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Subjects and Sense-Making

Preamble: the author is at home in the cognitive and language sciences and provides this contribution from some distance.

"We see with our legs", Heinz von Förster quipped (1995). He is trivially right, of course. As we walk, we reorient ourselves with respect to the surfaces around us, and with that, the flux on the retina changes. As the flux changes, so we see, now this, now that. Animals are knitted into their environments through sensory modalities and their own activity, but how that should be understood and talked about is vexed; vexed now, and vexed these last several hundred years.

With the advent of Western modernity, the edifice of time and space, made homogeneous and universal in the Galilean/Cartesian/Newtonian synthesis, had no place (literally) for the soul. Descartes famously apportioned it to an entirely distinct sphere of being, *res cogitans*. Kant made things more complex, but he left us with a transcendental ego that was nowhere to be observed, and he considered a science of psychology to be unattainable. These moves in physics, cosmology, and the philosophy of mind all preceded the development of the modern sciences of biology and psychology.

As the soul (ca. 1800) morphed into the mind (ca. 1900) and from there into the cognitive system (ca. 2000), means had to be found to interrogate sensations, perceptions, ideas, memories, and the like from a scientific standpoint. Many approaches were tried, but scientific psychology, by and large, came to view the mind as the theatre in which the senses contributed *input* that was consumed by *internal* processes of cogitation, assumed to be effected in the activity of the brain. The *output* of this pipeline was the volitional activity of the autonomous individual, which we see as behaviour. The physiological distinction between peripheral and central parts of the nervous system mapped nicely onto a distinction between input/output conduits (plumbing) and a Cartesian interiority (the mind). (Dewey 1896 provides an influential dissenting argument.) The privileged location of the brain within the safe enclosure of the skull provided a reassuring separation of subject and the world. Theologically, this gave credence to the post-Enlightenment individual, largely Protestant in stamp, who acted with complete autonomy, and who therefore bore full moral responsibility for all volitional action. Socially, it accorded with the civic notion of the individual citizen, bearer of specific individualised rights and responsibilities. As noted in the introduction, this individualisation of experience, and its positioning in an interior realm, did duty both in theories of religious experience (e. g., James

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1902), and in a secular science of psychology (e. g., Csikszentmihalyi and Larson 2014). It has become the default framing of both the subject and of experience in everyday discourse.

Two consequences of this framing of subjectivity are noteworthy. The first is a veritable hostility to movement when making any empirical observations of the subject, thereby ensuring that the many activities of daily ritualized practice, such as bead twiddling, nodding, pacing, and such are excluded from any substantive account of lived lives. The second is a blindness to the remarkable significance of joint speech (speaking identical words in synchrony), ensuring that unison speaking, which underpins many kinds of rite, ritual and prayer, but also protest and the enactment of identity in secular situations, is omitted from a scientific account of language. Both biases ensure that many of those constitutive features of everyday religious practice and everyday grounding in a familiar and shared world disappear from view, reducing accounts of religion to the enumeration of beliefs, ideologies and doctrines.

1 Hostility to Movement

A great deal of scientific work was done to shore up the view of subjective access to an exterior world through the medium of representations assembled from sensory input. Hubel and Wiesel garnered a Nobel Prize (Hubel and Wiesel 1962) for their work recording from individual neurons in the brains of cats, who, for operational reasons—the obligatory use of fine glass electrodes—had to be anaesthetized and strapped to the lab bench. When specific pattern of light and dark were projected onto the immobile retinas of the cats, intelligible activity of individual neurons was recorded. As neurons that were so monitored were selected further towards the interiority of the brain, so the apparent complexity of the relation between cat and world seemed to increase. This seminal work founded a field of computational image analysis that was construed as a model for the process of seeing (vision). The year of the Nobel Prize award, Hubel and Livingstone published a paper (Livingstone and Hubel 1981) demonstrating that pinching the tail of the cat, and thus restoring some level of conscious activity, radically changed the properties of the nerve cells, so that extrapolation from an inert inactive brain was dangerous, at best. In subsequent work, the more active the animal, the less does the brain activity admit of interpretation in this strongly representational fashion.

