

PRAGMATISM AND EMBODIED COGNITIVE SCIENCE

Roman Madzia
Matthias Jung
(Eds.)

DE GRUYTER HUMANPROJEKT 14



Matthew Crippen

Dewey, Enactivism and Greek Thought¹

Abstract: In this chapter, I examine how Dewey circumnavigated debates between empiricists and *a priorists* by showing that active bodies can perform integrative operations traditionally attributed to “inner” mechanisms, and how he thereby realized developments at which the artificial intelligence, robotics and cognitive science communities only later arrived. Some of his ideas about experience being constituted through skills actively deployed in cultural settings were inspired by ancient Greek sources. Thus in some of his more radical moments, Dewey refined rather than invented the wheel, and I suggest that prominent embodiment figures have done the same, Dewey having anticipated them, particularly Noë and his version of enactivism. I urge that cognitive science may progress into relatively unexplored territory by traveling Dewey’s historically sensitive path.

1 Introduction

In this paper, I argue that enactivism has antecedents in Deweyan pragmatism partly via Dewey’s appropriation of ancient Greek thought. Consequently the radicalness of Dewey’s ideas, which are advanced by the measure of contemporary cognitive science, derives partly from his historical sensitivity. This suggests some variants of enactivism and pragmatism are, as James put it in the subtitle of his (1907) book *Pragmatism*, “A New Name for Some Old Ways of Thinking.”

I begin by reviewing Dewey’s history of concepts of experience, and how he believed biology was resuscitating ancient notions. Next I elaborate on Gallagher’s (2009) claim that Dewey anticipated enactivism: the view, in the words of its founders, “that cognition is not the representation of a pregiven world [...] but rather the enactment of a world and a mind on the basis of a history of the variety of actions that a being in the world performs” (Varela, Thompson & Rosch 1991, 9). In broad strokes, I examine how Dewey circumnavigated debates between empiricists and *a priorists* by arguing that active bodies in environments can perform integrative operations traditionally attributed to “inner” mechanisms, and how Dewey foresaw developments only later realized by the AI, ro-

¹ I would like to acknowledge the help of my former research assistant, Salma El-Galley, on this chapter.

botics and cognitive science communities. I focus on striking parallels between Dewey's account and Noë's (2004, 2009; O'Regan & Noë 2001) version of enactivism; and, with other researchers (e.g., Lakoff & Johnson 1999; Rockwell 2005; Menary 2007; Gallagher 2009; Fingerhut 2011; Solymosi 2011, 2013; Skorburg 2013; Madzia 2013), strive to show that Dewey's work is generally in the spirit of current embodied approaches to cognitive science. I conclude by stressing that Dewey knowingly drew on ancient ideas. He refined rather than invented the wheel, and stated so. I suggest that enactivists and most prominently Noë have done the same, albeit less knowingly, and that enactivists might progress their field into relatively unexplored areas by following a historically sensitive path.

2 Dewey's history of experience

Dewey observed that empiricists and rationalists “do not thoroughly agree among themselves, but they agree that experience never rises above the level of the particular, the contingent, and the probable” (Dewey 1920, 78). In other words, both have skeptical attitudes towards experience, only the former hold nothing else is available to build knowledge.

Dewey wanted to resuscitate the status of experience, and in doing so, he returned to ancient ideas, observing that “the key to the matter” is curiously found in the Greek notion that “experience [is] itself a product of experience” (Dewey 1920, 79), which is to say, having experience means being experienced or skilled. Among much else, the Greek word *Experiri* “means try, to put to the test” (Lennon 1960, 316), and in Plato and Aristotle, Dewey elaborated, “you find experience conceived as something primarily practical in nature,” namely, “the association of experience with the kind of intelligent skills that is formed in the arts by the accumulation of the trial and error method” (Dewey 1910 – 1911, 133), and therefore accumulated from the past. This ancient account “agrees very closely with what the modern psychologist knows as the method of learning by trial and error as distinct from the method of learning by ideas,” and “[i]f another conception of experience is now possible, it is precisely because the quality of experience as it may now be lived has undergone a profound social and intellectual change from that of earlier times” (Dewey 1920, 79).

Elaborating on the radicalness of the shift from pre-Modern to Modern concepts of experience, Dewey explained that in the Modern era, “instead of being the representative factor that binds man to the past,” experience “is the liberating factor; it is not the memory of the old, but the perception of the new, which vouchsafes, conveys itself free from the distortions which intellect tends to intro-

duce” (Dewey 1910–1911, 133–134). Modern philosophers “usually had a critical purpose in mind,” and therefore rejected or devalued ancient notions of experience. We see this prominently in Descartes, who expressly blamed “custom” for many of our delusions. We also see it in Hume, who, while equating experience with sense impressions, and while acknowledging a role for custom, also used the latter to explain why knowledge is little more than a conditioned response.

Dewey believed “[t]he effect of the development of biology has been to reverse” the standard stimulus-response picture of human mind that became dominant in the Modern era (Dewey 1920, 84), and to bring about a partial return to ancient concepts of experience. James’ psychology, for example, was very much influenced by biology, especially Darwinism (see Crippen 2010, 2011), and his idea that experience is what remains after selective interests chisel away at sense impressions recalls Aristotle’s claim that experience arises from accumulation of incidents with important regularities reinforced and combined. As Dewey said:

[In] modern biology— experience concerned with life —[it is] impossible to think of life as primarily a way of knowing. [It] is primarily a mode of doing and suffering, i. e., passive, not from the standpoint of knowledge, but of doing, suffering disappointment, defeat. (Modern science tends in the same direction.) You get a certain principle of organization, you get away from the Humeian [notion]: every distinct perception [is] a distinct existence. Life has a certain structure, not a cognitive structure, but one which is a correlate of the function, i. e., continuity (Dewey 1910–1911, 134).

