

## WE DEWEYAN CREATURES

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ABSTRACT: I introduce a new form of human being, the Deweyan creature, to situate philosophical activity within our contemporary context. The Deweyan creature recognizes that it is not only a product of evolution but also an active and creative participant in the evolutionary process. Through this recognition, the Deweyan creature consciously and deliberately takes imaginative efforts toward reconstructing the old ways of tradition in light of the new ideas coming out of scientific activity. Such reconstruction is always toward a democratic ideal as John Dewey described it. In short, the Deweyan creature is the first form of life to recognize its ability to control its future evolution, provided that it is able to keep its ethical and moral progress at pace with the progress of science and technology. Dewey saw this challenge as crucial for democratic life in his day; it remains so in ours.

There has been, roughly speaking, a coincidence in the development of modern experimental science and of democracy. Philosophy has no more important question than a consideration of how far this may be mere coincidence, and how far it marks a genuine correspondence. Is democracy a comparatively superficial human expedient, a device of petty manipulation, or does nature itself, as that is uncovered and understood by our best contemporaneous knowledge, sustain and support our democratic hopes and aspirations? Or... if to construct democratic institutions is our aim, how then shall we construe and interpret the natural environment and natural history of humanity in order to get an intellectual warrant for our endeavors, a reasonable persuasion that our undertaking is not contradicted by what science authorizes us to say about the structure of the world? ... Is the world as an object of knowledge at odds with our purposes and efforts? ... Does it lend itself equally to all our social ideals, which means that it gives itself to none, but stays aloof, ridiculing as it were the ardor and earnestness with which we take our trivial and transitory hopes and plans? Or is its nature such that it is at least willing to cooperate, that it not only does not say us nay, but gives us an encouraging nod?

– John Dewey (MW11: 48)

## An introduction

For roughly the last century, a new form of life — a new way of being human — has been evolving. It is a rare form of life, more likely to go extinct than to propagate the Earth. I call it the Deweyan creature. This creature takes seriously the integration of what many see as disparate activities: science, art, and democracy. Indeed, we Deweyan creatures take *creativity* as the hallmark of human being in the world. This creativity seeks to ameliorate the problems of life for all sentient living creatures through the experimental methods of science and art. Such amelioration seeks not only edification but also consummation in the experience of others. Through these ameliorative efforts, we Deweyan creatures produce greater freedom through our conscious and deliberate transactions with our environments. For we Deweyan creatures not only recognize but also aim to fully embrace our nature as evolved and still evolving beings in transaction with nature. Central to these transactions is education — not any education but an education for an experimental and democratic global culture. That this culture is global is not to say that it is homogenous. Quite the contrary, insofar as it is democratic, the Deweyan creature recognizes this global culture's great diversity and celebrates its healthy and vital aspects, taking great effort to inculcate in the young a friendly democratic ethos with and for which to celebrate. That is, in order to maintain a global culture that is largely in a state of dynamic equilibrium — not a state of stasis but one cultivating growth — we Deweyan creatures cannot tolerate any bigotry or hatred or any similar activity that undercuts the democratic ethos: such attitudes and acts are treachery — the active embodiment of treason to democracy (Dewey 1939b/LW14). Moreover, insofar as this global culture is also experimental, the diversity of peoples throughout the world serve as living experiments for human flourishing from which all peoples can draw and benefit. For the environments in and with which humans and other organisms interact are not homogenous but radically different (even if the same physical regularities

and principles are operative, the variables and parameters differ wildly); and so we offer to one another a plurality of ways of being human. What we Deweyan creatures promise is not only the recognition of such plurality but also the intent to utilize the differences and the similarities between peoples to effect richer experience overall.

The phrase, *we Deweyan creatures*, is motivated by Richard Rorty — who regularly spoke of *we pragmatists* or *we liberal ironists*, etc. — and by Daniel Dennett — whose imaginative heuristic for thinking about the evolution of mind and inquiry, the Tower of Generate-and-Test, has its levels named after influential thinkers (Dennett 1995 and 1996). So I propose to add a new level to Dennett's Tower, in honor of John Dewey's insights about the integration — actual and possible — of science, art, and democracy toward a culture of creative freedom. Proposing is easy — having just done so — but further characterizing the need for a new level as well as further description about the novelty of that level is a greater challenge. With the development of Deweyan creatures, the Tower of Generate-and-Test must be modified — reconstructed — in order to eradicate the residual creeping Cartesianism that remains in Dennett's philosophy. My characterization of the Deweyan creature begins with Dewey's own thoughts on the office of philosophy as reconstructing our ethical or moral ideals in light of our best knowledge so far. The project for philosophy — reconstruction — is not guaranteed to succeed. It is the difference between Dewey's time and ours that not only illustrates the need for more Deweyan creatures but also the immense difficulty in creating them.

The argument proceeds from Dewey's articulation of the philosophical project of reconstruction and its relevance for us today to a reconstruction of Dennett's Tower of Generate-and-Test. As insightful as Dennett's heuristic is, there is a limitation to it, largely the result of a creeping Cartesianism that has infected his thinking. Through reconstructing the Tower, I hope to exterminate any residual Cartesianism. This

reconstruction draws on Hickman's Deweyan philosophy of technology by integrating it with Dennett's Tower through their shared use of the computer science expression, *generate and test*. With this evolutionary and technological perspective established, I turn to a further elaboration of the Deweyan creature and the import of integrating science, art, and democracy. I close with a discussion of what Mark Tschaepé calls *dopamine democracy*, contra Richard Bernstein's renewed call for creative democracy as a task that remains before us.

### Facts and values: reconstruction in philosophy

The central concern for philosophy is navigating intelligently the innovative developments coming out of the sciences — in other words, the production of new knowledge — with the conservative beliefs held sacred by tradition (Solymosi 2016). For John Dewey, this tension was rooted in lived experience and demanded not only philosophical reflection but also philosophical reconstruction. Reconstruction, as I have argued, is opposed to the more common project of finding reconciliation between the scientific and the humanistic (Solymosi 2012b, 2014; Solymosi and Shook 2013). Be it in the terms of Wilfrid Sellars or in his intellectual descendants like Paul and Patricia Churchland, Daniel Dennett, or Owen Flanagan, the trouble with reconciliation is that it continues the dualism at the heart of modern philosophy by forcing an unwarranted either/or upon us instead of encouraging us to face the demands our knowledge puts on us to reconstruct what it means to live meaningfully in a natural and evolving world. This dualism, as Dewey articulated, comes in myriad varieties. Building from my previous reflections on how the problem of rapprochement between the scientific and the humanistic is based on two competing conceptions of experience, I extend my transactional view of experience to reconstruct the evolutionary relationship — one of continuity, not opposition — between the natural world and the cultural world. Doing so requires a reconsideration of the nature of inquiry to

address one of Dewey's key concerns about our current situation. Dewey was concerned that our moral lives have failed to keep up with our scientific advances and that this failure will undermine our lived experience, creating a less free, less liberating, and less meaningful way of life. The failure of philosophers to reconstruct our experience — moral, personal, and social — in light of scientific advance has resulted in our inquiries and the further application of new knowledge to serve old aims set forth prior to the advance of modern scientific inquiry.