In the 1960s another set of experiments on cats showed something else: that self-initiated movement is essential for the development of useful vision (Held and Hein 1963). Held and Hein allowed kittens only very restricted movement op-

portunities. The kittens were examined in pairs. In each pair, one kitten (A = "active") got to move in a harness tethered to a central pillar (see Figure 1). The other kitten (P = "passive") was passively moved as the first walked. All walking took place inside a cylindrical chamber so that the visual stimulation received by both kittens was as nearly matched as possible. The kittens spent 3 hours a day in this chamber for some weeks. The A kittens developed normally by the measure of the tests employed (paw placement, response to a visual cliff, etc.). The P kittens, on the other hand, did not behave as normally sighted kittens. They had not learned the relation between activity and seeing.

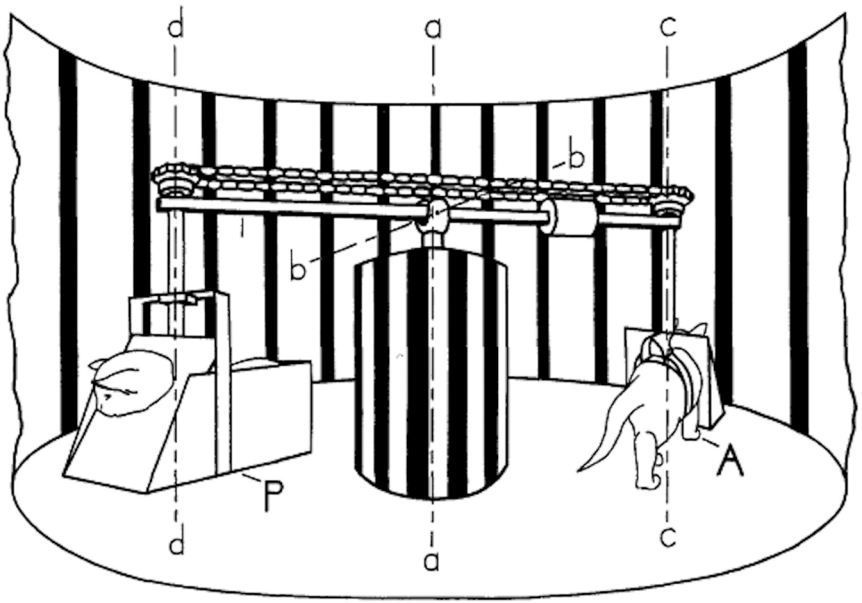

Figure 1: Apparatus for equating motion and ~~consequence~~ visual feedback for an active (A) and a passively moved (P) kitten. Held, Richard, and Alan Hein. 1963. "Movement-produced stimulation in the development of visually guided behavior." *Journal of Comparative and Physiological Psychology* 56/5: 872–876, figure 1. © American Psychological Association. No permission required: http://www.apa.org/about/contact/copyright/seek-permission.aspx

The importance of self-initiated action in grasping the world has likewise become apparent in the development of novel sensory modalities. Figure 2 shows an early sensory substitution device which requires the user to learn the association between user-generated motion and the corresponding pattern of stimulation on the skin (Bach-y-Rita 1972). At first, the user perceives the di-

rect contact with the skin, but with practice, the phenomenology changes and the system becomes a means of acting in the world, locomoting, catching objects etc. In similar vein, inverting goggles that reverse the orientation of the visual field need to be mastered through activity. After about three days of continuous activity under such circumstances, one's mastery of the sensory motor contingency of visually guided action is restored. But the reported phenomenology is one of restored capacity for action, not of the inversion and subsequent righting of an image. The relation between subject and world is now clearly seen to be mediated by activity (including the legs), and the senses can be reinterpreted as a means of uncovering opportunities for goal-directed action in a meaningful world.

Figure 2: Early sensory substitution device. Camera attached to the eyeglasses transmits to a needle array on the belly. Graphic by the author, after Bach-y-Rita (1972). Reproduced with permission of Elsevier Publisher, UK.