In *Reconstruction in Philosophy*, he added: “In order that life may persist, [its] activity has to be both continuous and adapted to the environment. This adaptive adjustment, moreover, is not wholly passive; is not a mere matter of the moulding of the organism by the environment” (Dewey 1920, 84).

Dewey, as a matter of course, nearly always insisted on establishing “working connections between old and new subject-matters” (Dewey 1929, viii). Dewey would do the same in developing his concept of experience. He urged that “[e]xperience itself has its retrospective, conservative, aspect,” as the Greeks suggested, and which incidentally supplies a reason why Plato and Socrates, in their roles as social critics, downplayed its epistemic value. He also stressed the “projective, prospective aspect” of experience, in line with the Moderns. “Genuine intelligence is the function of adjustment of the two aspects to each other [...]” (Dewey 1910–1911, 135). According to Dewey’s (1920) formulation, therefore, experience is “an affair primarily of doing” in which the living creature “does not wait passive and inert for something to impress itself upon it from without.” Rather, it “acts in accordance with its own structure, simple or complex, upon its surroundings,” and “changes produced in the environment

react upon the organism and its activities” in turn. “The living creature undergoes, suffers, the consequences of its own behavior. This close connection between doing and suffering or undergoing forms what we call experience” (Dewey 1920, 86). Thus to use a simple example, a blind woman, in pushing her cane into the world, meets resistance and thereby undergoes consequences of her action. Out of this meaningful interplay of doing and undergoing, perceptual experience of the world emerges.

3 Going out to receive

Dewey’s account of experience fits with current embodied accounts of cognition, and the corrections they suggest for older mainstream views. Many might assume, for example, that monarch butterflies—famous for their multigenerational migrations—possess complex internal cognitive maps when they only have pin-head sized brains, and interactions of bodies with complex environments explain much of their behavior, as when mountain ranges funnel them towards their destination. Noë (2009) and others such as Barrett (2011) have suggested we similarly err when locating the seat of our being inside our heads. As Noë indicated in the title of his 2009 book, this is wrong because we are in fact “Out of Our Heads.” “[P]erception,” he said elsewhere, “is not a process in the brain” (Noë 2004, 2), but “a mode of skillful exploration of the world” (Noë 2004, 194).

Noë thereby mirrored Dewey (1916), who a century earlier and building on ancient notions wrote that cognition “is not an event going on exclusively within the cortex [...]. It involves the explorations by which relevant data are procured and the physical analyses by which they are refined and made precise[.]” Seen thus, “[h]ands and feet, apparatus and appliances of all kinds are as much a part of it as changes in the brain” (Dewey 1916, 14). So without denying inner mechanisms of mind or brain, Dewey reasoned that bodily actions in the world already account for much of the structure of experience (see Dewey 1920, 84–92). Merging the language of rationalist and empiricist schools that had focused on the inner realm, Dewey declared that perception is “an act of the going-out of energy in order to receive” (Dewey 1934, 53). Thus when fingers go out to caress a lacquered woodcarving, smoothness and shape, not to mention the capacities of the hand, are realized as effects and in perception, whereas a cat’s digging claws realize sinewy toughness, suggesting that the difference between the perceptual worlds of the two is no mere mental or neural variation. The carving, as Merleau-Ponty said, “utilizes the time occupied by our tactile exploration or modulates the movement of our hand” (Merleau-Ponty 1945, 315), thereby patterning a perceptual experience.

In the case of vision, Dewey similarly reasoned that “seeing involves the co-operation of motor elements” (Dewey 1934, 53), that is, coordination around things in the world. Of course, he granted we sometimes look without overtly acting; yet we also spend most of our waking life handling and ambulating, which means synchronizing actions around objects and settings. Here and elsewhere, said Dewey, “[m]otor and sensory structure form a single apparatus and effect a single function” (Dewey 1934, 255), indicating that even when there is no overt action, seeing remains “an affair of readiness on the part of motor equipment” (Dewey 1934, 98). Indeed, if we did not see things so, we would bump, bumble and be functionally blind. Thus we see contours of bottles as things we can handle, and hallways as spaces for movement. When we see shape and line, we see “ways in which things act upon one another and upon us; the ways in which, when objects act together, they reinforce and interfere” (Dewey 1934, 100–101). Dewey accordingly insisted that when we see an object “[i]t is not just the visual apparatus” that becomes active, “but the whole organism” (Dewey 1934, 122; also see 100).

