current locus of attention or cognitive processing. Linguistic differentiators do not encode anything at all. Rather, the experiential semantics operates on non-linguistic social reality and constitutes an interactive exploration and transformation of it. The agent seeks to differentiate its own activities in accordance with relevant differentiations in the environment or the situation of the utterance as well as provide others with the means to carry out such differentiations.

In the present case, the utterance serves to coordinate the joint attention of the two agents and thus to focus their attention so that a successful sales transaction can be brought off to the satisfaction of both parties. Linguistic differentiators are the historical outcomes of agents' prior interactions with the relevant environment. They are thus grounded in a community's collective experience. Successful differentiators are selected because they reliably project forward to future instances whereas unsuccessful ones that do not reliably project forward are de-selected (Thibault 2012, 686–687). This explains why semantic differentiators work. In this way, agents learn that semantic differentiator X in situation-type A is likely reliably to bring about type-Z outcomes or results. A differentiator has a semantic potential that may or may not be actualised as a successful differentiation of the locally relevant experiential topology. In other words, a successful differentiation is accorded specific meaning-interpretation according to whether it is perceived to be supported by the relevant environment or not. A successful differentiation is thus an apperceived transformation of the situation and its conventions.

The selection of a particular experiential structure (transitivity + lexis) is always value-weighted for factors like desirability, obligatoriness, appropriateness, possibility, importance, relevance, salience, and so on that will bias subsequent interaction outcomes. The present example provides semantic indications for the purposes of both *action specification* and *action selection*. *Action specification* makes use of the experiential structure to construe a yet-to-be-realised relationship of possession between the buyer and the desired goods (the bananas). On the other hand, *action selection* functions to set up and to initiate an iterative flow of related actions and sub-actions that are required to bring off the sales transaction. Thus, the experiential structure of the utterance selects for the following actions: (1) it directs and coordinates the attention of the buyer and the green grocer with respect to a particular aspect of the local experiential topology; (2) it prompts the green grocer to get the required quantity of fruit; (3) to engage in a sales transaction with the buyer; (4) to establish and indicate the price; (5) to accept the buyer's money;

(6) to hand over the desired goods; and (7) to provide change if required.

When selves have control of the language stance and are therefore able to make normatively appropriate use of its affordance potentials, their utterances can serve to achieve high-order semantic control. Utterances can serve jointly to focus the attention of selves on the currently active part of the local experiential topology and consequently to control or to direct the action of others, i.e., to get the greengrocer to sell the buyer the desired bananas. Meaning emerges as a result of such iterated branching in the flow of unfolding co-action between the two agents. The 'meaning' of the utterance is an awareness of the successful co-articulation of a functional fit between self, utterance, and some aspect of the environment that the utterance is apperceived to operate on.

In the case of linguistic signs, wordings (lexicogrammatical pattern) are not the means of encoding semantic content. Lexicogrammatical pattern compresses information deriving from (1) the individual agent's first-person experience of the ways in which the pattern functions to co-articulate selves to aspects of the situations with which they have interacted; and (2) the population level socio-cognitive dynamics of an entire population of languaging agents. These regularities establish a consensual domain between agents. On this basis, agents can anticipate each other's actions. Wordings compress historical-cultural information concerning the semantic control strategies of a given population as they emerge in these historically emergent, recursively constituted consensual domains. Wordings are learned in the context of the non-linguistic experiential topologies that are already fully meaningful for the infant by virtue of the role they play in guiding action and perception. Bananas and their affordances are meaningful in the life of the child before the affordances of the word *banana* are.

### 13. LANGUAGE: CONSTRAINTS AND CAUSES

Lexicogrammar comes much later in the infant's development. Wordings are thus grounded in, and their meaning potentials are in the first instance established by, the affordances of the objects and events and the relations between these in the pre-linguistic 4-D multimodal experiential topologies that are the ground of all meaning. The power of wordings lies in their capacity to evoke and to direct attention with a high degree of precision to specific aspects of experiential topologies that may or not be physically present, but they can nonetheless be pointed to and evoked. This capacity rests on the compression and synthesis of information that the typological-categorical (digital) differentiations of lexicogrammar make possible in the transitivity structure of the clause and in more delicate lexical selections.