The science of experience is particularly salient for the core problem of philosophy, the ameliorative navigation between the old ways of tradition and the new ones of science. These two authorities Dewey saw as in conflict, yet not necessarily so. He argued that philosophers not only could but also should do their part in resolving the conflict. This conflict, however, is the result of the dualisms that have preoccupied philosophy since Plato. Elsewhere, I have articulated this problem of rapprochement by describing two alternative solutions that correspond to two conceptions of experience. The philosophically more popular conception of experience is the one advocated by Hume, in what has since been described as the Cartesian Theater (Dennett 1991; Solymosi 2011a and 2013a). Dewey described it as sensationalistic and as the spectator theory (Dewey 1917). In short, it holds that the mind and the world are ontologically separate and thus epistemologically inaccessible to each other. Despite attempts to find indubitable or absolute foundations for scientific knowledge, the philosophical problems continued to creep forward, be it in the epistemology industry's problem of knowledge tout court or in descendants of pragmatism via Wilfrid Sellars, who seek a synoptic vision of how the scientific image and the manifest or humanist image "hold together in the broadest possible sense" (Sellars 1960, 1). This synoptic vision is emblematic of the project of reconciliation as the solution to the problem of

rapprochement between the old (the manifest) and the new (the scientific).<sup>1</sup>

For the transactional conception of experience that Dewey and I advocate, these two common beliefs about the authoritative do not come into necessary conflict, as they must for the Cartesian/Humean conception of experience as a sensational spectator. I have upgraded Dewey's view of experience as the interaction or transaction of organism and environment by situating it within contemporary complexity and chaos theories of evolution and dynamical systems. I discuss this in more detail in the following section. This upgraded conception of experience evades the problem inherent in the project of reconciliation's view.

Yet problems are not evaded entirely. The problems faced by the pragmatist approach are still problems of finding rapprochement between the old and the new. Instead of reconciling oneself to the difficulties therein, the evolutionary pragmatist view I proffer is a project of reconstructing the old to meet the demands of the new. This project is by no means guaranteed to succeed. For it is unclear whether there is a theoretical resolution of the tensions between cultural practices and scientific advances; but more importantly there is no guarantee that any theoretical developments will succeed in practice. As I argue at the end of this essay, our current situation illustrates a failure of action due in part to the neglect of philosophers in their responsibilities to reconstruct culture in light of science *in an ameliorative fashion*.

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<sup>1</sup> The Sellarsian pragmatists have descended into two varieties, the eliminative materialist and the eliminative idealist. The former are scientific realists who advocate for the supremacy of the scientific image, claiming that the manifest image is entailed or will be shown to be entailed by the scientific. The eliminative idealist is a linguistic idealist or scientific anti-realist who sees the scientific image as just another story among the rest, useful for some problems but not for others — and, as is the case with the other stories, science has no special authority, especially with regard to the nature of reality. And so the idealist strikes against the common belief that science has authority, whereas the materialist strikes against the common belief that tradition has authority. I have described this genealogy at length in Solymosi 2014.

The problem for reconstruction is the problem for philosophy: the ameliorative navigation of old beliefs in light of new knowledge. As I have argued, following Dewey's lead, reconstruction is the philosophical method of identifying and utilizing the data, methods, and other products of scientific activity as means for achieving our ideals or ends-in-view. An effect of this reconstructive perspective is to no longer treat as scientific questions like "is free will real?" or "is consciousness real?" Rather, we are better off asking of science questions like, "how does free will work?" or "how does conscious activity work?"<sup>2</sup> In understanding the dynamic conditions for achieving these activities, we are better able to understand not only the value of such achievements but also the value of other activities that may inhibit or further promote these achievements.

To further situate my understanding of reconstruction in Dewey's terms, consider the following passages from Dewey's writings. The first is from his 1916 book, *Democracy and Education*:

Philosophy is thinking what the known demands of us – what responsive attitude it exacts. It is an idea of what is possible, not a record of accomplished fact. Hence it is hypothetical, like all thinking. It presents an assignment of something to be done – something to be tried. Its value lies not in furnishing solutions (which can be achieved only in action) but in defining difficulties and suggesting methods for dealing with them. Philosophy might almost be described as thinking which has become conscious of itself – which has generalized its place, function, and value in experience. (MW9: 336)

Dewey articulated what the known demands of us in 1931, in an essay, "Science and Society." He describes science as "operat[ing]...through its undesigned effects rather than as a transforming influence of men's thoughts and purposes. This contrast between outer and inner operation is the great contradiction in our lives. Habits of thought and desire remain in substance what they were before the rise of science, while the conditions under which they take effect have been

radically altered by science" (1931, 363a). He elaborates that "Till now we have employed science absent-mindedly as far as its effects upon human beings are concerned. The present situation with its extraordinary control of natural energies and its totally unplanned and haphazard social economy is a dire demonstration of the folly of continuing this course" (365b). Dewey then concludes with a statement of the contradiction of everyday life:

Thus the statement with which we began, namely, that we are living in a world of change extraordinary in range and speed, is only half true. It holds of the outward applications of science. It does not hold of our intellectual and moral attitudes. About physical conditions and energies we think scientifically; at least, some men do, and the results of their thinking enter into the experiences of all of us. But the entrenched and stubborn institutions of the past stand in the way of our thinking scientifically about human relations and social issues. Our mental habits in these respects are dominated by institutions of family, state, church, and business that were formed long before men had an effective technique of inquiry and validation. It is this contradiction from which we suffer to-day. (368a)

This contradiction requires reconstruction. Reconstruction is the philosophical method of taking the products of scientific activity — its data, theories, and methods — as means for achieving our ideals, such as freedom or conscious awareness or democracy — ideals which are themselves re-evaluated in light of the science.<sup>3</sup> What these passages from 1931 illustrate is Dewey's recognition of a bifurcation between the products of science and our ideals. As I discuss later, our democratic ideals are under direct threat from our ill-ordered technological products. Before turning to technology and science, I close this section with a critical consideration of Kitcher's well-ordered science as he situates it within Dewey's philosophical project.

<sup>2</sup> See Solymosi 2011b and 2013c.

<sup>3</sup> See Tschaepé 2015 on the nature of reconstruction in terms of primary and secondary experience as applied to a special case of neuroeconomics.

In “Philosophy Inside Out,” Kitcher reads Dewey’s philosophical project as navigating two axes, one dealing with value, the other with factual knowledge (2012b: 214–216). In endorsing this view of philosophy, Kitcher also, in “The Importance of Dewey for Philosophy (and for Much Else Besides),” emphasizes an interdisciplinary approach to philosophy, writing that Dewey “takes the philosophical attitude to consist in analysis of a broad swatch of inquiries, and the synthesis of ideas from diverse disciplines in a way that no specialized practitioner of any of those investigations could attain” (2012a: 19). Elaborating further, Kitcher writes:

Philosophy, so understood, is a synthetic discipline, one that reflects on and responds to the state of inquiry, to the state of a variety of human social practices, and to the felt needs of individual people to make sense of the world and their place in it. Philosophers are people whose broad engagement with the condition of their age enables them to facilitate individual reflection and social conversation. (2012b: 216)

This reflection and conversation, for both Dewey and Kitcher, are guided by a democratic ideal of inquiry. That is, it is not just willy-nilly and absent-minded gossiping that counts for reflection and conversation.

Indeed, Kitcher notes, “Dewey’s account of philosophical significance is embedded within a standard for well-ordered inquiry, one that is thoroughly democratic and egalitarian.” It is this standard, I contend, that deserves special attention and criticism. Kitcher “elaborate[s] the standard as follows.

Well-ordered inquiry would pursue just those lines of investigation, to the extent and in proportion to their evaluation as significant by a group of deliberators representing all human circumstances and points of view, all thoroughly informed as to the existing state of human knowledge and to the foreseeable prospects for developing it further, and all fully committed to mutual engagement with one another.

