than its rival theories. The question that we ought to be thinking about, I suggest, is whether enactivism proposes the most appropriate vision according to what we feel science ought to be doing and what it ought to be for; this is an ethical question, but not one that scientists should dismiss, for they too may be proposing a vision of a particular kind of community without being aware of it. So, given the feminist perspective, in which disciplines like cognitive science are understood as socially embedded and thus influential in and influenced by the sociopolitical domain, is it wise to treat the utopian and empirical projects of enactivism as completely distinct? Q1 By adopting a feminist lens, I suggest we can be more aware of how science – especially empirical projects – shapes human life more broadly, and to this end we may better consider how to use science to shape our lives for the better.

« 14 » If the explicitly utopian goals of enactivism do not in themselves warrant dismissing the project or favoring, what superficially appear to be, less idealized or conceptual projects, such as so-called empirical science, then I wonder what conceptual framework the authors think is the best for cognitive science? Q2 I have expressed my doubts elsewhere about whether enactivism alone should be used to arbitrate issues in significant areas of science that impact human life (such as psychiatry; see Russell 2023), but enactivism may otherwise be a useful framework if supplemented with other more explicitly utopian approaches including feminist thinking.

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The Point is to Change the World: Enactivist Reflexivity Motivates Resisting the Utopian vs. Scientific Distinction

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> Abstract • The distinction Meyer and Brancazio offer between utopian and scientific projects within enactivism is a helpful addition to the more well-established differentiation between enactivist strands. However, I propose that the distinction works well only as an interpretive lens for looking at enactivism from the outside. In contrast, considered "from the inside" or in light of enactivist commitments, enactivism has good reasons to challenge the currently dominant assumptions about science and philosophy that underlie the distinction.

Handling Editor • Alexander Riegler

« 1 » As a sympathetic outsider coming from enactivism's cousin field of ecological psychology, I welcome Russell Meyer and Nick Brancazio's proposed distinction between utopian and scientific projects within enactivism. In contrast with the increasingly popular blanket descriptions of enactivism as philosophical rather than scientific (the influential enactivism-as-philosophy-of-nature trope), Meyer and Brancazio's distinction brings nuance and rightly acknowledges the diversity that makes up enactivism, with different projects relating differently to science, some making closer contact with and even engaging in experimental research, and others focusing instead on philosophical inquiry. And besides providing this much needed nuance, their distinction is also a helpful addition to the more well-established distinction between autopoietic, sensorimotor and radical strands within enactivism: above and beyond differences regarding the emphases and influences that make up these camps, enactivists and enactivist projects can also differ in their intended audience and the goals they mean to accomplish, whether first and foremost philosophical or scientific. This

distinction thus refines our understanding of the current enactivist intellectual landscape and it also enriches our thinking about the prospects for moving forward.

« 2 » There is a caveat, however. As just affirmed, the distinction between utopian enactivism and scientific enactivism seems to be a helpful lens for making sense of the diversity of projects within enactivism. Yet, it strikes me as a good lens for examining enactivism specifically *from the outside*. And the authors seem to gesture in this direction in Footnote 2, where they point out that their distinction is not specific to enactivism but could be applied to other frameworks in cognitive science. My question, then, is whether *enactivists* should uncritically accept this distinction as a lens for examining enactivism *from the inside*, that is, in light of enactivist commitments. I am not convinced that they should, for the same reasons I do not think enactivists should have so easily embraced the (underlying) dichotomization between "philosophy of nature" and science. If we take for granted currently dominant categorizations of types of knowledge (and of academic disciplines and university departments), it seems reasonable to draw very sharp boundaries separating, on the one hand, philosophy and philosophical projects, from, on the other hand, science and scientific projects. Yet should enactivists take for granted these dichotomies and separations? My proposal is that enactivism has consequences that are not confined to the domain of psychology, cognitive science and philosophy of mind but that extend to philosophy of science as well: if we follow enactivists in how they rethink mind, cognition, brain, behavior, life and nature, then this ought to inform also how we understand *what science is* and, by extension, *what counts as scientific*.