Drawing on the collective experiences of a social group, including most importantly the variation that is intrinsic to the group, lexicogrammar thus has the capacity

Scalar Level	Processes and Mechanisms Involved	Time Scale	Modal Status
Attractor landscape of lexicogrammatical-phonological attractors	Long-term system tendencies of a population of languaging agents as agents entrain to collective dynamics in their efforts to find solutions to the coordination problem	Cultural-historical	Virtual constraints
Phenomenological level: the individuation of linguistic pattern in utterance-activity	Learning cultural and social skills and techniques to attend to and hear culturally valued and promoted 'formal' patterns (wordings) that are interactively integrated with past experience and with the anticipation of future interactive potentialities; learning to adapt the language stance (Cowley 2011)	Ontogenetic-developmental-life span scale	Possibility
Situation level: embodied activity-types and genres of social practices	Interactive perception of the affordance layouts of utterances (e.g., wordings) and their functional capacities of agents to affect and be affected by means of them	Enchronic scale of unfolding situation or event	Probability
Future projectibility	Anticipatory dynamic oriented to actualizing of future interaction potential through (1) action specification; and (2) action selection	Future projectibility of activity	Potentiality and its prospective future actualisation

Table 3: Entangled scalar levels of the degrees of actualisation of 'meaning potential' ranging from purely virtual constraints to the actualisation of future interaction potential.

to evoke and direct attention to the affordances of the non-linguistic, yet always social, experiential topologies on which language operates. An utterance is then a semantic control strategy that has the capacity to differentiate or partition the local topology in some interactively salient way. Utterances are complex layerings of operator-operand relations. Their semantic capacities are interpreted by agents in ways that mesh with their behavioural control strategies and the values-realising activities that inform their awareness of the situations that they seek to operate on and transform through their languaging activity. Table 3 presents a way of thinking about the relations between the various entangled scalar levels entailed by the idea of meaning potential. Rather than the idea that meaning potential is choice per se from networks of linguistic or other options, we need to show how meaning potential is a virtual possibility space that can be variably actualised. To explain this, it is important to distinguish between constraints and causes, as discussed below.

Languaging is a field of impersonal individuations structured by a virtual multiplicity (Idea) that has the capacity to give rise or individuate to any particular state of the system. Individuation occurs when two "disparate" orders are coupled. For example, the coupling of an individual person to the pre-individual field of virtual potentialities puts the two disparate orders in a state of 'communication'. The pre-individual field is a metastable state of potentialities that generates what Deleuze calls "an objective problematic field" (Deleuze 1968[2004], 307) when it is coupled to an individual person.

First-order interactivity or languaging therefore puts the agent in contact with a field of intensive impersonal individuations. The result of this contact is an actualised state of the system. Particular processes of individuation are structured by intensive impersonal individuations that are themselves structured by the thresholds (pre-individual singularities) that mark points of potential change in the system when they are coupled to a disparate order of relations such as an individual person. These

pre-individual singularities or thresholds organise and direct the intensive impersonal individuations.

Languaging is irreducible to abstract verbal pattern because it necessarily takes place through our first-order bodily interactivity with the world. Languaging is structured by a differential field of impersonal relations with which our bodies engage to individuate solutions to the problem space that is posed by this field. Deleuze proposes a three-fold distinction between the 'virtual', the 'actual' and the 'intensive' that allows us to think of languaging as being embedded in distributed cognitive systems that are constituted when agents engage in interactivity with other persons and/or artefacts, technologies, and affordances of their environments in particular activity-types and genres of social practice. The latter constitute a pre-individual metastable field of potentialities that agents can tap into and actualise along specific trajectories as solutions to the problem space that is constituted by the Idea.

The wordings that we learn to attend to in utterances are the phenomenological effects of lexicogrammatical attractors. The latter have a purely virtual existence on the scale of a population of interacting agents. They are implicit properties of system dynamics that attract the lower-scalar bodily dynamics of individuals in their first-order languaging activity to the higher-scalar system tendencies of a population of agents. Individuals entrain to these dynamics on ontogenetic and phylogenetic time scales. These long-term system tendencies on cultural-historical time scales stabilise the collective socio-cognitive-interactive dynamics of a given population of languaging agents. These long-term system tendencies give rise to regularities in the production processes that individuals learn to orient to on developmental-ontogenetic time scales as linguistic patterns (e.g., wordings) that have the capacity normatively to affect experience (Love 2007).