Such an ideal, as democratic as it is, risks too great a degree of abstraction from the lived experiences and circumstances of actual human beings’ meeting this ideal

in practice. Of course, failure to live up to one’s ends-in-view does not make those ends any less worthy. But we must not mistake this standard of well-ordered inquiry to take a Kantian or Habermasian attitude to democratic deliberation. As Kitcher continues:

The conditions that figure in this account are intended to rule out the various ways in which, from a thoroughly democratic point of view, inquiry can go astray. Most evidently, as Dewey recognizes so clearly, investigations can give priority to the wishes or to the whimsical interests of the few, at cost to the many: biomedical research can focus, as it so strikingly has in recent decades, on projects that might enhance the lives of an affluent minority, while leaving the life-threatening and incapacitating diseases that afflict vast numbers of poor people, most especially children, radically understudied; most abstract disciplines, like philosophy, can pursue issues that fascinate specialists, while paying scant attention to questions that touch on the lives of many people.

To put Kitcher’s point in terms proffered by Dewey, the concern is that new products of science are produced by and for a small group of people with vested and private interests. These products all too often come at a cost to other groups of people who receive no benefit from these new tools. Such conflict produces publics that must then contend with each other in order to live up to larger social ideals, like democracy. Insofar as those publics are able to unite and compromise can a democratic ethos flourish; insofar as these competing groups are unwilling or incapable of resolving differences, democracy fails (LW2). This, I take it, is the key contrast between Kitcher’s well-ordered science and ill-ordered science, respectively.<sup>4</sup>

To demand all human circumstances and points of view be represented is a first step towards avoiding this predicament. Genuine democracy, however, cannot be content with an expression

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<sup>4</sup> I cannot help but wonder what more could be said along these lines of well and ill in comparison to the distinction Socrates makes in book II of the *Republic* between his healthy city (what Glaucon calls a city of sows) and the feverish city, the *Kallipolis*, whose development is the focus of the next two books.

of the raw wishes of all individuals, uninformed about the actual state of human inquiry and about how it might be developed. For you to make a decision about how inquiry would promote your interests, you need not only the ability to convey your own perspective, to report on things about which you are the best expert, your own needs and aspirations, but also an understanding of the ways in which your goals could be promoted, given what is already known and what might now be probed and pursued.

Kitcher fails here to remember one of the key insights of pragmatism, especially Dewey's emphasis on the provinciality and the fallibility of knowledge. It is one thing to be open to and mindful of other voices as they appear and thus be willing to revise beliefs in response to these new experiences. It is quite another to require not only the openness and fallibility but also the full knowledge of all voices and full knowledge of the state of knowledge prior to dealing with new problems that result from private interests conflicting with public ideals. For all his efforts to persuade contemporary Anglo-American philosophy to take up Dewey's philosophic attitude, Kitcher nevertheless succumbs to the Cartesian dream of a lone and all-knowing knower: he runs the risk of advocating democratic philosopher-kings. He continues:

Democracy thrives on the combination of expertise, in which the individual's own intimate knowledge of context and preference is shaped by the collective corpus of knowledge. Hence, well-ordered inquiry insists that the research agenda can be that chosen by well-informed representatives of all points of view. The final condition is needed to overcome a familiar obstacle of actual deliberations, partial insistence on individual points of view, even when it is clear that they bring problematic consequences for others. By requiring that the deliberators be mutually engaged, the constraints on well-ordered inquiry insist that no group's interests can be sacrificed.

The difficulties at play here indicate both the need and possibility for the Deweyan creature as well as its very improbability of bringing about a Deweyan world. The research agenda that Kitcher mentions, as it is currently practiced, is not one set agenda but a plethora

of research programs aimed at a myriad of interests, many, if not most, of which have no consideration for the other agendas, nor for the larger effects on the world and lives of people beyond the agenda-holders. Furthermore, expressing the conversation in terms of a single research agenda itself runs the risk of becoming anti-democratic. One agenda to rule them all does indeed infringe on the freedom of local groups to handle their problems in their own way. How the Chinese, for example, decide to deal with food production in light of climate change is going to be very different from the way Canadians do, given their different climates, demographics, and natural resources. Of course, this is not to say that different publics should operate in ignorance of the other. Quite the contrary, as important as expertise is for democracy, so is open and friendly communication between parties of different backgrounds. Nevertheless, Kitcher brings attention to three tyrannies that all parties, regardless of background, face:

The three conditions can be viewed as combating three forms of tyranny: the tyranny of wealth and power, the tyranny of ignorance, and the tyranny of the majority. (2012a: 8–9)

Despite his mis-steps, Kitcher manages to point to many of the key characteristics of the Deweyan creature. The democratic emphasis is throughout as is an emphasis on intelligent inquiry. How inquiry gets going in the first place is integral to understanding the revolutionary nature of the Deweyan creature. So with this first pass at Kitcher's ideal of well-ordered science in contrast to Dewey's assessment of ill-ordered science — a condition still with us today — I turn to the evolution of intelligence and inquiry via Hickman's technoscience as integrated with Dennett's Tower of Generate-and-Test.

**The evolution of inquiry: from just having experiences to deliberately producing them**

...technology was for Dewey an active method of generating and testing new skills, as well as reconstructing old ones.

– Larry Hickman (1990:19)

Dennett (1995) provides a useful heuristic for thinking about how experience, inquiry, and science co-evolve out of evolutionary processes. He calls it the Tower of Generate and Test, drawing from terms in computer science that signify the algorithmic nature of natural selection. At each level of the tower, an evolutionary strategy is generated and subsequently tested in the world. Those that are more successful tend not to go extinct as quickly. Given what Flanagan has described as Darwinism-by-analogy (as opposed to strict Darwinism, see Flanagan 2009, and Solymosi 2012a), each level of the Tower describes a general set of patterns with specific capacities or traits. As evolution carries forth, new levels emerge that indicate new skills or traits. As Dennett puts it, “as each new floor of the Tower gets constructed, it empowers the organisms at that level to find better and better moves, and find them more efficiently” (Dennett 1995, 373). With the increase in complexity of organization that each new level illustrates, the ability of those creatures to anticipate similarly increases. The ability to recognize ever more complex patterns and to respond appropriately is indicative of mentation. This emphasis on action in the world is in direct contrast with the older conception of experience of Descartes and Hume that is at the heart of the project of reconciliation.

The project of reconciliation is fundamentally flawed in its sensationalistic conception. This creeping Cartesianism is hard to evade (Solymosi and Shook 2013). As we will shortly see, even the staunch anti-Cartesian Dennett succumbs in the end to a Cartesian conception of the mind as representational and largely (but not clearly consistently) cranium bound.<sup>5</sup> To combat

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<sup>5</sup> While the purpose of this paper is to introduce

this creeping Cartesianism, pragmatists like Dewey and Dennett appeal to evolution. They both argue for a deep continuity between the physical, the organic, and the mental.<sup>6</sup> The details of this continuity do not concern us here but are operative in the following discussion in three ways.<sup>7</sup> First, there is historical continuity between less complex and more complex organisms. Second, there is developmental continuity between less complex processes or skills and more complex ones — found both

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Deweyan creatures, some readers may nevertheless wonder where Dennett is situated in this sketch, especially since it may come across that Dennett is arguing against Dennett. From my perspective, Dennett is a transitional figure who has one foot in the old Cartesian ways and another foot in the new Darwinian ways. It may be useful to think of Dewey as a pioneer, who went into new terrain with limited tools (i.e. the science of his day) and covered a lot of ground, whereas Dennett (and others like Paul and Patricia Churchland or Owen Flanagan) are bridges (or bridge builders) to this new terrain initially explored by Dewey. Unlike Dewey, Dennett et al. are coming from an American philosophical landscape influenced by analytic philosophy and have at their disposal approximately fifty years of scientific advancements to draw upon. As is the case with any transition or evolution, there will be elements and vestiges of the old — some still useful, some to be discarded — among the new developments. And so there is a creeping Cartesianism that requires not only excision but also vigilance. I thank an anonymous reviewer for raising the concern about Dennett’s position in my thought. I also thank Mark Tschaepe for many conversations over the years about this very issue: the bridge metaphor may well be his.