It is for comparable but more specific and carefully elaborated reasons that O'Regan and Noë proposed in their landmark 2001 article that visual perception is “*the activity of exploring the environment in ways mediated by knowledge of the relevant sensorimotor contingencies*” (O'Regan & Noë 2001, 943), so that “seeing is a way of acting” and “exploring” (O'Regan & Noë 2001, 939). The point can be demonstrated by considering devices employed by individuals with sensory impairment. For the blind, as Merleau-Ponty observed, a cane ceases to be an object; through “exploration of things,” which develops into skilled action, it becomes “an area of sensitivity, extending the scope and active radius of touch, and providing a parallel to sight” (Merleau-Ponty 1945, 143). Noë (2004) provided a more sophisticated illustration, citing Bach-y-Rita's (e.g., 1983; 1984; and Kercel 2002) tactile-vision substitution system. Here a camera mounted on the head transmits stimulation through vibrations on skin or electrical current on the tongue. Individuals who *actively explore* their surroundings come to develop quasi-vision in a relatively short time. They can identify positions and numbers of objects and grasp them. They even experience illusions normally associated with vision.

On such grounds O'Regan and Noë (2001) concluded that “[v]isual experience rests on know-how, the possession of skills” (O'Regan & Noë 2001, 946). Noë elaborated:

Like touch, vision is *active*. [...] You and your eyes move around the scene the way you move your hands around the bottle. As in touch, the content of visual experience is not given all at once. We gain content by looking around just as we gain tactile content by moving our

hands. You enact your perceptual content, through the activity of skillful looking (Noë 2004, 73).

Compare this to remarks made by Dewey:

As we manipulate, we touch and feel, as we look, we see; as we listen, we hear. [...] The eye attends and reports the consequence of what is done. Because of this intimate connection, subsequent doing is cumulative and not a matter of caprice nor yet of routine. In an emphatic artistic-esthetic experience, [which means skilled, among other things,] the relation is so close that it controls simultaneously both the doing and the perception (Dewey 1934, 49–50).

Because of this, Dewey (see Dewey 1934, 175) and Noë (see Noë 2004, 73) rejected camera snapshot models of vision, arguing instead that perception develops in time with unfolding actions.

Noë's enactive sensorimotor theory of course "proposes not that perceiving is *for* acting, but rather that perceiving is constituted by the exercise of a range of sensorimotor skills" (Noë 2004, 90). Dewey, while arguing perceptual organs are vehicles for action, also held that there is no perception without joint action and coordination around things in the environment. He wrote:

Nothing is perceived except when different senses work in relation with one another except when the energy of one "center" is communicated to others, and then new modes of motor responses are incited which in turn stir up new sensory activities. Unless these various sensory-motor energies are coordinated with one another there is no perceived scene or object. But equally there is none when—by a condition impossible to fulfill in fact—a single sense alone is operative. If the eye is the organ primarily active, then the color quality is affected by qualities of other senses overtly active in earlier experiences. In this way it is affected with a history; there is an object with a past. And the impulsion of the motor elements which are involved effects an extension into the future, since it gets ready for what is to come and in a way predicts what is to happen (Dewey 1934, 175).

Speaking in terms Dewey would have appreciated, O'Regan and Noë also observed that "seeing involves testing the changes that occur through eye, body, and attention movements" (O'Regan and Noë 2001, 947) and therefore "activity on the part of the animal as a whole" (Noë 2004, 2).

If perception—visual and otherwise—is, as Noë urged, "a mode of activity on the part of the *whole* animal" (Noë 2004, 111; emphasis added) whereby the organism coordinates with its surroundings; and if the manner in which "things look, smell, sound, or feel (etc.) depends, in complicated but systematic ways, on one's movement" (Noë 2004, 109), then it follows that perception occurs through modes other than but also including traditional categories of sense. In-

deed, Dewey urged that motor, intellectual and emotional capacities are also involved (see Dewey 1934, 22, 53; also see Crippen 2014, 40–41). Consider the experience of eating popcorn, and how it mobilizes the tongue, jaw, hands, eyes and ears that hear that crunch and skin that feels its warmth, while also being part of cultural rituals and a socially integrative medium within movie theaters. This explains why a liquid popcorn stimulating the same excitations on taste receptors has little appeal. This also helps account for Zampini and Spence's (2004) finding that chips seem extra crispy when people hear crackling, for food is crispy not solely because it fragments easily, but also because it has a certain a look, sound and manner of mobilizing the jaw and tongue—an overall way of synchronizing sensitivities and actions. As Dewey (1926) wrote in an example about painting that could apply also to eating, jogging, skiing and numerous other activities: “[A]n integration is effected in the total set of organic responses; eye-activities arouse muscular activities which in turn do not merely harmonize with and support eye-activities, but [...] evoke further experiences,” for example, by directing attention, posture and gaze. “Moreover, as in every adequate union of sensory and motor actions, the background of visceral, circulatory, respiratory, functions is also consonantly called into action” (Dewey 1926, 122). Thus the experience of jogging or skiing, especially if carried to an aesthetic level, is highly integrated. Interactions with the trail fall into rhythmic unity and consequently experience too. More broadly, the experience hangs together like a narrative, with twists and turns in the trail introducing tension and repose, and the view reached after a strenuous climb involving increased heart rate, building pressure and then relaxation that follows from climax.

Dewey maintained that absent “interaction between the total organism and objects”—interaction in which doings and undergoings synchronize around objects and thereby become members of a “single act”—“[objects] are not perceived” (Dewey 1934, 54; also see 58–59). And, indeed, we experience food and ski trails through just such a joint mobilization of capacities. Here hands, eyes, tongue, heart and other organs are “instruments through which the entire live creature, moved and active throughout, operates” (Dewey 1934, 50); and here “an organized body of activities, including the motor elements [, is] necessary for full perception” (Dewey 1934, 256).