The identity of a linguistic unit is always a matter of interpretation and judgment. A judgment that a particular

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linguistic event is an occurrence of the word *douchebag* or the consonant /p/ is based on an appeal to a cultural norm. These norms are ideals that are implicit in the cultural and institutional practices of languaging in which linguistic artefacts—braille, sign language, utterances, and texts—circulate. In interacting with these artefacts, persons in possession of the requisite capacities and skills can detect and make use of patterns that to varying degrees are perceived as conforming to the ideal. These capacities and skills crucially depend on an evolutionary and developmental history of ideal institutionalised linguistic types (Fortescue 2001, 234–235), or virtual second-order constructs (Thibault 2011a), that can be actualised and repeated across innumerable occasions of languaging. Ideals in the sense intended here are virtual constructs that are actualised in variable ways in concrete utterances and texts.

On the situation level, persons draw on semiotic repertoires. Semiotic repertoires are not instantiations of choices from a pre-given system of options; they are more like genres of social activities/practices and ecosocial affordances (not linguistic/textual genres *per se*) that enable the exercise of persons' agentive capacities and powers in particular ecosocial niches. This means that the primary focus is not on the linguistic objects described by linguists, but on how emergent pattern and regularity (wordings, soundings, etc.) are integrated with and incorporated to the repertoires of practices which these patterned regularities help to enable. Rather than abstract senders and receivers sending messages to each other, we have concrete embodied persons in their worlds co-participating in practices with which regularities of languaging are integrated. Persons perceive and orient to the affordance layouts of the unfolding situation, including the affordances of the linguistic pattern they apprehend in each other's languaging.

As mentioned above, utterances are selected because they reliably project forward. They set up an anticipatory dynamic that is inherently modal. This dynamic is oriented to the future development and actualization of future interaction potential. This happens in two main ways: (1) *Action specification*: the utterance provides indications as to which actions and social practices are evoked and made relevant by the utterance; and (2) *Action selection*: the utterance serves to catalyse an iterative flow of actions and processes required to bring off a successful enactment of the social practice currently at play, e.g., the buying and selling of fruit discussed above. Constraints are not the same as causes. Constraints as set out in Table 3 are modal potentials. They are virtual and conditional. They set up or establish the selection and enabling conditions that need to be actualised for something to happen such as the flow of actions and events required to purchase the desired fruit in the sales transaction discussed above.

This flow of actions and events is caused by real living persons who, in participating in particular activities and practices, exercise their capacities and powers—their

agency—in order to make things happen. These activities and practices are irreducible to 'language' or 'discourse' *per se*. Languaging is always in some way meshed with bodies, activities, and practices whereby people do things and make things happen in their worlds. Linguistic pattern has no agency and no causal powers. It does nothing and makes nothing happen. Agents do things and make things happen. It is important to distinguish between causes and constraints. Lexicogrammar is a system of constraints. Constraints on the other hand are not causes. Constraints limit the space of possibilities—the degrees of freedom—of some system, but they are not causes in the sense defined here: constraints do not cause other events to happen in the way that causes do. On the other hand, causes imply the exercising of agency to make things happen in the world. For our present purposes, I will confine the notion of cause to the production of one event by another event.

If I say to you, "Make me a cup of coffee, please!" and you then make me the coffee, the linguistic pattern in my utterance does not cause you to make the cup of tea. The linguistic pattern constrains attention to a specific region of experience and proposes an anticipated action that I want you to perform. However, and assuming that you oblige my request, I draw upon my capacities and powers to set up a flow of events. The causer of the resulting event series is the whole person—me—to whom the utterance is referable. In exercising my agency, I am responsible for instigating a causal series that also requires your co-agency and co-participation to bring off the desired outcome. By means of my utterance, I exercise my agency in ways that productively cause another event (your action of making and giving me the coffee). The linguistic pattern in my utterance imposes its own constraints on the currently operative space of possibilities, but it does not cause anything to happen. Agentive powers are exercised by embodied persons who mesh the bio-mechanical possibilities of their bodies with cultural and linguistic patterns, with artefacts, tools, technologies, and so on in distributed cognitive systems. Our explanations of languaging require explanations that can take account of both causes and constraints. Constraints are virtualities—possibility spaces—that can be variably actualised in human action, of which languaging is a sub-set. Their actualisation in the world takes the form of productive causal series of events.

