

Papers

Discovering the Non-self: The Construction of Language, Trance, and Space

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Abstract

We might conceive of a Language Acquisition Device (LAD) as a useful abstraction, whether taking it as fact or not. An LAD is understood for grammars of languages, but can also be applied easily to music theory and mythology. Less obvious is that our identification of space, as *an active* process, can be described syntactically. We borrow from a Constructivist approach, one where we do not assume the existence of physical space, but merely acknowledge that, *for some reason*, space ends up being conceived in our minds. By discarding the common Platonist belief that our concept of space is a reflection of some *real* thing, Constructivism offers a useful perspective for understanding how and why we might make distinctions between self and environs.

Keywords: [Child development](#), [computation](#), [constructivism](#), [embodiment](#), [linguistics](#), [selfhood](#), [transducer](#)

How to Cite: Wright, J., 2013. Discovering the Non-self: The Construction of Language, Trance, and Space. *Body, Space & Technology*, 12. DOI: <http://doi.org/10.16995/bst.64>

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1. Introduction

Space thus becomes something more than a void in which to roam about, dotted here and there with dangerous things and things that satisfy the appetite. It becomes a comprehensive and enclosed scene within which are ordered the multiplicity of doings and undergoings in which man engages (Dewey, 1934:23, 190).

To begin, the very concept of location/space is just that – a concept. As such, it is *inseparable* from contextualization. It is also *exclusively* a mental construction. If we feel that there must exist an objective universe, ultimately it is merely a matter of faith (Searle, 2001:102-103). The only world that we can possibly know is the *a posteriori* world we construct, based on our unique and subjective experiences. Space certainly is part of that mental construction.

Specifically, in the same subtle way a sense of numeracy can be detected in nonhuman animals, concepts of precise numbers and counting are strictly a matter of faith (Vallortigara, 2009). There is no possibility that the number line or mathematical representations are a more exact method of the detection of relative quantities, nor can any evidence of such precision be evidenced outside of the human mind. Furthermore, this precision is not static. We might also complain that our will is not our own, or our heart wants one thing, but head wants another. Of course, not that these need to be taken as anatomical literal, but that self-hood is constantly relative and dynamic. Up to a certain point, more precision may clarify things *for the human thinker* (Shettleworth, 1998:391), but beyond it, the clarification is a matter of human-centric faith.

Moreover, it is an organizing scheme for chaotic stimuli - to arrange them in their proper places, so to speak. The space we occupy, particularly the border between self and environment, is a byproduct of associations, trial-and-error experimentation, and sensory stimuli, all within the rigid context of our prioritized needs (Metzinger, 2009:77). This is not to say that the objects that constitute space do not exist, but that we cannot assume that these objects constitute space in similar ways outside of the human mind. More specifically, we tend to view experience as if 'site-specific' art, as if the site (and its context) existed independently of the artist and audience. If one takes the constructivist view of modeling the environs, the theory further explains that construction, at least, *tends to be* socially motivated in social settings. The attitudes of a culture plays an important role in how we understand the things we perceive (Goffman, 1959; Milgram, 1974; Langer, 1998). 'It cannot be safely assumed at the outset that judgement is an act of intelligence performed upon the matter of direct perception in the interest of a more adequate perception' (Dewey, 1934:311). Therefore, participating meaningfully in the world as provided, requires that new members negotiate between their own personal interpretations and conceptualizations, and those of the older, established members (Cobb, 2005; Sfard, 2008:115-116, 259 -260).

2. Creating Space

Our premise is that space, as we experience it, should not be taken as an accurate portrayal of the universe outside of the mind. Nonetheless, we do indeed undergo a rather salient experience. Thus, it has been concluded that, like other experiences, these are internal *constructions* within the mind, rather than mental descriptions of a presumed external world.