<sup>6</sup> Dewey calls the differences *plateaus*, specifically the physical, the psycho-physical, and the mental (LW1). Dennett describes these differences in terms of patterns, the physical, the design, and the intentional (1987). To understand these patterns, Dennett suggests, we take up attitudes or stances to their respective patterns. The continuity between these patterns is developed into what Dennett calls *cascading cranes* (1995). In a similar fashion, Hickman speaks of *platforms* (2001). These engineering metaphors are appropriate and useful; but it is equally important to remember that there is no grand designer. So I also suggest here that Terrence Deacon’s nomenclature also be considered (2011): the physical corresponds with Deacon’s thermodynamics; life or design or the psycho-physical with morphodynamics; and complex life, intentionality or mentation with teleodynamics. Further work is important here but goes beyond my present purposes. However, see Dennett’s review of Deacon (2013), and my 2015.

<sup>7</sup> See Dewey 1938/LW12, Johnson 2007, Solymosi 2011a, and Sullivan 2015. Sullivan is especially poignant with regard to the latest research on our microflora.

ontogenetically and phylogenetically. Finally, there is continuity between what is traditionally taken to be the inner and the outer. Prior to Darwin, the distinction between inner and outer came in the form of mind/body dualism or mind/world dualism. After Darwin, the dualism became materialism — but nevertheless remained Cartesian. That is, the problem of explaining how a brain represents its body and/or its world remains a central problem for philosophy and cognitive science, insofar as a Cartesian materialism sets the conditions. For the pragmatic naturalist, trying to locate mentation within the organism or the brain is a fool's errand that simply recapitulates the problems of Cartesian dualism in materialist terms. In casting experience as organism-environment transaction, the boundary between inside the organism and outside of it is itself blurred. The boundaries we inquirers draw for what goes on between or across the skin barrier is arbitrary, if often useful. The difficulty is the presumption that one boundary serves all the needs of inquiry absolutely. Indeed, the creeping Cartesianism that drives this presumption is so strong that this third point requires emphasis that there is continuity not only between body and world but also between brain and body: just as the skin is an artificial barrier so is the cranium.

With this caveat on continuity, I now turn to integrating Dennett's Tower of Generate-and-Test with Hickman's Deweyan conception of technology and science. To do so, I take up my Deweyan conception of experience as the transaction between organism and environment, symbolized as  $\mathcal{C}\mathcal{E}$ . To be clear, I will use the symbol  $\mathcal{C}\mathcal{E}$  to signify experience so conceived as organism-environment transaction. For brevity's sake,  $\mathcal{C}\mathcal{E}$  is understood to be dynamic and non-linear (Solymosi 2013). This process is also taken to be evolutionary.<sup>8</sup> On

<sup>8</sup> This symbol illustrates the complete entanglement of organism and environment, not only as the proper evolutionary unit as Griffins and Gray have argued (2001; Solymosi 2013; and Solymosi and Shook 2013) but also has an ontological whole the parts of which (the O and the E) are only discerned according to specific methodologies for designated research problems.

this  $\mathcal{C}\mathcal{E}$  transactional view, the ontological separation of mind and world or mind and body is simply evaded.  $\mathcal{C}\mathcal{E}$  is a product of and participant in evolutionary processes, initially only in a biological sense but also now culturally. There is no unbridgeable separation between mind/body, mind/world, or nature/culture. There are only changes or phases in the natural process.<sup>9</sup> The changes that come from adaptation are changes that can be described in terms of regulatory mechanisms of  $\mathcal{C}\mathcal{E}$  (Solymosi and Shook 2013). *Homeostasis* is commonly treated as the only regulatory mechanism that matters or even exists. Undoubtedly, it is integral to maintaining a fixed set point in  $\mathcal{C}\mathcal{E}$ . The easiest example is body temperature: sweat when hot, shiver when cold. But homeostasis goes only so far; it does not account for novel needs, for the possibility of new set points. *Allostasis* is the regulatory mechanism that affords such anticipation. Its classic example is the physiological changes of higher levels of cortisol, adrenaline and/or testosterone prior to battle or sex. The body prepares for changes yet to come in the environment. So new set points are aimed at. With greater complexity in  $\mathcal{C}\mathcal{E}$ , both homeostatic and allostatic mechanisms are capable of doing new things with old ways.<sup>10</sup>

Consider the first floor of Dennett's Tower of Generate-and-Test (1995, 374ff), the self-replicating organism, the Darwinian creature. It is barely homeostatic: it keeps its pattern going long enough to make a copy of itself. That's it. There's no anticipation, no capacity for learning. But some Darwinian patterns evolve sufficient phenotypic plasticity for operant conditioning. Through  $\mathcal{C}\mathcal{E}$ , these Skinnerian creatures learn what behaviors bring about what outcomes. So new ways of  $\mathcal{C}\mathcal{E}$  are generated and thus tested in the world. Not every  $\mathcal{C}\mathcal{E}$  is pleasurable, survivable, or replicable. If an organism were capable of anticipating what novelties are likely to occur next, then this

<sup>9</sup> Cf. the earlier discussion in note 6 of Dewey's plateaus, also called phases by Dewey and by Hickman, Dennett's patterns, stances, and cranes, and Deacon's dynamics.

<sup>10</sup> For more on homeostasis and allostasis, from a pragmatist perspective, see Schulkin 2003, 2011a, and 2011b.



organism's transactions with its environment are not only more likely to increase the chances of survival but of replication and pleasure too.

Thanks to the operant conditioning characteristic of the Skinnerian creature, the organism becomes capable of anticipating previously engaged environments: what was once novel becomes routine and expected. The advantage is clear over the Darwinian creature, but it is lacking from our perspective. Learning only happens post hoc for the Skinnerian. The next step in this evolutionary sketch is to take what's already operative in  $\mathcal{C}\mathcal{E}$  and put it toward what could be the case but is not yet. In the terms of regulatory mechanisms, we see the shift from merely homeostatic processes to allostatic ones that are made possible by the older homeostatic processes. This shift or development becomes particularly potent when the anticipations take on a greater degree of foresight. One way to increase foresight is to increase the degree of immediate detail: there is a world of difference between distinguishing whether or not a small dark speck moves across a visual field and whether what is moving across the visual field is a fly or a lead pellet. The frog lacks the finer grade of detail and is all the worse for it in the scientist's laboratory.<sup>11</sup> Another way to increase foresight is to extend it spatiotemporally. The farther ahead an organism can anticipate what will happen at a spatiotemporal distance in its environment the better its odds at navigating  $\mathcal{C}\mathcal{E}$ .