But experimental psychologists still insist that their (experimental) subjects not move. Stimulus presentations are routinely preceded by a "fixation cross", to align the head (Figure 3). Most forms of neuroimaging (EEG, PET, MEG, fMRI) share this feature in common: the (experimental) subject is not allowed to move. Heads are clamped, bodies immobilized. Only under such conditions can the Cartesian subject be delineated in an imaginary interior.

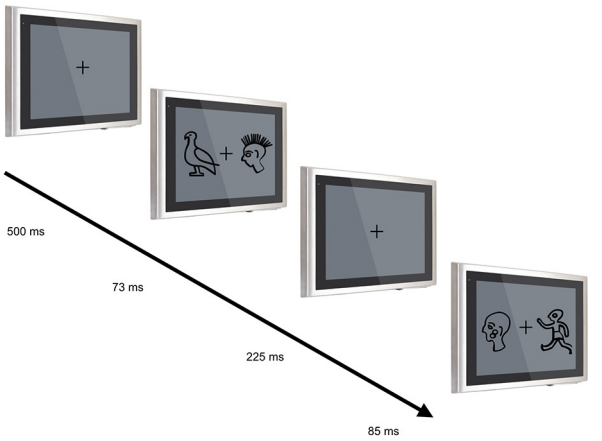

Figure 3: The ubiquitous fixation cross as used in very many cognitive psychology experiments. Graphic by the author.

A survey of standard psychology syllabi reveals that almost no attention is paid to movement as something meriting study, despite the aspirations of the discipline to be relevant to understanding behaviour, which is cast as a distal output. Yet there is a well-developed science of movement, with over a hundred years of converging empirical results that do not contribute to, or support, the interpretation of movement as a controlled output of a central executive (Cummins 2010; Latash 2008). Contemporary cognitive psychology it seems is not merely insensitive to the role of movement in grounding the relation of a person to their world, it is positively hostile to it.

2 Absence of Joint Speech

The second notable absence brought about by persistent reliance on something like the Cartesian *cogito* is evident in the scientific understanding of language. The structuralist and generative schools of linguistics that together constitute the scientific approach to language in the first and second halves of the 20th Century, respectively, both treat of human communication as the passing of encoded messages from one unobservable interiority or mind to another. This immediately serves to make human-to-human communication different in kind from all other forms of animal communication and vocalization. Both approaches rapidly abstract from the messy situated business of live interaction to the abstract sys-

temic perspective that studies *langue* but not *parole*, or *competence* but not *performance*. This leap from the concrete and situated to the abstract and symbolic necessarily leaves much behind, including all consideration of the voice as privileged modality, and the embedding of vocal activity in many practices of daily life, from the mundane to the sacred.

Conspicuously absent from *all* scientific work on language is that form of vocal activity found when multiple people say the same thing at the same time. I have dubbed such speech *joint speech* for no term of art existed that made such speech a theme for empirical inquiry (Cummins 2009, 2013, 2014). This vocal activity necessarily evades the gaze of the Cartesian linguist, for it makes no sense as message passing. There are not necessarily distinct roles for speaker and listener, as everybody is both simultaneously. The speech is frequently characterized by a great deal of repetition, as in practices of prayer (rosary, kirtan) but also in the repeated chants of protesters and sports fans. The texts spoken are authored elsewhere. They are frequently organised as call and response, and this may find formal integration into the structures of the liturgy. Antiphonal structures, that seem to indicate collective responses that betoken generalised assent and collective uttering, are found as far back as written records stretch, to the ancient Israelites and Sumerians, and collective chanting is the manner in which the Vedas were preserved over many centuries. All human societies seem to chant in unison, yet this activity becomes invisible if we characterise language solely as the passing of encoded messages.