Initially, we should make some attempt to describe a non-spatial reality. No doubt this description is not fact. That is fine. One possibility is that, instead of watching someone walk across the room and then out the door, reality *could be* like a film strip. In this model, all points of light on each frame are given equal priority, but in the first frames there appears a recognizable disturbance of pattern of colors. The discoloration subsides and appears again, with slight changes. Then there is no discoloration, but the sound of the closing door (which of course need not be identified as a door, but a medium pitched thump). A conspicuous effect of eliminating a sense of space is the loss of a sense of causality. Is causality necessary in the *a priori* universe, or is it a convenience for our own comprehension? Moreover, this pattern simply discolors the ground, where all is essentially ground.

The ground and subject(s) are not distinguishable. If one imagines that there might be an objective means to quantify neurological responses to say, watching dance and performing it, we find that our mirror neurons (also called 'monkey-see-monkey-do' neurons in Millikan, 1995) are fired in both cases, without regard to some self-other distinction (Dunbar, 2008). It may be more difficult to imagine the simpler alternative that, as with developing infants really just see the world, a mother, and the self as one thing (Eliot, 1999: 299 - 300; Erikson, 1958). The gradual tendency to make such a distinction is not innate, but *learned*. Furthermore, importantly for multimedia, it can also instantly and ephemerally be re-learned. With the advent of multimedia, a subject could conceivably be drawn into an artificial environment without being distracted from the premise/context/story that puts them there. We do not have to juggle our scrutiny (Popper, 2007:132-134). The sense of space can be and is circumvented.

Of course, our subjective perceptions do adhere to such rigid synchrony, as if imagining such frames was somewhat valid (Gregory, 1966:161-162). But physiologically, the shapes, colors and edges arrive, and are processed at rather independent schedules. Motion too does exist, but that still need not imply space exists. Might space be another such associatively projected property? We might think of *location* as distinct from *setting*, which is incidentally the case for computers. Space is neither intrinsic nor automatic. The job of a programmer (and artist) is to use code, in some form, to add subjective elements like space.

figures 1, 2 These images underscore difference between setting and location.

A frog may see the motion of the fly, aiming its tongue at that spot, without ever considering that the motion detected is a fly or even that it is a subject. This response merely results in less hunger *often enough* (Millikan, 2005). Without this explicit data linking the elements of certain sequential frames, generalizations need to be projected onto the image, to group and prioritize it into meaningful (and irrelevant) objects, including ground. Incidentally, this is roughly how a computer/camera sees the world (Gonzales & Wintz, 1977; Myler & Weeks, 1993; Levin, 2006). For robots to see as we do then, they must develop their own sense of space (not simply coordinates dictated explicitly), which is an essential byproduct of a *sense of self*.

2.1. Virtual Space

This leads us to discuss virtual space, as if there is non-virtual space, and some vague relationship between them (Greene, 2004:181-182). Space is roughly defined by the purposes of the occupants. But more importantly, it can recede in importance such that, no attention being lavished on the background – as strictly defined by context – the space can easily take on other non-spatial meanings (Allen, 2004; Dennett, 1991:389-398; Solso, 2003:230). A white room means something different to a handy-man, who has to buy the precise shade of paint, and a curator who is thinking about how traffic will flow and rest. Consider the handy-man, to whom the walls are not ground but subject.

In a sense, to speak of online spaces as literal, simply does not apply. Literally. The web is merely a collection of machines that transfer data packets, which serve as instructions to create the graphics one sees on the computer monitor. The 'web surfer' does not move in space-time, the bits do. Yet the metaphor is entirely common and understood. This metaphor exists precisely because there is a previous conceptualization that is long constructed, and fits well enough with our *contextualized* sensations (a description of this learning process, about space on the web, before the metaphor was common, occurs (Shirky, 1995:3).