The evolutionary achievement that affords such  $\mathcal{C}\mathcal{E}$  is the emergence of nervous systems. These dynamical systems are governors of the multi-system processes of body and world. Prior to nervous systems,  $\mathcal{C}\mathcal{E}$  was only immediately had. After and thus with nervous systems,  $\mathcal{C}\mathcal{E}$  became controllable as well. What nervous systems make possible is the advanced anticipatory capacity of imagination: the taking of what has happened and happening to adjust to what could happen in the future, in the distance. Dennett distinguishes this advancement in the Tower of Generate and Test by appealing to Karl Popper's famous quip that such a skill "permits our

hypotheses to die in our stead" (Dennett 1995, 375). Long before Popper's pithy phrase, pragmatists like Peirce and Dewey recognized the critical contribution of imagination and the dramatic rehearsal for  $\mathcal{C}\mathcal{E}$  (cf. LW1: 221). The benefits of imagination for navigating future  $\mathcal{C}\mathcal{E}$  are obvious and numerous. An organism no longer needs to have the direct and immediate transaction with a specific environment in order to adjust to it. Now, based on past  $\mathcal{C}\mathcal{E}$  it has had, it can anticipate and adjust accordingly, thereby increasing its odds at successfully regulating dynamic patterns.

As  $\mathcal{C}\mathcal{E}$  continues, for both the environment and the organism — ontogenetically and phylogenetically — the imaginative capacity improves in both immediate detail and spatiotemporally. It is important to remember that on Dewey's account of  $\mathcal{C}\mathcal{E}$ , it is both a doing — what the organism does to the environment, sometimes in an effort to alter it for the better — and an undergoing — what the environment does to the organism, often in return to the organism's doings, to which the organism must adapt (Dewey 1917). In short, the point is that through dynamic feedback loops and subsequently feedforward loops, both the organism and its environment are transformed. This point is a subtle one, at once obvious yet unappreciated. Among social animals, some things they do are indicative of the situation at hand: a present need or a problem on the horizon. Gestures and calls communicate the needs and the on-coming difficulties. But gestures and calls are immediate and impermanent, lasting only as long as the memory of the communication does. If such information is solely or primarily kept strictly within the organism, then its longer-term spatiotemporal consequences are limited not only to that organism but also to the idiosyncrasies of that life. To make that information more readily available to other organisms, who share an environment further enhances that population's abilities to anticipate.<sup>12</sup>

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<sup>11</sup> See Dennett 1987 and Akins 2002.

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<sup>12</sup> One way to do this is to transform parts of the environment into affordances. Natural affordances are those opportunities for action that just happen to become available when an organism relates to an environment serendipitously. Artificial affordances are opportunities for action that organisms bring about to

The evolutionary step from immediately sharing ideas via communication (calls and gestures) to altering environments to better afford informative symbols for imagination marks the final level for Dennett and his description of the Tower of Generate-and-Test. Gregorian creatures are the next level. They are named after the psychologist Richard Gregory in honor of his work on the role of information in tools and artifacts. In the externalization of information about the environment back into the environment in the forms of tools and artifacts, Gregorian creatures mark the arrival of a new medium for evolution: *culture*. Where the previous levels of the Tower evolved through genetic selection, the externalization of intentionality into the environment enables a newer, faster medium of evolution. This externalization is found, for example, in social animals that gesture to one another, whether it is by repeating vocalizations, or making faces, or in sharing tools, or in the use of words.

So powerful is the effect of language on an organism that Dennett sees words as “mind-tools” that radically alter an organism’s inner environment through the cultural interaction within its exterior environment that is now full of “words, words, words” (1995, 417). In more words, as intentional consciousness first emerges with the development of nervous systems, full-blown language, above and beyond mere communication, evolves among the interactions of the nervous systems of social organisms. The intelligence that such mind-

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expedite life functions. The recognition that specific trees or branches are better for climbing affords new  $\text{CE}$  as does the recognition that specific types of stone are better for cutting. Such affordances are better utilized if shared. An immediate way of sharing is by doing together. This is reminiscent of the Skinnerian creature. Another way of doing that is distinctly Popperian is to share ideas nonverbally. The relationship between skill and idea takes us well beyond the limits of this already wide-ranging essay. Consider, however, the theory of continuity at work in this sketch. As higher levels of the Tower are constructed, they are constructed out of the achievements and possibilities of the lower levels. This marks a growth in continuity. And so the lower level skills yield higher level abstractions (see Deacon 2011). Ideas are skills of imagination; when ideas are shared, they are tools of culture.

tools bestow on a cultural organism through what we could call enculturation but already do call education is so empowering that the information an organism can process about the environment becomes staggering in comparison with non-linguistic Popperian creatures. For this very reason, Dewey refers to language as “the tool of tools” (Dewey 1925/LW1: 134).

Within the Gregorian level of the Tower of Generate-and-Test, there is one last achievement that is a real game-changer: “it is the one that gives our minds their greatest power,” writes Dennett, “once we have language – a bountiful kit of mind-tools – we can use these tools in the structure of deliberate, foresightful generate-and-test known as science. All the other varieties of generate-and-test are willy-nilly” (Dennett 1995, 380).

What makes science a particularly potent form of generate-and-test is not simply that it makes mistakes, which all other forms do as well, but that it makes them publicly in such a way that allows science to be self-corrective in ways that all other forms of fixing belief are not. Prior to science, all the generating-and-testing of ideas and actions were done as a matter of survival necessity. Where there was foresight, it was short-term and quickly tested. Its results were never quite clear on what went wrong or why. Science, however, has gone above and beyond by setting up a sensitive social structure that is open to and indeed thrives upon self-criticism through the comparison of ideas, methods, activities, etc. – all of which is made possible by language.

The predominant tools used by Gregorian creatures are words (Dennett 1995, p. 378). This “tool of tools” allows for a plethora of reminders and cues for sustaining long-term thinking and planning. Such a tool goes well beyond the skin of the organism and well into the environment. While Gregorian creatures make significant use of tools to anticipate the future (thus allowing for greater options for action, thus greater degrees of freedom), it is a particular breed of Gregorian creature which has the capacity for technology as

Hickman describes it. This particular creature is unlike any other on the face of the Earth. For it not only imagines new ways of living but also foresees such possibilities through a creatively experimental and democratic attitude. Only through such a cultural attitude is there a possibility for the integration of science and art toward the end-in-view of a creatively democratic culture as described earlier.

At this stage, we can begin teasing apart the perspectives of Dewey and Dennett. The first step in doing so is to note and reject Dennett's still Cartesian way of speaking about minds as individual things that bodies have. In contrast, Dewey's rejection of the reified *mind* in preference of organism's *mind*ing environments is advocated, especially if we take to heart the third characteristic of continuity, discussed above. That is, the continuity between the interior/exterior of an organism's transaction with its environment is critical for understanding the reconstruction of mentation in light of science. To refer to J.J. Gibson's theory of affordances, the Deweyan conception of  $\mathcal{C}\mathcal{E}$  rejects the Cartesian atomism and individualism in favor of a conception of *mind*ing that is not only embodied in the organism but also embedded and extended into the environment as a stable activity or dynamic scaffolding of meanings that enable an organism to act intelligently. As meanings are guides to action, they afford an organism various opportunities for action. Such affordances are anticipations of possible activities that may be undertaken. The stronger the *mind*ing is, the stronger the imagination is, and the better anticipations an organism can have. The symbolization of meanings that language provides brings about a new level of organic activity: culture. Just as there are physical or biological affordances, there are cultural affordances too. A cultural affordance is an artifact of human activity that may be but not necessarily is the product of deliberate inquiry. Nonetheless, cultural affordances are key to productive inquiry (Chemero 2009; Solymosi 2013b; and Johnson 2014).