Attention to the many forms of joint speech found in daily life, from the solemn recitation of the *credo* to the familiar rite of singing Happy Birthday (for joint speech admits of no separation between speech and music) brings some hitherto neglected themes to the fore. In place of representation and reference, they encourage us to attend to liveness and co-presence. The commerative silence that marks public grief after tragedy may be seen as a limiting case, in which words are reduced to a minimum of zero, but the participatory collective enacts a common purpose. The words spoken are not infrequently in languages other than those used in daily life, and so it becomes important to treat of lexical content rather differently; often there is little point in asking what the words "mean", as this may not even be clear to the speakers. Rather, we learn far more by observing and understanding the *context* in which such behaviour happens. This serves to pick out a group of highly charged acts of social significance, such as the swearing of oaths of allegiance and the demands of an outraged public. It brings to the fore activities that must be participated in, and that cannot be removed to the page or to recordings. Where conversation may be understood as a dialogical negotiation of common ground, the chorusing found in overt synchronised statements of belief represent a collective and shared posi-

tion with respect to the world. Joint speech, in short, does not fit the Cartesian mould, but reveals very much about the collectives who speak as one.

3 Subjects, Singular and Plural

Scientific psychology, rooted as it is in a strongly Christian world-view where the autonomy of the individual person is paramount, has never been comfortable with anything other than one mind/soul per person, and the mind/soul has been the domain of the subject. But an older, less-restrictive view that can be traced back to Aristotle, sees the subject simply as the bearer of intentional predicates. Subjects in this sense arise when we can point to a distinguishable entity to whom we can attribute beliefs, sentiments, desires, and the like. A subject, on this view, is an active entity whose activity becomes intelligible when it is viewed as teleological, or serving its own self-generated ends, survival being paramount among them. This view of what a subject is extends naturally to collective subjects, and thus to the subjects of joint speech.

The vocabulary of enaction, introduced in the 1991 volume *The Embodied Mind* (Varela at al. 1991) sought to provide a vocabulary that could address many shortcomings of the human sciences that were inherited by the Cartesian/Kantian tradition. The book self-consciously tried to introduce a Buddhist sensibility to cognitive science (though subsequent elaboration of the themes of the book have frequently played down the Buddhist lineage). Importantly, it approached the relation between subject and world not as distinct entities, but as co-defining domains that arise in activity. Space precludes any kind of comprehensive account (see Stewart et al. 2010 for a recent compilation), but two features of an enactive account are here relevant.

First, in an enactive account, the meaningful encounter *by* a subject *of* a world arises *through* activity in a specific environment. This way of treating of subjects does not allow for separation of subject and world; they are co-arising just as the surface of a bowl simultaneously gives rise to an inside and an outside. It is in the activity of the subject that a world of significance is enacted. This broad framing suggests that it might provide a profitable way to approach the (vain) repetitions found in prayer, and the associated gestures and acts that are threaded into the structures of ritual and liturgy (and sports terraces, schoolrooms, courtrooms, and beyond). It suggests that much of the activity we routinely find in the context of religious practice (as well as related contexts) might become intelligible precisely by attending to the small acts that provide a sensorimotor embedding of the individual person within a collective. It is in the aesthetics of rite, ritual, and of the grounding of everyday life that we

might discover and make intelligible much of the shared world of the participants.

Secondly, the approach taken aspires to providing a vocabulary that works at many levels, from cell to society (Froese and Di Paulo 2011). Although most work in the field concerns itself with the individual multicellular organism, the basic concepts were developed in consideration of the kind of organization found in single cells, and it extends naturally beyond the individual to collective subjects, exhibiting collective intentionality through their collective practices.

And so it seems that we must appeal to a wide variety of subjects if we are to understand our own sense-making, our diversity, and our concerns. An ontological light touch seems appropriate, even necessary, if we are to avoid a premature commitment to a *subject* rooted in one religious tradition or another. This is contentious ground, for sure, but attention to the role of the senses, the embedding of action, and the manner in which meaning arises for many kinds of subjects, might just help us avoid some of the more obvious pitfalls. The aesthetics of religion then does not appear to me to be a new niche area, but a sorely necessary corrective for the negotiation of stories of our being that might garner consensus.

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