2.2. The Construction of the Concept of Space

Space is essentially that which is not *self*, self being a gradually refined and learned notion (Gopnick & Meltzoff, 2006). Regardless if we unintentionally believe in space that we observe or intentionally create internal space, as in meditation, that space is understood as distinct from the self. In child development, the progression from infancy to adulthood, is quite literally a very cumulative process of differentiating modal impulses (Piaget, 1929:38). Initially, the sources of many sensations are ambiguous and difficult to distinguish, for instance a mother's smile. Infants must come to *decide* that some sensations are internal, such as hunger, and some external, such as the shape of a toy. These decisions are generally quite conscious, in the form of *cognitive conflicts* (Devries & Zan, 2005), paradoxes that the learner must resolve. Later, for instance, young children tend to believe that the sun is somehow part of them, consciously manipulated (albeit lacking dexterity, similar to their uncoordinated fingers and toes). Piaget and many others stress that this egocentrism is not precisely *solipsism*. Children at this stage have not yet developed a *Theory of Mind* that they will take for granted as adults (Gopnick & Meltzoff, 2006; Fodor, 2000:62-64). Moreover, these children do not recognize their own mind as even being *theirs*, which would require a somewhat developed sense of self. Rather, they assume the universe has but one mind, to which they have privileged access. Children further learn to distinguish between unresponsive space and intelligent, animate *others*. That objects can be categorized as self or non-self, space or non-space, is entirely subjective and a convenience for mentation's sake. Are we correct that there are other minds? The most we can say is that culturally, we are pressured to believe in multiple minds, as interaction ultimately allows for categorization of sensory and conceptual impulses into frames (Searle, 1994:196-191).

[...] The real root of the frame problem lies in treating humans and machines as organisms that are both engaged in producing an objective analysis of reality. This viewpoint is not limited to workers in AI [...] We saw that many psychologists concerned with category perception take a similar view of humans. Now, we may manufacture objects aimed at producing an objective analysis of reality, but evolution manufactures creatures aimed at maximizing their

life-chances. We may choose to assume that relevant information is information relevant to a particular task. But for evolved creatures, relevant information is information relevant to a particular type of organism. [...] We can even distinguish between what makes it difficult and what makes it impossible. The difficulty lies in furnishing the robot [or primate] with all that eons of evolution have given us. The impossibility lies in teaching a robot what is relevant and what isn't, when there is no autonomous entity there for things to be relevant or irrelevant to (author's emphasis, Bickerton, 1990:204, 205).

3. Metaphor

The basic mappings in the event structure metaphor include the following; causes are forces. States are locations (bounded regions in space). Changes are movements (into or out of bounded regions). Actions are self-propelled movements. Purposes are destinations. Means are paths (to destinations). Difficulties are impediments to motion. Expected progress is a travel schedule; a schedule is a virtual traveler, who reaches a prearranged destination at a prearranged time (Feldman, 2008:207).

Metaphor is not only applied on a personal mentation level described by George Lakoff et al., but also to myths at a universal cultural level Joseph Campbell describes (see also Campbell & Moyers, 1988). The organism and its culture have a symbiotic need to nurture the other, for the sake of both of their own survivals. Trance-induced rituals, even ones that insight members to stab themselves (Becker, 2004), are a means to keep the culture's membership thriving. Sharing and exhibiting strong devotions to a common iconography becomes a priority for survival. The physical aspect of trance literally alters waves, to allow the trancer to engage in extra-human activity, particularly engagements with the spirit world (Alderage, 2006). This supernatural interaction ultimately allows members of that culture to apply mythology to their lives in ways that are unavailable to the ordinary human. Surely, this trance state is often only an act. But where it does occur, this state coincides with verifiable changes in physiognomy, within the brain. Embodiment is key to metaphor, but in a trance state, the perception of that body, the self, changes radically.

Note that the concepts culled from this metaphoric 'mapping' process are artificial constructs and quite linear. Though robots may be imbued with limbs, casing, sensors, etcetera, their software is written rather independently of these 'bodies'. While the hardware is seldom radically altered by the software. They cooperate, but remain distinct. This is simply an artifact of our distinction of the mind-body.