On this view, a language is a cultural affordance (indeed a complex of cultural affordances, like words and idioms) that relates the organism to its environment.<sup>13</sup> This organism – a person – has among its environs other organisms, i.e. other people. The brains and bodies of all these persons present information, much of which is symbolic or capable of being symbolized. The vast adjustments persons make to themselves and their environments is thoroughly linguistic. This is not to say that all  $\mathcal{C}\mathcal{E}$  is or has become (strictly) linguistic; rather that language affords novel  $\mathcal{C}\mathcal{E}$  that may or may not be explicitly linguistic.  $\mathcal{C}\mathcal{E}$  at the level of the cultural is imbued with meaning because of the empowerment of language and symbolization.

The most obvious example of this bio-cultural development is the intelligent extension of our brains and bodies into the environment in the tools and techniques produced by technology (in Hickman's sense to be discussed momentarily). Imagination is at the heart

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<sup>13</sup> The relationship between language and culture/society is complex. Discussion of it exceeds the limits of this paper. Insofar as language is a cultural affordance, it is one that makes other affordances possible: an affordance of affordances, or, as an anonymous reviewer put it, a possibility of possibilities. As such, some may argue that language is a condition for the possibility of social or cultural affordances. To argue that would be to go too far, beyond the scope of  $\mathcal{C}\mathcal{E}$  and risk an unwarranted transcendental turn. Of course, there are some cultural affordances – e.g., novels, stories, books generally – that are only possible with language, and so language is a condition for their possibility. However, not all cultural or social affordances are linguistic or made possible by language. Two examples come to mind: the  $\mathcal{C}\mathcal{E}$  of non-human mammals, such as voles and primates, are social if not fully cultural, but nevertheless pre- or proto-linguistic but not fully linguistic; and the bonding relationship between a human mother and her child, particularly as developed through the act of breast-feeding. See Nöe 2015, 3ff, on human breast-feeding as an organizing activity primarily to prepare the child for social/cultural  $\mathcal{C}\mathcal{E}$ , including language, in contrast to non-human breast-feeding which is strictly a matter of nutrition. Undoubtedly, there is more to be said on the nature of language as a cultural affordance (as well as the nature of a cultural affordance in general) than can be said here. To that end, not only must we avail ourselves of Dewey's ideas but also the work of George Herbert Mead. I thank an anonymous reviewer for raising this important issue.

of anticipation. The more creative our mindings or culture, the greater our ability to anticipate. The deliberate and conscious effort to set the old ways to new uses marks off  $\mathcal{C}\mathcal{E}$  from just happening to cultural  $\mathcal{C}\mathcal{E}$  bringing itself about in a self-conscious and deliberate manner. If we continue to discern higher levels of the Tower of Generate and Test, it should become clear that of the genus Gregorian, there is a new species emerging. Following Dennett's pattern of nomenclature, I propose naming this new level Deweyan creatures, after Dewey's vision for a technoscientific and democratic culture.

Following Dewey, Hickman sees "*technology as a cognitive activity within the evolutionary history of complex organisms*" (Hickman 2001, 21, italics in the original). If we gauge each level of the Tower of Generate and Test as a new level in awareness of action, environment, and plausible futures, the Deweyan notion of technology, as "*the invention, development, and cognitive deployment of tools and artifacts, brought to bear on raw materials and intermediate stock parts, with a view to the resolution of perceived problems*" (Ibid, 12, italics in the original), is the next step in anticipation. In other words, a technological and democratic culture affords persons a greater ability to anticipate the future because such a culture deliberately cultivates imagination and creativity with the general end-in-view of democracy.

Humans are social organisms who have evolved and deliberately developed an ecological niche in which information-conveying symbols afford individual humans and human groups greater reliability and stability in their efforts to manage their lives and environments, through the process of adjustment. Deweyan creatures grow out of Gregorian creatures because they recognize that they are not only overtly technological but that they are also inheritors and developers of technologies of imagination, i.e., science, art, and democracy.

The marking feature of the Deweyan creature is its recognition that its way of life is a product of evolution, that its way of life is self-conscious of both this fact and the fact that this awareness provides the means for

guiding the future course of evolution in an ever-more deliberate fashion. This awareness, however, does not guarantee success or progress. Rather this awareness brings a further recognition of just how unique and precarious this way of life is, especially in its infancy.

Our words do not represent or correspond to the world in the naïvely realistic sense. Words do re-present the world by setting patterns into new relations. These relations produce new information; they afford us greater opportunities for action. Central to these cultural affordances is education. It is a process that recognizes that each student has his or her own recognition of difference and similarity in order to cultivate both a shared sense of belonging to a culture and community and a unique sense of becoming a responsible individual within that community. Education, then, is the process by which a child becomes an intelligent and competent inquirer.<sup>14</sup>

The patterns at play that are productive range from the bodily to the cultural. Among these patterns are the cultural activities we learn to perform with our bodies. The exemplar of this is speaking. Other activities include dancing, fighting, singing, writing, cooking, and inquiring in deliberately experimental ways. These skills – *techné* – are rooted in the bodily and cultivated by the use of language. Yet these cultural activities are not strictly bodily nor linguistic. The affective aspect of  $\mathcal{C}\mathcal{E}$  can be expressed by art or stated by science, but such expressions or statements are not identical to the quality of the situation (Hickman 2001, 90–91). What both art and science provide are means for effecting new experiences: they are pattern-modifying patterns of activity. The pattern that is modified is  $\mathcal{C}\mathcal{E}$ , specifically the human subject and its social relations (including other subjects); the pattern(s) doing the modifying are the activities of other humans, activities that we refer to as scientific or artistic. Alva Nöe, influenced by Dewey's

<sup>14</sup> Integral to this view of education is that inquiry begins wherever the inquirer happens to be. We are where we are, not necessarily where we would like to be. We only have the specific tools – linguistic and otherwise – at our disposal that our specific situation affords us.

aesthetic theory, puts the point this way, “Technologies organize our lives in ways that make it impossible to conceive of our lives in their absence; they make us what we are. Art, really, is an engagement with the ways our practices, techniques, and technologies organize us, and it is, finally, a way to understand our organization, and, inevitably, to recognize ourselves” (Nöe 2015, xiii).

The difference between art and science is not a difference of method or starting place but of specific purpose. Both employ the general pattern of inquiry. For example, Hickman discusses the experimental method at work for a novelist working on her next novel (2001, 33–34). The raw materials and stock parts of which she makes use are those of past experiences, whether they be items from her personal life or from stories or accounts of others whom she knows or from historical research. The problems in need of solving vary from plot structure and character development to the overarching problem of conveying to others a proposed solution for dealing with the human condition. In the end, a product is produced: a new novel. This general pattern of intelligent inquiry is no different than the approach Darwin took in the writing of *Origins*, as he helped himself to the work of Lyell and Malthus and many others. There is a difference in purpose, however, between the artist and the scientist. It amounts to this: science provides the means that art puts toward or utilizes in its (often critical) expression of our ideals.

The project of reconstruction must make use of this partnership between science and art. Central to this project are the ideals of freedom and democracy. Constitutive of these ideals – entangled as they are – is the role of criticism. From Socrates on, freedom is most likely to flourish in the proper conditions, which, as history has shown so far, are found in democratic cultures. Democracy, as Dewey saw it, is a way of life, of transforming culture, to effectively enrich experience for all. To attain this end, freedom must not only be sought and cultivated, it must also be enacted through the activity of critical reflection. In order to be free, we must be able to question all that we hold dear and be

prepared to adjust according to the best results of our inquiries. In other words, to be free, we must be experimental. To be experimental is to be consciously active in one’s deliberate pursuits of one’s ideals, including the reflective criticism of those ideals.