4 Brainless calculation and integration in AI, robotics and humans

For decades, psychologists have argued that “evidence indicates that as compared with consciously controlled cognition, the nonconscious information-acquisition processes are incomparably faster and structurally more sophisticated” (Lewicki, Hill & Czyewska 1992, 796). Part of the explanation seems to be that many complex processes are enacted through non-neural bodily structures, which perform “complex calculations by virtue of interacting with the environment” (Long 2011, 104). Or as Clark put it, many “computational ... operations are implemented” through bodily action, meaning “operations are not in the neural system alone but in the whole embodied system located in the world” (Clark 2008, 14).

In line with this idea and again attributing its seeds to the ancients while anticipating developments in AI, robotics and cognitive science, Dewey urged that before inner mental mechanisms show up, “[e]xperience carries principles of connection and organization within itself” by virtue of arising out of “adaptive courses of action, habits, active functions, connections of doing and undergoing” and “sensori-motor co-ordinations” (Dewey 1920, 91). Hence, he explained, “[s]ome degree of organization is indispensable to even [...] an amoeba” (Dewey 1920, 91). It must interact with its environment, else perish. Yet it cannot do so any way whatever. Its locomotive powers, its capacity to move materials in and out of itself, its shape and size all limit its possibilities of action. So too do the materials it encounters. Consequently its activity has “organization,” “continuity in time” and “reference to its surroundings” (Dewey 1920, 91; cf. Lakoff & Johnson, 17–19), and therewith coherence and even the basic appearance of intentionality. Thus, as Noë put it, even with unicellular life “we find a subject and an environment, or an organism and a world. The animal, crucially, has a world; that is to say a relationship with its surroundings” (Noë 2009, 40). Hence “the life of the bacterium is not hidden within it.” Its life “is a dynamic in which the bacterium, in its environmental situation, participates. And so it is for consciousness, more generally” (Noë 2009, 43; also see Thompson 2007, 74–75).

In recent decades, the artificial intelligence and robotics communities have made similar realizations, as with Herbert Simon’s (see Simon 1996, 51) well-known ant example where the complexity of the ant’s movement is a function of the complexity of the surface over which it strides. Dewey and Simon’s observations about the amoeba and ant connect to recent work by John Long, who in a 2011 book recounted experiments involving simple light seeking robots he called

Tadros. Long varied the robots' tail stiffness, allowing them to compete in a kind of evolutionary game. He reported that they developed "better feeding behavior than their parents had—in a real sense, they got smarter. But [...] they did so by evolving their bodies, not their brains" (Long 2011, 95). Without claiming that his robots are going to win Nobel Prizes, Long insisted "that Tadros—by virtue of being goal directed, autonomous, and physically embodied—have intelligence" (Long 2011, 95–96); and Long, in line with Noë, who argued that "[m]eaningful thought arises only when the whole animal is dynamically engaged with the environment" (Noë 2009, 8), predicted further that if AI is ever to achieve human-like intelligence, "the AI has to be an embodied robot, and human-level intelligence is only achievable with a body and a brain" (Long 2011, 97).

In situations like this "part of the 'processing' is done by the dynamics of the agent-environment interaction, and only sparse neural control"—or the electronic CPU analogue—"needs to be exerted when the self-regulating and stabilizing properties of the natural dynamics can be exploited" (Pfeifer et al. 2007, 81). The body, Long explained, "[b]y virtue of being in the real world, interacting with real water, automatically solves [...] intensely complex" physical problems (Long 2011, 104), just as the human knee does when interacting with contours of terrain (Chemero 2009, 27). Long went on to say: "In response to the tail's coupled internal and external force computations, the body, to which the tail is attached, undergoes the yaw wobbles—recoil and turning maneuvers." Its body accordingly calculates and performs patterns of "acceleration that interact to produce the overall motion of the Tadros according to Newton's laws of motion (Long 2011, 104).

Of course, this is not to argue that amoebas or Tadros enjoy traces of conscious experience. This way of thinking, quipped Dewey, would be akin to concluding that because plows "originated from some pre-existing natural production, say a crooked root or forked branch, the latter was inherently and antecedently engaged in plowing" (Dewey 1925, 282). The point, rather, is that many of the integrative and calculative acts traditionally located in the inner mental realm are literally, which in this case means physically, carried out in the world. So while not denying either the existence of private consciousness or importance of the brain, Dewey—along with others such as Merleau-Ponty, Chemero, Thompson, Clark, Noë and Long—stressed that whatever else experience involves, "[t]he first great consideration is that life goes on in an environment; not merely *in* it but because of it, through interaction with it. No creature lives merely under its skin" (Dewey 1934, 13).