We speak of time as though it resembles space - as when a listener wonders when the speaker will get to some point. Also, we often think of time as a fluid that's "running out." And we talk about our friendships in physical terms, as in "Carol and Joan are close" (Minsky, 2006:343).

The above quote may at first seem sensible enough, but the question is not in their apparent logical differences to us, but that they, as well as our logic, may easily be constructed by similar means within us. Even the notion that space is three dimensional is not an absolutely certain assumption, but is explainable given our metaphorical understanding of location. A Cartesian-like grid, whether rigid or warped, is not a reflection of space, but a reflection of a model which is customized to ease the processing requirements of our profoundly species-specific cognitive strengths and weaknesses (Shettleworth, 1998:566 - 571). If space were, say, twelve dimensional, we might learn to imagine it, but at the severe cost of that extra mental processing. Likewise, we can imagine animals, possibly the nematode worm (Enquist & Ghirlanda, 2005:164-165), who likely do not have our spacial modeling abilities, but conceivably only require a two dimensional view of the universe in order to survive. How are we to say that three is the correct number of dimensions to depict reality? Many organisms do with much less, and thus it is presumptuous not to assume that we too are dealing with a simplified reality, adapted to the limitations of our physiognomy.

3.1. I/O Functions

Visualization is one useful shorthand way of mapping our mental reconstructions of the environment, such that we

avoid bumping into walls and such. Chaotic bursts of impulses, when organized as visualization, may create coherent images for us (Bach-y-Rita:70-72, 1972; Bevelier & Neville, 2002). Having determined the usefulness of adopting this scheme, the brain will tend to use optical impulses for sights rather than sounds, strengthening the synaptic paths (Grossberg, 1973/1988). Or, an alternative theory is that the brain may use every impulse in every way possible, but soon it discards processes that are not successfully recognized by the cortex, or are beaten in a Darwinian competition of possible thoughts (Minsky, 1985; Calvin, 1999; Minsky, 2006).

The difference between input/output and transduction/actuation is helpful, though indeed subtle. The relationship between a light switch and light emitted from a bulb is easily explained using either pair of terms. Nonetheless, it is essentially a linear system, reducible to a single bit (on or off). It becomes more clear when we apply it to more complex, nonlinear systems that can not be entirely and precisely formulated digitally from any static, objective 'God's-eye' point-of-view (Edelman, 2004:140). But not too complex! An input/output scheme implies that there is a static relationship between the input and output. A human body defies prediction of any relationship and could not possibly be consistent. So we will consider the automobile. One might say that the accelerator pedal is an input device, and that the output is acceleration of the car. But that input must also occur when there is sufficient fuel. That alone may not cause acceleration though, as a dead battery would also prevent the output. One might then list every conceivable input and every conceivable output (which would include, not just acceleration, but exhaust, vibrating radio speakers, etc.). However, even if an exhaustive list of these inputs and their coordination were feasible, if a giant boulder fell on the car, acceleration would still not take place. For all but extremely simple mechanical circuits, the input/output scheme is not a precise enough model. It becomes impractical to conceive of a logical map between the infinite number of possible inputs and outputs.

When we speak of qualia, we are referring to a phenomenon by which the visible features (such as color) we vividly imagine experiencing and what our sensory organ detect, are two very different things. But essential to human development is that it becomes nearly impossible not to confuse the sensation (built by the mind, with only indirect clues from the environment) and the environment. A common example in describing the problem of qualia is that we can both agree a stop sign is red, but not that your idea of what redness looks like is the same as mine. The problem is addressed in the next section.