Intelligent activity, then, aims, in part, to alter the environment – social, physical, and biological alike – as well as to promote the adaptation of the individual to changes in the environment. I say that alteration of the environment is social because we are *social* animals. Our environment involves other individuals, and their unique and shared values and goals. I say that alteration is also physical because we have certain values about the physical world and its use for our goals, both of which have consequences for the social and the biological, like our policies over food production from the farm to the kitchen. I say biological because we humans are *social animals*. As much as our social relations empower us through the sharing of information, our biology sets specific limits on the possibilities of both cultural and biological evolution. Understanding those limits empowers our imaginations to create new vistas. This creativity is characteristic of Deweyan creatures.

If I had to put the evolutionary difference between the Deweyan and the Gregorian into a nutshell, I would say the difference is that the Gregorian lacks the imagination for reconstruction, just as the Popperian lacks the imagination for science, while the Deweyan creature takes another step in intensifying imagination. It recognizes and embraces the instrumentality of both science and art as continuous problem-solving activities – viz., as imaginative activities – for democratic life. It is important to remember that Deweyan creatures are a variety of Gregorian creatures. At the strictly genetic level, Deweyan and non-Deweyan creatures are not only capable of copulation but of producing viable offspring as well. The difference between these creatures is cultural. In order for a Deweyan and non-Deweyan to copulate (with the exception of rape), let alone procreate, something has got to give. Either one (d)evolves into the other or becomes the cultural

equivalent of a mule.<sup>15</sup> Other varieties of the Gregorian have not only evolved but have gone extinct: one need only review the history of cultures, viz., of hominid groups that inquired and made use of symbolic communication.

The Deweyan creature is relatively new, only beginning to distinguish itself with the rise of both modern science and modern democracy. It is only starting to set roots and to consider blossoming in the on-going aftermath of Darwin's *Origins*. The future of the Deweyan creature remains unclear, and extinction is likely. Nevertheless, the imaginative capacities of an individual in a scientific-democratic society outweighs the capacities of any other Gregorian.

#### **Creative democracy or dopamine democracy — the choice before us**

This notion of a species of animals gradually taking control of its own evolution by changing its environmental conditions leads Dewey to say, in good Darwinian language, that 'growth itself is the moral end' and that to 'protect, sustain and direct growth is the chief *ideal* of education'. Dewey's conservative critics denounced him for fuzziness, for not giving us a criterion of growth. But Dewey rightly saw that any such criterion would cut the future down to the size of the present. Asking for such a criterion is like asking a dinosaur to specify what would make for a good mammal or asking a fourth-century Athenian to propose forms of life for the citizens of a twentieth-century industrial democracy.

— Richard Rorty (1999: 120)

Richard Bernstein shares with Rorty the import of the Darwinian turn for education, particularly education for a democratic ethos. Bernstein notes that at every turn in Dewey's thought there is an underlying democratic ethos at work. Such a personal ethos is what undergirds the political forms of democracy. Indeed, Bernstein remarks, "without a vital democratic *ethos* or culture, political democracy becomes hollow and meaningless. Democracy as a form of government is an

outgrowth of, and is dependent upon, this living *ethos*" (Bernstein 2010: 74). The recognition of the possibility and need of a democratic ethos is characteristic of the Deweyan creature.

I described the Deweyan creature using Kitcher's description of well-ordered science as conducted by democratically-sensitive representatives — people who have a deep understanding of the state of affairs and how that state affects not only themselves but also all other lives involved with those affairs. Ideally, the selection of such representatives would be a wholly democratic affair insofar as those making the selection are as personally democratic as those selected. Such a world is not yet ours. And so we come to the first of two difficulties I raise and with which I conclude this brief introduction to Deweyan creatures: how do we Deweyan creatures, so few in number, bring about the democratic ethos, without becoming elitists?

Bernstein understands that "Democracy requires a robust democratic culture in which the attitudes, emotions, and habits that constitute a democratic *ethos* are embodied" (2010: 86). He emphasizes "the fragility of democracy[; that] Unless we constantly work at incorporating a democratic ethos into our everyday lives, democracy can all too easily become hollow and meaningless" (2010: 88). Indeed, democracy runs the risk of the ill-ordered science Kitcher describes as three tyrannies: of wealth and power, of ignorance, and of the majority. These tyrannies are at the heart of Plato's critique of democratic life in the *Republic*. His solution, as eloquently expressed as it is, is nevertheless problematic for Dewey. Bernstein explains:

Throughout his career, Dewey was critical of what came to be called "democratic realism" or "democratic elitism." Democratic realists adopt a version of the aristocratic argument. They claim that in the contemporary world, in which individuals can be so effectively manipulated by mass media and the problems of society have become so complex, a viable democracy requires the "wisdom" of an intelligentsia, who, like Plato's *aristoi*, "rule not in their own interests but in that of society as a whole." But Dewey was deeply suspicious of those who advocated that a

<sup>15</sup> That this is easily applicable to contemporary philosophy has not escaped the attention of the author. Cf. Kitcher 2012b.

viable democracy requires a special class of intelligentsia which has the responsibility to make “wise” democratic decisions. (2010: 74–75)

The mass media’s manipulations of the masses was a concern Dewey nevertheless felt. The problem with both democratic elitism and democracy as practiced in Dewey’s life is that neither is democratic enough. The elitism is no solution at all to the internal problems of democracy. Bernstein continues his diagnosis:

Dewey sharply criticized the abuses of laissez-faire mentality, the fetish of individualism, and the “pseudo-liberalism” that had become so dominant during the last decades of the nineteenth century in America. He believed that the greatest dangers to democracy are *internal* ones, which arise when the democratic *ethos* and democratic practices are undermined. (2010: 76–77)

This undermining brings us to the second problem: if the key to democratic life is not the elimination of conflict but the recognition of contingency and the inevitability of conflict, then another characteristic of the Deweyan creature is how it *responds to conflict*. As Bernstein puts it, “this requires imagination, intelligence, and a commitment to solve concrete problems” (2010: 84; see also Bernstein 2006: 195). This characteristic of the Deweyan creature seems untenable with the view of democratic representatives put forth by Kitcher. These requirements require proper cultivation, the right sort of education. But we today live in a society whose neoliberal market mentality encourages us to be constantly distracted, most especially with our technological devices.

Mark Tschaepe (2013) argues that we must not forget Plato’s central lesson: unintelligent, uneducated democracy sets a society on its way to tyranny. So long as we are free to pursue anything we want, most people will pursue the lower appetites and pleasures. As Socrates says in the *Republic*: people “aren’t filled with that which is and never taste any stable or pure pleasure. Instead they always look down at the ground like cattle, and, with their heads bent over the dinner table, they feed, fatten, and fornicate” (586a–b).

Tschaepe observes that reading this passage brings to mind people and their electronic devices. Indeed, the evidence is growing that dopamine loops and dopamine squirts are operating during such activity (Rosen 2012). The incessant but broken-up demands of multitasking habituates people into constantly seeking the next hit of dopamine – but without the joy of consummation (which is the work of the opioid system, not the dopaminergic). As people continue to seek more attention from diverse but narrow sources (e.g., email, text, Twitter, Vine, Snapchat, etc.), Tschaepe argues, people become less able to attend to any one task satisfactorily.

