INTRODUCTION:
PRAGMATIST PERSPECTIVES ON SCIENCE AND TECHNOLOGY AND CONTEMPORARY DEWEY STUDIES

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John Dewey (1859-1952), who had a taste for hyphenated concepts that aim at bridging rooted dualisms, could well have been the originator of the nowadays so fashionable term "techno-science". The idea that we must not separate between science, as a logically prioritized epistemological enterprise and technology as a downstream application finds itself all over his work, especially in his later "Logic: Theory of Inquiry" (Dewey, LW12). Dewey finds faults with this separation on two fronts: science is itself a form of technological production, in-so-far as inquiry is for a pragmatist, in general, a situated form of problems solving and problem engagement. Technology, on the other hand, is, at least in its inventive and explorative phase indistinguishable from experimental inquiry and learning adaptation.

This issue pursues several overlapping aims. It gives voice to a number of promising new strands of Dewey-scholarship with particular attention to the critical role Dewey played, conceptualizing technology and preparing contemporary debates in science and technology studies. Moreover, it concerns with contemporary pragmatist scholarship, starting from Dewey and going beyond, in exploring philosophical problems surrounding progressive feats in science and technology.

The pragmatist tradition has always been an important source and inspiration of Science & Technology Studies (STS). However, the rich and fertile output of STS scholarship has received less attention than it deserved from pragmatist philosophers, albeit with a growing number exceptions.

A few concepts seem crucial when approaching science and technology from a pragmatist vantage point that also find expression in this special issue. E.g. the revolution of the concept of "agency" in STS debates was well prepared by Dewey's "transaction" perspective, which sees human agency as an emergent property, a product of environmental and instrumental conditions. Actions are always the co-authored products of agents and their natural, social (and technological) contexts. This perspective finds many correspondents in STS, e.g. in Latour's actor-network theory.

For pragmatists and STS scholars knowledge is a process that involves aspects of technological production and social negotiation. Knowledge is never a representation of independent facts, but always a product or artifact. Facts and observations are manufactured and designed to the same extent, as experiments and technological equipment is necessary for their production and mediation. Pragmatists go so far as to include our biological constitution (hands, brains, and eyes) among these instrumental conditions.

Most pragmatists share a broadly naturalistic metaphysical platform, yet pragmatist naturalism includes constructivist elements: reality is at least co-produced by human technological interventions. STS asks whether technology remakes reality in a way controllable by planning human agents or whether technology creates dynamics and spin-offs that are as ungovernable as brute natural forces. The metaphysical implications of these questions interlace with pragmatist thinking about the co-authorship of agents and instrument users in producing reality.

Also, both traditions grapple with the sources and determinants of value and aesthetic value and have developed a great sensitivity for the mutual dependence of values and instrumental/technological environments. The profound insight that technology does not only offer solutions to problems but also shapes the contexts in which we formulate purposes and a conception of the good life is central to pragmatists and STS thinking alike. How the coevolution of values and technological conditions affects individual conceptions of the good, social norms and cultural ways of life is a field of shared interest.

For pragmatists, the use of tools and instruments is not only a defining trait of our species that has shaped our natural environment, it is also that trait which makes us proactive participants in our own evolutionary story. Pragmatists understand tools not merely as a means of achieving desired outcomes with given resources. Tool-use is rather a creative form of mediation between problem-situations and problem-solutions, in which both sides are transformed. For pragmatists after Dewey, the instrumental action is not a mechanical exercise but a creative and aesthetic mode of human functioning, and it is fundamental to aesthetic dimensions of our experience.

Reducing technology to an aesthetically mute instrument, a mere conduit between resources and external ends is a caricature that nevertheless captures a growing tendency arriving from the industrial revolution. The reduction of the technological to the mechanical and consequently the emptying of instrumental activity of aesthetic quality and meaning beyond the achievement of an external end is Fesmire's topic. Fesmire traces the critique of technology that Dewey developed at the beginning of the industrial age and demonstrates how it centers on the aesthetic-experiential aspect of the instrumental action. Dewey's embrace of science and technological action had gained him disdain from critics who suspected him of collapsing intrinsic values into mere instrumental means. Fesmire shows how these critics fail to appreciate Dewey's hope that technology could enrich and deepen our lives and in particular aesthetic dimensions of our experience.

No doubt, as techno-sceptics after Heidegger noted, the proliferation of appliances that make modern life easy, also alienate us from meaningful and deeply aesthetic experience. In pre-industrial life, instrumental struggles were more embedded in their environment and our contribution was better characterized with making in the sense of "poiesis" (from which also "poetry" arrives). Fesmire carefully demonstrates how Dewey identifies the sources of modern alienation not in technology per se, but in a mechanical understanding of technology that separates instrumental pursuits from the search for meaningful ends.