Flowers display their beautiful colours which give pleasure to us, however they are not made for us, but for flying insects. Those insects involuntarily fertilize plants carrying pollen from flower to flower [...] So some plants evolved to attract insects and in that way plants reproduce and continue living on the planet Earth. So insects evolved to distinguish flowers among the whole electromagnetic radiation that gets to their eyes coming from the Earth's surface, as patches of definite colours. Thus, eyes have appeared and evolved as a filter for those chains of events [...]. For instance, electromagnetic radiations are filtered by eyes, in chains which end at perceptions we call colours. But if the radiation wavelength is in the ultraviolet zone, some insects will see it, but in our case we will not (Herrero, 2005; for a further explanation 'Why are there colors?', see Dennett, 1991:375-383).

3.2. Transduction

The problem becomes much clearer when we broaden our assumed definitions of the senses, to speak of *transducers* (Pylyshyn, 1984) and *actualizers* (rather than input/output). Color is not a feature eyes detect. The eyes send stimuli to the cortex, which manufactures qualia in a very specific protocol, only used by the (illusionary) Cartesian Theater. The theater cannot be proven to exist, is not likely, but is experienced nonetheless. In other words, the first step is to re-conceptualize colors, not as input but as output. Output that is exclusively for a particular context and not the rest of the universe (Dennett, 1991: 389-398). Though 'output' becomes misleading when we consider that qualia does not exit from the mind that creates it.

Though we often say there are five senses, there really is no way to determine the amount and number of sources for

our impulses. The sense of touch is not in one place but a whole network of nerves both in the skin and internal. Is the recognition of a person's walk, fundamentally different from a recognition of the person's face? When we have been waiting in line and become impatient, with which organ do we 'feel' the time passing? We must take a broader view of the senses, including a sense of our location in space.

Frogs react quickly and effectively to bugs that fly past them, but this by no means implies that they have a concept of "bug". Indeed, we can be pretty sure that they do not, or at best that their concept of "bug" both under- and over-generalizes to a rather gross extent. For instance, they will overgeneralize by snapping at bug-sized pellets that are flipped past them, but will undergeneralize by totally ignoring motionless bugs even when no other food source is available (Bickerton, 1990:27-28).

Likewise, jellyfish skin is very delicate. It is easily damaged by light. Thus, when the jellyfish detects that too much light is hitting it, the fish sinks to deeper (darker) waters. Is the jellyfish aware of this detection? Given the neural anatomy (or profound lack thereof) of the jellyfish, this is surely not the case. Does the jellyfish feel uncomfortable in too much light, and seeks comfort? This is speculative, but highly unlikely. It is ultimately impossible, of course, to determine if a precise point at which a creature's mind is *aware* of its own behavior or reasons for it. Though it would be ridiculous to imagine that the jellyfish has any concept of things like 'skin' or 'light', or even self. The same can be said of any qualia, including color, shape, size, relative location, smell, friendliness, interestingness, and so on.

Contrary to popular belief, stimuli to different modalities is not processed solely by any one module. For instance, visual stimulus is mainly processed in the visual cortex, but occurs all over the brain (Baars & Gage, 2010:158, 170-172). Nonetheless, the impulses from the various sensory organs, as well as the cortical modules of the brain, are all essentially the same (discussions expounding on Vernon Mountcastle's neurological hypotheses Dennett, 1991:262 and Hawkins, 2005:49-52). It is merely a series of phenotypical accidents. Likewise, even Chomsky has continually held that the Language Acquisition Device (LAD) was not specifically designed *for language*, but has merely been employed *with the result of language* (Chomsky, 1975; 1980; 2002). The LAD may well be useful to conceptualize music, trance and space, among other mental tools. Also of note, in Ruth Millikan's pushmi-pullyu representation (PPR) scheme (1995), the role of linguistic intention, can be to simultaneously define expectations, as well as perform them. Though she speaks of language and utterances, there is no reason to restrict the PPR from spaces, such as art galleries, churches and court rooms, which also both signify expected behaviors, as well as serve those behaviors. In fact, it is useful as a model to reconsider the senses (including the 'sense' of space) as *potential meaning detection systems*.