Tschaepe notes what both Plato and Dewey argued before him: democratic life requires intelligence and sustained attention. Social media mediates our interactions with one another. Yet it lacks expression: there are no gestures, no subtleties of tone, no indications of posture or facial expression, utterly lacking in tactility beyond the thumbs. It encourages distraction. Nicholas Carr observes the effects of Internet use on our cognitive load, writing “Our ability to learn suffers, and our understanding remains shallow. Because our ability to maintain our attention also depends on our working memory... a high cognitive load amplifies the distractedness of experience... as we reach the limits of our working memory, it becomes harder to distinguish relevant information from irrelevant information, signal from noise. We become mindless consumers of data...” (2010, 125). He points toward a  $\text{C}\text{E}$ -transactional view: “Try reading a book while doing a crossword puzzle; that’s the intellectual environment of the Internet” (2010, 126). This environment is part of our culture, especially with regard to our social interactions. Our use of these devices affords anti-democratic behavior in that we are able to escape those in close bodily proximity but who share a different opinion. Instead, people connect with others who are far in body but close in opinion. In other words, we can connect with those who think like us regardless of where they are on the planet while ignoring those who may think differently from us yet live nearby.

Dewey saw such a threat to democracy in 1916, writing:

In order to have a large number of values in common, all the members of the group must have an equable opportunity to receive and to take from others. There must be a large variety of shared undertakings and experiences. Otherwise, the influences which educate some into masters, educate others into slaves. And the experience of each party loses in meaning, when the free interchange of varying modes of life-experience is arrested. A separation into a privileged and a subject-class prevents social endosmosis. The evils thereby affecting the superior class are less material and less perceptible, but equally real. Their culture tends to be sterile, to be turned back to feed on itself; their art becomes a showy display and artificial; their wealth luxurious; their knowledge over-specialized; their manners fastidious rather than humane.

Lack of the free and equitable intercourse which springs from a variety of shared interests makes intellectual stimulation unbalanced. Diversity of stimulation means novelty, and novelty means challenge to thought. The more activity is restricted to a few definite lines — as it is when there are rigid class lines preventing adequate interplay of experiences — the more action tends to become routine on the part of the class as a disadvantage, and capricious, aimless, and explosive on the part of the class having the materially fortunate position. (MW9: 90)

Dewey goes on to discuss Plato's views of slavery beyond the legalistic sense. Tschaepe's concern is that we have become slaves to our devices.

More disconcerting are Henry Giroux's observations regarding the use of brain science within a neoliberal context. Writing along similar lines to Dewey's concern, Giroux describes our current situation:

Think of the forces at work in the larger culture that work overtime to situate us within a privatized world of fantasy, spectacle, and resentment that is entirely removed from larger social problems and public concerns. For instance, corporate culture with its unrelenting commercials carpet-bombs our audio and visual fields with the message that the only viable way to define ourselves is to shop and consume in an orgy of private pursuits. Popular culture traps us in the privatized universe of celebrity culture, urging us to define ourselves through the often empty and trivialized and highly individualized

interests of celebrities. Pharmaceutical companies urge us to deal with our problems, largely produced by economic and political forces out of our control, by taking a drug, one that will both chill us out and increase their profit margins. (This has now become an educational measure applied increasingly and indiscriminately to children in our schools). (2011, 85)

Giroux is pointing to the tyrannies discussed by Kitcher, of wealth and power, of ignorance, and of the majority. The majority of us are woefully ignorant of economics, technology, and, especially, neuroscience, let alone how these three are entangled with each other. This tyrannical trinity is antithetical to the democratic ethos imagined by Deweyan creatures. Our democratic culture in the West, especially in the US, is enslaving us, via our devices, to triviality. Giroux continues:

Surely, common sense is of little help in explaining the existence of brain research that is now being used to understand and influence how people respond to diverse sales and political pitches. Nor does it explain why there is not a huge public outcry over the emergence of a field such as neuromarketing, designed by politicians and corporations who are "using MRIs, EEGs, and other brain-scan and medical technology to craft irresistible media messages designed to shift buying habits, political beliefs and voting patterns." (2011, 158)

Democracy, privately and publicly, requires informed citizens who interact with diverse ways of life, seeking a common good — that is, democracy requires Deweyan creatures. The dopamine democracy threatens such an enlightened and creative democracy. Taking up a pragmatic conception of experience as  $\text{C}\text{E}$ -transaction affords us a creative way forward for inquiry. Failure to do so effects the dopaminergic dysevolution from democratic ideals.

What is the response to the dopamine democracy? Bernstein offers hope. The first bit of which is an emphasis on creative democracy's not only always being a task before us but also something "that can be fully grasped only when one understands the linkage between democracy and experimental science, the



meaning of experience, the claim about the continuity of means and ends, and the emphasis on communication, interaction, and sharing” (2006: 193). Indeed, Bernstein articulates what I take to be central traits of the Deweyan creature. With regard to the nature of a *creative* democracy — in direct response to the neoliberal globalization that sets the scene for Tschaepé’s dopamine democracy — Bernstein writes that “It is intrinsic to the very idea of such a democracy that is always a task before us — a task that demands passionate commitment and reflective, flexible intelligence” (2006: 202).

What does this reflective faith require (2006: 193) for effecting creative democracy? Bernstein’s answer is a well-ordered and concise description of the Deweyan creature. He writes:

But let me remind you that Dewey speaks of *creative* democracy. What does “creative” add to our understanding of democracy? I think there are two central points that Dewey wants to make. First, that his understanding of democracy both presupposes and fosters creative individuals [viz., we Deweyan creatures]. Situated creativity is one of the most basic categories in Dewey’s thinking. The democratic personality is one that is *flexible, fallible, experimental, and imaginative* [my emphasis]. Here again we see why Dewey placed so much emphasis on education in a democratic society. Without creative imagination and intelligence, individuals lack the resources to deal with novel situations. Ultimately this type of creativity involves a number of virtues: *the courage to experiment, to change opinions in light of experience. It also requires a genuine respect for one’s fellow citizens — a respect and openness that is not simply professed but concretely exemplified in one’s practices* [my emphasis]. These practices do not arise without careful cultivation of the habits, skills, and dispositions required for creative activity. “Creativity” is not something that is limited to special occasions, nor is it restricted to special aesthetic domains. It can — and indeed ought to — be manifested in all human experience and in our everyday practices.

But there is an even more radical sense in which democracy must be creative. Democracy is forever confronted with the task of creating and recreating *itself*, for democracy can never anticipate the contingencies and the new situations that we confront. A creative

democracy is one that always faces new, unexpected challenges. (2006: 201–202)

The task before us is the task of reconstructing our ethics and morals in light of, indeed in response to, our technological products, such as our dopamine devices. The dopamine democracy is a descendant of an older worry about democratic life. That we are able to characterize it in neural terms is evidence that we have progressed methodologically in understanding ourselves as evolved and evolving beings — something Plato simply could not imagine, let alone understand. Our task is not only diagnostic about the tyrannical trinity Kitcher describes — such tyrannies always loom in the shadows — but also prognostic: how are we to use these new tools and devices to thwart current efforts to exploit, enslave, and degenerate human beings? In using these devices as means toward an end for which they are not designed, we begin the process of reconstruction, of re-tooling these devices for our own nobler ideals. Insofar as we Deweyan creatures value freedom, inquiry, and democracy, the more conversation we generate about these very real and felt difficulties the greater the hope we have in resolving them together.<sup>16</sup>

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<sup>16</sup> My thanks to John R. Shook and Mark Tschaepé for reviewing parts of earlier drafts, and, especially, to Bill Bywater for feedback on entire earlier drafts of this paper. I also thank an anonymous reviewer for helpful remarks.

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