Though unfamiliar with Dewey and obviously Noë, Merleau-Ponty provided a nice summary of all this when he wrote that "[a]part from the probing of my eye or my hand, and before my body synchronizes with it"—the sensible object

is a “beckoning” (Merleau-Ponty 1945, 214), which is to say, an invitation to actualize available possibilities. In the words of Dewey, “[i]t is clue in behavior, a directive factor in adaptation of life in its surroundings.” “It is an invitation and inducement to act in a needed way” (Dewey 1920, 87)—“needed” because there are always limits; we cannot act in any way whatever. Thus while we “project” ourselves into the world by pushing into and otherwise probing it (see Dewey 1917, 7), we cannot perceive it in any manner whatever because we cannot act in any manner whatever. Whereas we can roll a bottle between our palms, the same action and hence experience is impossible with cinderblocks. Differences perceived here accordingly involve “a relation between organism and environment,” but this, wrote Dewey, is no basis for “proclamations of the agnostic ‘relativity’ of knowledge”; it is “an argument for the ultimately practical value of distinctions.” Distinctions “are *differences* made in what things would have been without organic behavior—differences made not by ‘consciousness’ or ‘mind,’ but by the organism as the active center of a system of activities” (Dewey 1908, 45; cf. Hurley 1998, 333). Thus we are, to repeat Noë’s refrain, outside of our heads. Yet according to Dewey, this is inherent in Ancient Greek notions resuscitated by developments in biology, which is why Noë’s variant of enactivism, like Dewey’s account, appears to be a new name for an old way of thinking.

5 Experience, culture and history

From what has been said, it should be clear that Gallagher rightly noted that Dewey’s “concept of cognition is not far removed from what today is called ‘enactive cognition’.” Gallagher added that “one thing that Dewey clearly emphasizes and that is all but missing in some discussions of the enactive approach [...] is the fact that cognition is always socially situated” (Gallagher 2009, 38). Dewey, for example, observed that

[i]f we start with the traditional notion of mind as something complete in itself, then we may well be perplexed by the problem of how a common mind, common ways of feeling and believing and purposing, comes into existence [...]. The case is quite otherwise if we recognize that [...] we must start with grouped action, that is, with [...] interaction among individuals (Dewey 1922, 61).

Decades later and nearing the end of his life, Dewey (c. 1951) went on to lament that “Culture and Nature” might have been a better title for his *Experience and Nature* (1925) because so many had misunderstood what he meant by the term “experience.” In these final sections, I will sketch Dewey’s reasons for equating experience to culture, and discuss how it relates to and aptly summarizes his

views regarding situated cognition, as well as connecting him to both recent and ancient thought, while also supplying future directions.

Drawing on Gibson's (1979) theory of affordances, Noë argued that the way objects limit and pattern movement reveals the shape of the object. Generalizing to vision, he further wrote that "[t]o learn how things are from how they look is to learn that the environment structures one's possibility of movement. It is to discover the structure of sensorimotor contingencies" (Noë 2004, 103). And in the same way activities of hands, mouths, tongues and eyes coordinate around things such as beer bottles and therewith form perceptual experiences, an entire weekend and therewith an experience, culture or world of revelry may organize around bottled beer. So too may the agricultural, industrial and commercial activities, not to mention the physical space, of a beer-producing town. Martin Heidegger noted that "the Old High German word *thing* means a gathering to deliberate on a matter under discussion, a contested matter" (Heidegger 1949, 172), and therefore a matter of concern; and in the just mentioned examples, life activity gathers around a concern for particular things. Heidegger thus suggested that worlds form around things. In *Grapes of Wrath*, John Steinbeck offered an instructive example of this. "In the daylight," he wrote, Great Depression migrants

scuttled like bugs to the westward; and as the dark caught them, they clustered like bugs near to shelter and to water. [...] Thus it might be that one family camped near a spring, and another camped for the spring and for company, and a third because two families had pioneered the place and found it good. And when the sun went down, perhaps twenty families and twenty cars were there. [...]

Every night a world created, complete with furniture—friends made and enemies established; a world complete with braggarts and with cowards, with quiet men, with humble men, with kindly men [and laws and rules on conduct, as Steinbeck later added]. Every night relationships that make a world, established (Steinbeck 1939, 264–265).

Steinbeck went on to say that "[a] certain physical pattern is needed for the building of a world" (Steinbeck 1939, 266). In his example, this included objects of concern such as "water, a river bank, a stream, a spring, or even a faucet unguarded. And there is needed enough flat land to pitch the tents, a little brush or wood to build the fires," and more besides (Steinbeck 1939, 266–267).

Steinbeck's description illustrates Dewey's notion that experience is equivalent to culture (c. 1951, 361–363; also see 1920, 92; 1922–1923, 351)—"culture" here understood as embodied patterns of activity within communities of interrelated agencies and things, patterns that constitute both our worlds and experiences, as when we talk about the "French experience," "culture" or "world," or the "world" or "experience of parenthood." This concept of experience is in

fact very old, as Dewey well recognized. Plato, for instance, sometimes understood experience as sedimented customs (see *Laws* 720a; also see Dewey 1920, 92), and a similar notion can be drawn from Aristotle's view that experience comes from accumulated memories (see *An. Post.* 99b35–100a8; *Met.* 981a7–9).

Expanding on ancient views and echoing more recent scholars such as Hubert Dreyfus (2003), Dewey observed that the Greeks lacked introspective psychology and even conceptions of mental acts (Dewey 1910–1911, 52). For the ancients, Dewey elaborated, “the ultimate standard was custom—what had to be done. That meant that things were learned by apprenticeship; the things they learned were the things to do” (Dewey 1910–1911, 32). Their concept of experience fit with this. “Experience [...] signified a store of practical wisdom, a fund of insights useful in conducting the affairs of life.” So conceived, “experience is exemplified in the discrimination and skill of [...] good [artisans]” (Dewey 1925, 354).² Given that we almost invariably become skilled or experienced in the context of communities, and there are cases in which we use the words “experience” and “culture” interchangeably, it is not difficult to see how Dewey came to identify the two. These connections are suggestive in the context of enactive theory, which follows Dewey—and to some extent the ancient Greeks—in holding that perceptual experience is constituted through skilled acting.