« 3 » What marks the difference between the "utopian" and the scientific? That is, what determines the border separating philosophical projects from scientific ones? It seems that the difference between the two cannot be merely the theoretical or empirical nature of the work. There are plenty of projects pursued by scientists contributing to recognized scientific disciplines and employed by science departments (e.g., in physics, biology, chemistry, and mathematics) that, although purely theoretical and sometimes even speculative in nature, are still widely accepted as belonging to their respective sciences. Conversely, although perhaps less frequently, there are plenty of practical and applied projects pursued by philosophers, often within the institutional context of philosophy departments, but which do not, due to the projects' practical and applied nature, come to be seen as falling outside of philosophy proper and moving into the domain of science. I explicitly mention disciplines and departments because I suspect that these institutional factors might matter more for shaping intuitions about what is scientific and what is not than the nature of the work itself, whether it is theoretical or "practical." And the lines are especially blurry when it comes to inquiry questions that crisscross disciplinary borders, as is precisely the case in enactivism and related fields in embodied cognitive science, where one and the same project can (and in many cases does) count as contributing to, say, theoretical biology or theoretical psychology just as much as to philosophy.

« 4 » Recognizing these epistemic entanglements motivates resisting a separation of philosophical work from scientific work purely in terms of whether the work is theoretical or empirical. However, I think enactivists, along with ecological psychologists and others in embodied cognitive science, have even further reasons to reject this criterion, precisely because of our reconceptualization of mind, cognition, embodiment and, by extension, knowledge. As I have emphasized elsewhere, pragmatists and phenomenologists (precursors of embodied cognitive science broadly construed, and some of them supposed "enactivists avant-la-lettre") explicitly challenge the dichotomies of theory vs. practice and of theoretical knowledge vs. practical knowledge, and they do so as a result of rejecting the more fundamental dualities of mind vs. body, perception vs. action, reason vs. emotion, the mental vs. the material, organism vs. environment, the human vs. the natural, culture vs. biology, and so on (Sanches de Oliveira 2019; Sanches de Oliveira, van Es & Hipólito 2023). This means that, above and beyond the general difficulty attending categorization purely in terms of the theoretical or empirical nature of different projects, enactivists can also look at the situation through an explicitly enactivist lens (what I have referred to as looking "from the inside" or in light of enactivist commitments), accordingly extending enactivism's anti-dualisms so as to reveal the artificiality of currently dominant disciplinary distinctions. The contingency and inadequacy of the separations imposed by contemporary institutions can occasionally make itself evident to anyone engaged in cross-disciplinary research, whether enactivist or not. The point here is that an enactivist (or ecological, or more broadly embodied cognitive) understanding of the nature of human experience and human knowledge gives further reason to resist the categorization proposed, because the same understanding also challenges the categories presupposed.

« 5 » That enactivism has these kinds of "internal" reasons for resisting categorization as *either* philosophical *or* scientific is not a new point. On the contrary, it was present early on, in Humberto Maturana and Francisco Varela's insistence that their scientific account of cognition needed to account also for cognizing about cognition: "The observer is a living system and any understanding of cognition as a biological phenomenon must account for the observer and his role in it" (Maturana & Varela 1980: 48). However, their claims to be making a scientific contribution (and there are many such claims in their works) do not have to be read as siding with science as if this meant "in opposition to philosophy." Rather, Maturana and Varela can be seen as offering a naturalized epistemology that challenges views of philosophy as non-scientific and of science as non-philosophical, as is especially clear in their discussions about the nature of "explanation" (Maturana & Varela 1987: 28f, and also the passage surrounding the 1980 quote above). Of course, I am not suggesting that contemporary enactivists of different strands must agree with the specific accounts Maturana and Varela offered. The point is to show that, besides challenging dominant assumptions about the nature of mind and knowledge and, accordingly, about how the mind sciences should be conducted, enactivism is, from the start, articulated as a framework that additionally challenges dominant categorizations imposed on knowledge (including, that is, knowledge about knowledge).

« 6 » To elaborate, let me step farther back (and perhaps a bit to the side) to consider how the pragmatist roots of enactivism

and related frameworks in embodied cognitive science motivate thinking differently about science. Key here is the pragmatist theme neatly expressed in Richard Rorty's (1991) claim that natural science is not a natural kind.