Even though Dewey's critique of modern utilitarian technocracy sometimes reverberates with the technophobia of Romantics and early preservationists, Dewey rejects any hiatus between technology and nature. The Aristotelian notion that technology is external to nature and that engineering amounts to a form of manipulative tricking of a well-ordered cosmos out of its harmonious path is anathema to his naturalism. On the contrary, since humans are in and of nature, so is technology. The question is therefore how humanity can co-evolve in a technologically advancing (still natural) environment, without becoming disenfranchised consumers and laborers in its machinery.

Shook & Giordano look at neuro-science as their starting point for investigating and critiquing our practical dispositions. They take an interest in neuroscience and neuro-technology and its increasingly articulate say on moral cognition and the study of ethics.

Shook & Giordano reject any reductionist reading of neuronal functioning in moral decision making as a hardwired determinant of moral dispositions. The brain is too much the product of a sociocultural co-evolution to allow an understanding of neuronal pathways as originators of intelligible moral decisions. A contemporary, pragmatist neuroethics has to take very seriously both the biological & neuronal foundations of our deliberative capacities, and the social, cultural determinants together with which they co-evolved.

On the question, whether neuroethics can provide answers to normative questions about how we should deliberate or how we ought to live together, Shook & Giordano give a pragmatist answer. Neuro-studies do not issue in prescriptive resolutions but as a "lens and mirror" of our socially embedded, biological and evolved nature, neuro-ethics offers an important source of

ethical orientation. We may add, that pragmatists never denied the possibility of committing a natural fallacy, meaning a deliberative short circuit by which we jump from observed conditions directly to prescriptive conclusions. Ethical judgments must involve intelligent and imaginative deliberation, which means behavioral adaptation and learning in view of actual and possible experience. This, indeed, takes place on the naturalistic grounds of appreciated experience and projection without the need for postulation of additional purely normative premises.

This knowledge of our biological and neuronal functioning will also come to pass when new ethical decisions have to be taken e.g. in view of advancing technologies of enhancement.

Thinking of human activity and deliberation, as co-authored by a natural, social and technological environment has gained much currency in the field of Science and Technology studies since Latour and other began speaking of "assemblages" and "actants". With his distinction between the viewpoints of "self-action", "interaction" and "transaction", Dewey is surely the father of this approach.

As in Fesmire's article, alienation by means of technologically and politically engineered environment is also the topic of Mark Tschaepe in "Undermining Dopamine Democracy through Education".

In our Dec 2015, Arnold Berleant argued that our sensibility is becoming instrumentalized and corrupted for industrial purposes. Food, music, movie and advertisement industries are now conglomerates of vested interests that make coordinated efforts to monopolize and condition our tastes and thereby predetermine our customer choices. Tschaepe is motivated by a similar worry. The neoliberal order has turned individuals into consumers that react to the salience of advertised stimuli rather than take responsibility in cultivating their own preferences and decisions. "Dopamine democracy" stands for the de facto annihilation of deliberative political self-control, a yielding to consumerist temptations and suggested necessities of market forces. This leads to a form of political individualism where agents (or brains) scan their environment for salient incentives, which they pursue, sometimes by entering strategic alliances with others.

Hope sees Tschaepe in Dewey's theory of education, and specifically in the notion of growth of freedom and self-control through intelligent inquiry. When we learn through inquiry in problem-solving collaboration with others we overcome the detrimental separation between mere "information" and "thoughtful action". Thereby knowledge becomes an empowering force in overcoming ideological divides and in forming new democratic communities.

In "We Deweyan Creatures" Tibor Solymosi introduces the idea of human beings as an organism so thoroughly embedded within its environment that he introduces "Œ" as a symbol for the indivisibility of human subject (organism) and environment. In his account of evolution as a continuous process of generating hypothetical solutions and testing them, "Deweyan creatures" do not see themselves merely as products of evolutionary dynamics but also as active participants in shaping the world and sharing experience.

Solymosi asks the momentous question whether a Deweyan conception of creative democracy is supported by (human) nature. Like Tschaepe, he contrasts the conception of a critical and deliberative community with a reactive "dopamine democracy" where technological appliances only prompt reactions by offering salient stimuli. Solymosi tells a narrative of human evolution that takes its environmentally embedded transactive nature serious. An instrumentalist account, he agrees with Dewey in defining language as the tool of tools. We are creatures with the ability to use tools intelligently and mediated by the use of language we project ourselves forward into transformed situations that we help to create.

As both Fesmire and Tschaepe, Solymosi too understands tools as more than mechanical

intermediaries between problems and solutions. The use of tools and technology is an imaginative activity, which means that the distance between technology, science and art diminishes. All these human endeavors capture creative enterprises of using instruments to transform situation in a meaningful way. Deweyan creatures have the unique imaginative capacity of seeing themselves as part of the evolutionary story which transforms the social and environmental transactions of our species. This position calls for a self-conception of humans as critical, socially interactive and creative co-authors of an unfolding evolutionary story, and it is this notion that is entirely incompatible with the reactive, stimulus-driven denizen of a "dopamine democracy".