Dewey's notion that experience is equivalent to culture bears striking resemblance to ideas of the Russian developmental psychologist Lev Vygotsky, a contemporary of his commonly cited in today's embodiment literature, who emphasized the blurring of the individuals with their social worlds (see Barrett 2011, 62). In *Human Nature and Conduct* Dewey noted that “each person begins a helpless, dependent creature” (Dewey 1922, 62), and added in *Reconstruction in Philosophy* that

[...] the contacts of the little child with nature are mediated by other persons. Mother and nurse, father and older children, determine what experiences the child shall have; they constantly instruct him as to the meaning of what he does and undergoes (Dewey 1920, 92).

Then, summing up, he wrote:

2 If Aristotle is to be trusted, then Dewey—while a sensitive reader of the ancient Greeks—oversimplified when he suggested that ancient Greeks equated experience (*empeiria*) to art (*tekhnē*), for Aristotle's *Metaphysics* (981a–9) clearly differentiates between the two. Yet Dewey (c. 1910–1911) also appears to have been aware of this since he said: “The Greek *technē* [...] covered Knowledge and Skill. It meant intelligent skill—i.e., skill directed by knowledge” (Dewey 1910–1911, 47–48).

[t]here is doubtless a great mystery as to why any such thing as being conscious should exist at all. But [...] there is no mystery in its being connected with what it is connected with. [...] And by this is meant both that it will be shared by those who are implicated in the associative custom, or more or less alike in them all, and that it will be felt or thought to concern others as well as one's self (Dewey 1922, 62).

This view, which has received empirical support in the studies of Colwyn Trevarthen (e.g., 2011) showing that infant and parent are coupled units, was in turn echoed by Noë, who observed that “[c]hildren are not separate; they are not observers; they are regulated by their mothers’ soothing or alerting tones, eye contact, gestures, and touch. A mother is literally one of the structures constituting a child’s psychological landscape” (Noë 2009, 31).

He further observed that if “[l]anguage, tools, and collective practices make us what we are,” then we have “no reason to suppose that the critical boundary is found in our brain or skin” (Noë 2009, 67–68). Indeed, “our cognitive powers require for the very exercises the existence of a sociolinguistic environment” to the extent that “language is itself socially manufactured and shared by linguistic communities.” Seen accordingly, [o]ur minds cross out of the skull and get supported by shared sociolinguistic scaffolding” (Noë 2009, 88).

Dewey’s thinking, as stated, developed in the context of ongoing efforts to circumnavigate the debate between *a priorist* and empiricist psychologies (e.g., 1906, 469–475; 1917, 16–27; 1920, 81–91)—the debate, to put it crudely, about whether the “inner subject” imposes form on the “outer world” or vice versa. Against rationalists, Dewey (1922) argued that our ways of cognizing worlds follow from our ways of inhabiting them, from habits of action. “Reason pure of all influence from prior habit is a fiction,” he wrote. But so too are the “pure sensations” of the empiricists, for the ability “to single out a definitive sensory element in any field is evidence of a high degree of previous training, that is, of well-formed habits” (Dewey 1922, 31). In line with O’Regan and Noë’s conclusion, therefore, that “visual sensation and visual perception are different aspects of a person’s skillful exploratory activity”; and their additional conclusion that visual awareness depends on the “integration of these patterns of skillful exercise into ongoing planning, reasoning, decision-making, and linguistic activities” (O’Regan & Noë 2001, 970–971), Dewey observed that

[a] moderate amount of observation of a child will suffice to reveal that even such gross discriminations as black, white, red, green, are the result of some years of active dealings with things in the course of which habits have been set up. It is not such a, simple matter to have a clear-cut sensation. The latter is a sign of training, skill, habit (Dewey 1922, 31).

Dewey thus chided rationalists for not being empiricists, that is, for not recognizing the priority of experience; yet this is, strange to say, also why he attacked empiricists. “Our ideas,” he wrote, “truly depend on experience, but so do our sensations. And the experience upon which they both depend is the operation of habits” (Dewey 1922, 32)—in other words, skilled actions principally enacted not in our heads, but in shared cultures or worlds.

6 Future in the past

While this paper is not a critique, I am surprised at the extent to which Dewey—a leader in both philosophy and psychology—has been absent from enactive cognitive science until recently. I have heard some justify this on the basis that current researchers are doing science, and Dewey is “mere history.” However, if science is an excuse for neglecting obvious predecessors and ignoring history, then so much the worse for science. Following Dewey’s example, on the other hand, might progress enactivism into relatively unexplored areas.

Most obviously, Dewey has, in effect, written an enactive account of aesthetics that meshes with recent psychological theories describing aesthetic perception as a process whereby we rapidly assess what it is possible to do in a setting. So, for example, in the same way that some works of art have a quality that draws audiences into them, some settings entice people to penetrate deeper, as when we encounter ones with trails disappearing around bends (e.g. Kaplan & Kaplan 1989, 58). Dewey, moreover, has offered hints to how enactive theory might illuminate synesthesia, a weak point some scholars have noted (e.g., Fingerhut 2011). Dewey, with other historical figures such as Merleau-Ponty, has done this by noting the extent to which synthesis of perceptual modalities occurs through the body coordinating around things, as opposed to being a purely neurological occurrence. Because we habitually encounter things this way, Dewey urged that “[t]he eye, ear, or whatever, is only the channel *through* which a total [interaction] takes place” (Dewey 1934, 122). So while “[w]e see a painting *through* the eyes,” it is a mistake to suppose that visual “qualities as such, are central if not exclusive.” We can “perceive, by means of the eyes [...], the liquidity of water, the coldness of ice, the solidity of rocks” (Dewey 1934, 123).