3.3. Media and Mapping

Utopia is commonly described as a place, and in that place life is organized such that problems do not arise. Even if Utopia was only populated by one person, or only in the imagination, that person could not, by definition, have any conflicting thoughts or emotions. As long as Utopia is taken as a purely fictional notion, but not a goal, there is no conflict. Some conflict is *essential* to survival. In fact, conceptual conflict is central to the Piagetian model of how children come to understand the world. We must constantly construct, test, fail and revise notions. We *could* say that Utopia is not necessarily an external place, but an internal *state*, where conflicts are resolved. But Utopia is essentially a medium for expression, and not something one could point to on a map. The point being that a medium is a vehicle necessarily relative to a self/driver, but a 'map' is an externalization of something one can point to and identify as distinct from the self.

When it comes to virtual spaces, there is absolutely no significant difference between the use of the audience member's imagination to construct a library, a commute home, or a scene on the web. Media, divorced from any specific self, is at most, arbitrary. Though Walter Benjamin argued the media is crucial (1935), his collected essays stand as evidence that the media essentially does not matter. We often see messages and either take no notice of, or

cannot ascertain the media employed. Marshall McLuhan points out specific cases, such as the initial lighting of the Eiffel Tower, where 'the medium is the message' (1964:8; Marvin, 1988:158), but his examples are an insignificant minority 'in the Age of Mechanical Reproducibility' (Benjamin, 1935).

A stick is not a tool (Nye, 1996:29; Vygotsky, 1978:25). But a stick, wielded by what we consider a self, and in such a way to be considered a tool – is a tool. A tool is literally a medium, but a stick, until it is framed by a conscious organizational scheme, is meaningless noise in the environment.

4. Conclusion

When desert ants must return home after a day of foraging, they rely on dead reckoning (Shettleworth, 1998:281–284). If the ant is artificially displaced a few inches, the ant follows a path parallel to the correct one to get home, and winds up those same inches off. The ant then appears to search in vain, seemingly unable to recognize what should be familiar markings. Given the rather limited supply of reliable landmarks in the desert, and the few neurons available, this method is ordinarily an impressively economic solution. It is further reasonable to deduce that the ant conceptualizes space differently than say, primates. However, there is no privileged, 'God's-eye' (Edelman, 2004:140) perspective from which we can say that we understand what *space really is like*, and that we are not employing some economical cognitive technique.

We may know the sun does not really rise, but the truth of the matter need not be confabulated with a linguistic description of an experience that we predict also occurs for others. Whether or not something like the popular conception of space exists 'out there' is absolutely irrelevant to our discussion. What is relevant is that in order for the human brain to organize stimuli, objects are labeled in such a way as to be understood. Without this framing scheme, objects could not be distinguished from chaos. A simple illustration of this is focus, where readily observable entities are not found meaningful – until we attend to them. Thus, there are two senses of the word 'space'. Firstly, in the common usage, space is a feature not unlike the qualia of color, the existence of which being ultimately a belief. Secondly, in the Constructivist sense, space, which may bear no resemblance at all to the way we might describe the prior sense of the word, is an organizational scheme of disorganized stimuli, allowing for the strict limitations in computational abilities within the human brain. Though both of these senses have long been described, both are generally intertwined and considered a single philosophical issue.

In the end, whether we ultimately do believe a Platonist universe exists out there or not, we can conceive of this important distinction, addressing concrete functional aspects, rather than relying exclusively on theoretical and/or assumed ones, to ascertain an aspect of cognition. All things the brain does today, we paid for dearly Evolutionarily. The mind conceives of spatial-ness, cannot do so for the idealistic sake of revealing truth, but serves some functional purpose for our specie's idiosyncratic neuroanatomy.

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Biography

Judson Wright is a computer programmer. His software experiments/artwork, papers and performances have been included in galleries, stages, books and journals extensively around the world and on the web since 1996. He graduated from Brown University and has an MA from the Interactive Telecommunications Program at New York University.

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