The wordings we attend to in our utterance activity are constraints that constrain, guide, scaffold, and support action specification and action selection, as discussed above. The virtual potential of lexicogrammatical constraints can be actualised in variable albeit constrained ways in the flows of the activities and practices in which languaging is embedded. In this way, persons exercise their capacities and powers to make things happen in their worlds. In other words, embodied persons doing things cause or make things happen when they catalyse productive flows of actions and events in the world. Languaging is always part of a single adaptive system



of larger-scale processes in which persons participate. We need this more systemic perspective if we are to develop an adequate theory of the interplay of constraints and causes in languaging activity.

We have accorded mythical status to second-order linguistic pattern as if it had causal powers independently of human agency. We may become language masters when, as Roy Harris suggests in the quotation at the head of this article, we transcend this mythical status and reconnect the constraints and causal powers to the ways in which languaging extends our human agency in relation to the world in which we live as distinct from the disembodied abstracta postulated by the language myth.

#### 14. CONCLUSION

The conceptual-ideational structures of a language (and concepts more generally) are forms of activity that are compressed by a particular linguistic or other semiotic structure such as visual images. They are more than formal structures. The word 'banana' is a form of (incipient) activity that is compressed, informationally, in the linguistic pattern. Bananas are instantiated in the many forms of social activities and practices involved in the growing, harvesting, distribution, storage, transportation, buying and selling, and uses and consumption of bananas in a wide range of activities and practices of different kinds. A banana is an artefact that is nonetheless a compressed form of activity. Forms of activity embed artefacts in them as affordances for producing human action. The artefact—the banana—is embedded in, participates in, and circulates in systems of activities and practices that make the object into an artefact that enables people to realise certain kinds of values-realising activities. Bananas can have different kinds of properties—e.g., colour, shape, size, firmness, ripe, sweetness, and so on. However, the properties per se do not make the object into an artefact. This depends on the activities in which the object with its properties is embedded and participates.

There can be many sedimented layers of such relations. Utterances have the functional capacity—the second-order affordance potential—to direct attention to and to provide indications as to the affordance potentials of first-order 'objects' and 'events.' This always entails an interactive stance organised in relation to and referable to the self that is the source of the stance. If I use the word *banana* or *lemon* to indicate some object in the physical environment or to evoke a virtual (non-perceptual) awareness of the given region of experience, I am providing functional indications as to the affordance potential of the object and therefore its interactive potential. Such stances are incipient forms of action. They prepare one or rehearse one for possible action in relation to the indicated object. Words do not correspond to the fixed essences of things. Instead, they serve to set up interactive stances between selves and environmental phenomena—stances that provide second-order

linguistic information about some aspect of the affordance potentials of the first-order experiential topology that is selected as the current locus of attention. In so focusing and coordinating attention, they draw value from the self into the affordances so indicated. Calling something a 'lemon' rather than a 'banana' is to indicate something about its affordance potential and therefore how it can or might be interacted with.

Utterances provide semantic information above all about the affordance potentials of things and therefore how we can co-articulate ourselves with the interactive potentials of them. It is precisely because of this fact that prescientific and non-scientific practices and ways of orienting to and co-articulating with the environment often remain correct. They have perduring normative power that serves to guide people in the normatively correct ways to orient to their world. Words provide normative semantic information about the potentialities of the interaction kinds that they differentiate. The distinction between natural kinds and interaction kinds (see also Hacking 1999, 31–32) is less relevant than it first seems because anything that is differentiated by the conceptual-ideational structures of languaging is a real pattern that exists in the human ecology as an artefact of some kind and therefore has affordance potentials that can be interacted with in relation to particular activities and practices. An important aspect of the functional capacities of utterances is to provide functional information about the aspects of experience that language differentiates and how the given aspect so differentiated can affect us just as we can affect it when self-co-articulates with the affordance potentials of its environment.

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