Dewey, by virtue of drawing on the past, offers more besides. For instance, incorporating ancient ideas into an essentially modern psychology, he developed notions about self and morality. A civil rights activist, to consider an example, acts in but also against the world. Resisting “existing custom[s] is the beginning of individuality in mind” (Dewey 1922, 87–88), and it also shapes the direction of her life, giving it purpose and form. She cultivates a disposition by developing

habits, for habits are dispositions towards or, as Dewey wrote, “demands for certain kinds of activity; and they constitute the self” (Dewey 1922, 25). “Were it not for the continued operation of all habits in every act, no such thing as character could exist” (Dewey 1922, 38). They even underlie “will,” for they are inclinations to chase after and want certain things. Thereby the woman not only becomes an individuated self, but also an integrated one. Aristotelian and by extension Thomistic conceptions of humanity and morality are based on understandings emphasizing habits in just such ways. So in the work of Dewey and thinkers before him, arguably there are already well-developed seeds for an enactive theory of morality—another area relatively unexplored so far.

Seen as culture, experience is a historical phenomenon not merely in the sense that it unfolds in time, but also in the sense that it is a shared heritage and story of a community. While philosophers do not unanimously endorse this concept of experience, most grant that experience is a basic material upon which philosophical inquiry works, and all are centrally preoccupied with shared cultural experiences or stories. After all, the very words and concepts philosophers use and analyze only have meaning in the context of publicly owned heritages. Above all, Dewey was a philosopher of experience and by extension a historian of philosophy. By virtue of being a historian and insisting on establishing “working connections between old and new subject-matters” (Dewey 1929, viii), Dewey developed ideas that remain cutting edge today, for instance, his notion that experience is culture and that it arises through skilled acting. We can learn from Dewey’s example.

References

- Aristotle (1941). “Metaphysics.” W. D. Ross (Trans.). In: R. McKeon (Ed.). *The basic works of Aristotle*. New York: Random House, 681–926.
- Aristotle (1941). “Posterior analytics.” G. R. G. Mure (Trans.). In: R. McKeon (Ed.). *The basic works of Aristotle*. New York: Random House, 108–186.
- Bach-y-Rita, P. (1983). “Tactile vision substitution: Past and future.” In: *International Journal of Neuroscience* 19, 29–36.
- Bach-y-Rita, P. (1984). The relationship between motor processes and cognition in tactile vision substitution. In *Cognition and Motor Processes*, ed. by A. F. Sanders and W. Prinz, 150–159. Berlin: Springer.
- Bach-y-Rita, P. & Kercel, S. (2002). “Sensory substitution and augmentation: Incorporating humans-in-the-loop.” In: *Intellectica* 2, 287–297.
- Barrett, L. (2011). *Beyond the brain: How body and environment shape animal and human Minds*. Princeton: Princeton University Press.
- Chemero, A. (2009). *Radical embodied cognitive science*. Cambridge, MA: MIT Press.

- Chemero, A. (2013). "Radical embodied cognitive science." In: *Review of General Psychology* 17, 145–150.
- Clark, A. 2008. *Supersizing the mind: Embodiment, action and cognitive extension*. Oxford: Oxford University Press.
- Crippen, M. (2010). "William James on belief: Turning Darwinism against empiricistic skepticism." In: *Transactions of the Charles S. Peirce Society* 46, 477–502.
- Crippen, M. (2011). "William James and his Darwinian defense of freewill." In: M. R. Wheeler (Ed.). *150 Years of Evolution: Darwin's Impact on Contemporary Thought and Culture*. San Diego: San Diego State University Press, 68–89.
- Crippen, M. (2014). "Body phenomenology, somaesthetics and Nietzschean themes in medieval art." In: *Pragmatism Today* 5, 40–45.
- Dewey, J. (1906). "Experience and objective idealism." In: *The Philosophical Review* 15, 465–481.
- Dewey, J. (1908). "The practical character of reality." In: *Philosophy and civilization* [1931]. New York: Minton, Balch & Company, 35–56.
- Dewey, J. (c. 1910–1911 [pub. 1993]). *Philosophy and education in their relation*. transcribed from lectures by E. R. Clapp & J. J. Chambliss (Eds.). Boulder: Westview Press.
- Dewey, J. (1916). *Essays in Experimental Logic*. Chicago: University of Chicago Press.
- Dewey, J. (1917). "The need for a recovery of philosophy." In: *Creative intelligence: essays in the pragmatic attitude*. New York: Henry Holt and Company, 3–69.
- Dewey, J. (1920). *Reconstruction in philosophy*. New York: Henry Holt and Company.
- Dewey, J. (1922). *Human nature and conduct. An introduction to social psychology*. New York: Henry Holt & Company.
- Dewey, J. (1983/1922–1923). "Syllabus: types of philosophical thought." In: *The middle works, 1899–1922, vol. 13*. ed by J. A. Boydston. Carbondale and Edwardsville: Southern Illinois University Press, 352–395.
- Dewey, J. (1925). *Experience and nature*. Chicago: Open Court Publishing Company.
- Dewey, J. (1926). "Affective thought." In: *Philosophy and civilization* [1931]. New York: Minton, Balch & Company, 117–125.
- Dewey, J. (1929 [1958 reprint]). *Experience and nature*. second edition. New York: Dover Publications.
- Dewey, J. (1934). *Art as experience*. New York: Minton, Balch & Company.
- Dewey, J. (1981/c. 1951). "Portion of unfinished introduction." In: *The later works, 1925–1953, vol. 1*. ed. by J. A. Boydston. Carbondale and Edwardsville: Southern Illinois University, 361–364.
- Dreyfus, H. (2002). "Existential phenomenology and the brave new world of the matrix." In: *The Harvard review of Philosophy* 11, 18–31.
- Fingerhut, J. (2011). "Sensorimotor signature, skill, and synaesthesia: Two challenges to enactive theories of perception." In J. Fingerhut, S. Flach & J. Söffner (Eds.). *Habitus in habitat III: synaesthesia and kinaesthetics*. New York: Peter Lang, 101–120.
- Gallagher, S. (2009). "Philosophical antecedents of situated cognition." In: P. Robbins & M. Aydede (Eds.). *The Cambridge companion of situated cognition*. Cambridge: Cambridge University Press, 35–52.
- Gibson, J. J. (1979). *The ecological approach to visual perception*. Boston: Houghton-Mifflin.
- Heidegger, M. (1949). "The thing". Albert Hofstadter (Trans.). In: *Poetry, Language, Thought* [1971], New York: Harper & Row, 163–180.