« 7 » Rorty's criticism of popular conceptions of "science" is well known. He rejects the idea that science bears a special relation to what it studies such that it can transcend the limitations of human perspective and tap into extra-human reality. For him, this view of science is a throwback to the religious worldview of the medieval era:

> "Worries about 'cognitive status' and 'objectivity' are characteristic of a secularized culture in which the scientist replaces the priest. The scientist is now seen as the person who keeps humanity in touch with something beyond itself." (Rorty 1991: 35)

In Rorty's view, then, trust in science as "carving nature at its joints" is *secularized* faith, but it is *faith* nonetheless: in this conception, science has all of the key elements that made up the medieval religious worldview, including rituals and doctrines (and therefore concern for orthodoxy), hierarchy and authority, and, perhaps most importantly, a redemptive aura based on the idea that science alone can remedy our fallen (epistemic) state because it has privileged access to an allegedly universal, mind-independent Truth.

« 8 » Many writers have rejected Rorty for his views on science and philosophy, including even self-avowed pragmatists such as Douglas McDermid (2008), who see him as objectionably veering off course from traditional pragmatism. Whether or not such criticisms are warranted, Rorty's claim that natural science is not a natural kind articulates a theme that was certainly already present in the thought of his classical pragmatist predecessors. This includes William James, for whom, as Rorty explains, "no distinction of kind separates the sciences from the crafts, from moral reflection, or from art" (Rorty 1980: 723). Similar ideas are also present in John Dewey's thought. Consider the following claim Dewey makes in *Experience and Nature*:

> "The history of the development of the physical sciences is the story of the enlarging possession by mankind of more efficacious instrumentalities for dealing with the conditions of life and action." (Dewey 1929: 11)

You cannot read this quote and think that by "science" Dewey had in mind anything like the transcendental theological modernist conception Rorty denounces. On the contrary, this quote clearly illustrates the paradigmatically pragmatist idea that science grants us access to truth only if, like James, we see the "true" not in terms of correspondence to a reality supposedly separate from human practice, but rather as that which carries us "prosperously from [some] part of our experience to [some] other part, linking things satisfactorily, working securely, simplifying, saving labor" (James 1907: 58).

« 9 » The pragmatist perspective thus debunks the myth of science as special and distinct in its transcendental epistemic capacities: science cannot deliver the ultimate, human-independent Truths of reality because no such Truths exist – that is what James means when he says that "the trail of the human serpent is thus over everything" (James 1907: 64). Yet we cannot stop here. Rejecting the idea that natural science is a natural kind enables us to naturalize science and more clearly see its continuities with (rather than distinction in kind from) other human practices, including philosophy. Science falls, along with other practices, squarely within the domain of human action and experience. Accordingly, science is made sense of, pragmatically, as an effort toward extending the reach of human success. Viewing the "scientific" and the "philosophical" in opposition with each other and as mutually exclusive categories makes perfect sense given dominant institutional structures. However, as the pragmatist tradition illustrates, a naturalized perspective on human epistemic, sense-making practices motivates seeing these categories (and the structures that perpetuate them) as artificial, historically contingent, dispensable, and maybe even worth fighting against.

« 10 » My intervention in this commentary can be framed as a call for *reflexivity* within enactivism, in line with the reflexive attitude I have recently advocated for in embodied cognitive science more broadly (Sanches de Oliveira 2023a, 2023b). Briefly, what I mean by reflexivity is the application of our concepts, tools and methods – the same ones we already use to make sense of cognitive phenomena in general – but for making sense of ourselves and our explanatory practices, including the cognitive phenomenon of investigating cognition. This is what I was referring to by the idea of looking at enactivism "from the inside" or in light of enactivist commitments. It is also the attitude I illustrated above, in some of Maturana and Varela's work, as being central to enactivism's starting point. And my suggestion is that even if the utopian vs. scientific distinction is perfectly fine for understanding enactivism (and other frameworks) from the outside, it might not be as good a lens for looking at enactivism from the inside and, reflexively, making sense of enactivist sense-making.