All above contributions show how promising an intensified communication between pragmatist scholarship and science and technology studies may be. Many of the concepts that define contemporary STS scholarship have been philosophically anticipated and elaborated by pragmatists since Dewey.

As it is well-known, Dewey has represented and summarized the main movements of the traditional pragmatism. During his long life he wrote papers and books almost on every important question of philosophy: e. g. on social philosophical phenomena like democracy and religion, on ontological phenomena like nature, and on aesthetic phenomena like artworks and art. We could say that Dewey was almost a polymath, and due to his multidimensional philosophical activity, he has more and more followers even today. In the second chapter of this issue, we have chosen five general contemporary interpretations of his philosophy.

The first train of thought is connected to Dewey's social philosophy. Carlos Mougan uses Dewey's interpretation of democracy as "a way of life" as an Alpha and Omega of his standpoint. However, he also shows that Dworkin's "moral reading of democracy" is not in contradiction with Dewey's participatory approach, since "democracy has a commitment to the moral development of individuals, stressing continuity between ethics and politics" (PT 61). What is more, Mougan builds into his interpretation the effects of the legal system, when he emphasizes that his offer „requires politics to defend basic democratic values more strongly and sees legal and constitutional principles as weapons for the development of political and social order, favoring a deepening in the democratic way of life" (PT 65). This makes, as Mougan says, abstract tools for specific policy from the constitutional principles.

Barry E. Duff has chosen an ontological approach. Experience and Nature (E&N) is Dewey's seminal work that wanted to destroy the traditional dualism of human consciousness and Nature by the help of a radical "empirical naturalism or naturalistic empiricism, or […] naturalistic humanism" (E&N, 1929 1a). However, E&N has always caused some perplexity according to Duff even for Dewey himself, because he wanted to achieve a paradigm shift, but he has failed. "In discussion of E&N at the end of his life, he can be seen struggling again with the paradigm shift he had adumbrated but was unable to achieve." (PT 67) In Duff's opinion, the perplexity is caused by the presence of two incommensurable paradigms in E&N: the sociocentric concept of "meaning" and „and the 'individuocentric' concept of "experience" that necessarily includes only one person." (PT 76) In his paper Duff tries "to make sense of E&N by showing how it can be reformulated as a coherent whole using the sociocentric paradigm; the changes Dewey considered making to it even at the end of his life are discussed and give further support to this strategy." (PT 68)

In the next two papers give manifestation of the aesthetic approach which was one of the most important dimensions of Dewey's late philosophy. In Art as Experience (AE) which was first published in 1934, Dewey has embedded his philosophy of art into his pragmatism and has shown the continuity between our

everyday life experience and the aesthetic experience. Dario Cecchi emphasizes that Dewey goes much further than Kant in connection with the description of the mutual connections between cognition and aesthetic experience: "Aesthetic experience has the function of emphasizing the organizing process of ordinary experience – an organizing power which Dewey qualifies as an aesthetic principle of ordinary experience. As a consequence, we are not interested in aesthetic experience because it refers either to beauty or art. This is due to the fact that aesthetic experience emphasizes the primary cognitive (or aesthetic-cognitive) performance of experience." (PT 89) Barry Allen shows us on the one hand how Dewey connected nature and experience together: „Philosophy has had a tendency to oppose nature and experience. Experience was a superimposed veil, something to be transcended to find nature. Modern science no longer feels this problem. It takes for granted that experience controlled in appropriate ways is the path to facts and laws of nature. Philosophy should rethink its concept of experience accordingly." (93) On the other hand, he goes further and makes it clear that if we want to understand the aesthetic experience then we have to interpret first the general process of experience, as Dewey has written about this relationship in Art as Experience. Allen represents an original pragmatist standpoint, when he says that „the value of knowledge depends on experience" (PT 94) since "knowledge is »a mode of experiencing things which facilitates control of objects for purposes of non-cognitive experiences«" (PT 92).

Last but not least we have chosen a paper in connection with pragmatism's religious dimension. Ulf Zackariasson interprets miracle and he refuses the contemporary apologetic understanding of the phenomenon which dominates the present Anglo-American philosophy of religion, which says that a miracle is an isolated event. He prefers a pragmatist solution, where "miracle" is replaced by "the miraculous," and it is understood as an organic part of the human life: "When combined, the insights sketched pragmatically entail a form of meliorism: adequate responses to life's miraculous character are those that call on us to take action against injustice, suffering, hate, cruelty and inequality, regardless of whether it is directed towards us or others." (PT 108)

In this issue, we have aimed to show how Dewey's philosophical influence is enduring and not nearly exhausted. In fact, the relevance of Dewey's thoughts seems to grow rather than decline, particularly in view of advancing technology and a rising intellectual interest in the position of humanity in an increasingly techno-morph environment. We hope that not only card-carrying pragmatist philosophers but the members of a wider academic audience, especially those interested in science and technology, will also find this project interesting.