- Hurley, S. (1998). *Consciousness in Action*. Cambridge, MA: Harvard University Press.
- Kaplan, R. & Kaplan, S. (1989). *The experience of nature: A psychological perspective*. New York: Cambridge University Press.
- Lakoff, G. & Johnson, M. (1999). *Philosophy in the flesh*. New York: Basic Books.
- Lennon, J. (1960). "The notion of experience." In: *Thomist: A Speculative Quarterly Review* 23, 315–343.
- Lewicki, P., Hill, T., & Czyzewska, M. (1992). "Nonconscious acquisition of information." In: *American Psychologist* 47, 796–801.
- Long, J. (2011). *Darwin's devices: What evolving robots can teach us about the history of life and the future of technology*. New York: Basic Books.
- Madzia, R. (2013). "Chicago pragmatism and the extended mind theory: Mead and Dewey on the nature of cognition." In: *European Journal of Pragmatism and American Philosophy* 5, 193–211.
- Menary, R. (2007). *Cognitive integration: mind and cognition unbounded*. Basingstoke: Palgrave Macmillan.
- Merleau-Ponty, M. (1945). *Phenomenology of perception*. Colin Smith (Trans.) [1962]. New York: Routledge & Kegan Paul Ltd.
- Noë, A. (2004). *Action in perception*. Cambridge, MA: MIT Press.
- Noë, A. (2009). *Out of our heads: Why you are not your brain, and other lessons from the biology of consciousness*. New York: Hill and Wang.
- O'Regan, K. & Noë, A. (2001). "A sensorimotor account of vision and visual consciousness." In: *Behavior and Brain Sciences* 24, 939–973.
- Pfeifer, R. et al. (2007). "On the information theoretic implications of embodiment—principles and methods." In: M. Lungarella et al. (Eds.). *50 Years of artificial intelligence: Essays dedicated to the 50th anniversary of artificial intelligence*. New York: Springer, 76–86.
- Plato (1963). "Laws." A. E. Taylor (Trans.) In: E. Hamilton and H. Cairns (Eds.). *Plato: The collected dialogues*. Princeton: Princeton University Press, 1125–1518.
- Rockwell, T. (2005). *Neither brain nor ghost: A nondualist alternative to the mind-brain identity theory*. Cambridge, MA: MIT Press.
- Simon, H. (1996). *The sciences of the artificial*. Cambridge, MA: MIT Press.
- Skorburg, J. A. (2013). "Beyond embodiment: John Dewey and the integrated mind." In: *The Pluralist* 8, 66–78.
- Solymosi, T. (2011). "Neuropragmatism, old and new." In: *Phenomenology and the Cognitive Sciences* 10, 347–368.
- Solymosi, T. (2013). "Neuropragmatism on the origins of conscious minding." In L. Swan (Ed.). *Origins of mind*. Biosemiotics 8. Dordrecht: Springer Publications, 273–287.
- Steinbeck, J. (1939). *The grapes of wrath*. New York: Viking Press.
- Thompson, E. (2007). *Mind in life: Biology, phenomenology, and the sciences of mind*. Cambridge, MA: Harvard University Press.
- Trevarthen, C. (2011). "What is it like to be a person who knows nothing? Defining the Active intersubjective mind of a newborn human being." In: *Infant and Child Development* 20, 119–130.
- Varela, F., Thompson, E. & Rosch, E. (1991). *The embodied mind: Cognitive science and human Experience*. Cambridge, MA: MIT Press.
- Zampini, M. & Spence, C. (2004). "The role of auditory cues in modulating the perceived crispness and staleness of potato chips." In: *Journal of Sensory Studies* 19, 347–363.