« 11 » Capitalizing on Meyer and Brancazio's reference to Engels, I want to conclude by pointing to the quote alluded to in the title of my commentary: "The philosophers have only interpreted the world, in various ways; the point is to change it" (Marx 2000: 173). Ignoring its original context, this quote could be read as claiming that "the point is to stop doing philosophy and instead change the world." However, you only have to read it this way if you equate philosophy with interpreting-rather-than-changing-the-world. An entirely different reading is that you can change the world even as you continue doing philosophy, and even *by* doing philosophy, as long as you define broadly what counts as "philosophical." And that is precisely the sort of reconstruction that a revolutionary project like enactivism might be able to offer. Rather than taking for granted currently dominant categories and divisions (including those between what is properly scientific and what is only philosophical), we challenge them and work to change the (academic, intellectual, cultural) world. Enactivism offers new ways to understand mind, cognition, embodiment, knowledge, etc., but it does not have to stop there: it can also inspire new ways to understand our understanding of these phenomena, resisting oppressive disciplinary structures and paving the way for fundamental change in the means (and ends) of knowledge production. Or, at least, that is a possibility that

enactivists can pursue by thinking about enactivism reflexively, looking at it from the inside.

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Divide & Rule: The Future of Enactivism

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> Abstract • Meyer & Brancazio's article provides a strict categorization of enactivist research that can lead to productive foundational discussions but risks leaving out enactive perspectives that do not fit into the two categories. I discuss what will fall through the grid of the utopian and scientific split and how the exchange of philosophical and empirical methods is an essential part of all scientific models.

Handling Editor • Alexander Riegler

« 1 » Enactivism faces two problems simultaneously: its explanatory targets encompass a diverse set of biological and cognitive systems, and at the same time, its conclusions are insufficiently discussed by specific research in cognitive psychology, neuroscience, or biology. In their target article, Russell Meyer and Nick Brancazio thoroughly review the state of the art of the field. While I agree that a categorization of all the different strands is much needed, the proposed separation of utopian (philosophically oriented) and scientific (empirically oriented) enactivism appears to go against one of its central messages. According to Francisco Varela (1996), the explanatory gap between phenomenological and scientific descriptions of cognition can only be bridged by a methodology that takes empirical and philosophical content seriously. Here, I am extending Varela's notion of mutual constraints to the whole enactivist modelling process. In the neurophenomenological program, first-person data about subjective experience should constrain our acquisition of third-person data that comes from conventional scientific tools. In the same way, these scientific results should guide our way of studying subjective experience in a mutually constraining framework. The enactivist program starts with a novel epistemic perspective, where theoretical and experimental ideas constrain each other in a way that makes them inseparable in practice. Separating scientific from "utopian" endeavors might render the empirical data meaningless and the philosophical concepts mere speculation. This perspective of mutual constraints suggests that most of enactivist theory-building happens on the spectrum of scientific and utopian ideas mentioned in §51, and through the reflexive interaction of theory and practice. While the hard separation may be productive for reevaluating the explanatory goals of enactivism, in practice, it can lead to an artificial opposition of utopian and scientific approaches, while they are complementary. This opposition is visible in §29, which frames foundational texts of enactivism as utopian, even though these texts provided the basis for building novel research methodologies, such as the aforementioned neurophenomenology program.

« 2 » From a more general perspective, a significant amount of the philosophy of science literature deals with the problem of separating ontological from epistemological questions in areas as diverse as physics, psychology, and economics. Focusing on the enactivism debate only, Meyer and Brancazio do not provide an argument for why the explanatory goals of enactivism should be any different from those of modelling approaches in other areas, such as physics. A comparison of the interaction of ontological and epistemological questions in other scientific disciplines may be revealing for theory building in enactivist research. Mary Hesse's (1953) hypothetic-deductive method explains how models in physics appear to be deduced from empirical data, while theoretical considerations already provide the basic structure into which the results are fitted. According to Hesse, this applies to formalized models in general and to their empirical tests. While scientific enactivism may appear to be independent of ontological commitments, its underlying concepts