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James and Dewey on Abstraction

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I. Introduction

AN ABSTRACT CONCEPT such as “voluminousness” aptly, yet incompletely, characterizes any physical body.¹ Postulated stages of “stimulus” and “response” partition—for fallible, analytical purposes—the continuous physiological process of the reflex arc.² A judgment of someone as a “murderer” may be accurate, but it all too easily becomes a too narrow universal claim of that individual’s putative fundamental essence.³

A pragmatic analysis sheds light on these three cases of abstraction. Abstractions such as concepts, stages, and judgments are purpose-driven, partial, and useful for understanding, inference, and intervention. Yet, the dangers of what William James termed “vicious abstractionism” and “the psychologist’s fallacy,” and John Dewey recognized as “*the* philosophic fallacy,” loom large in any abstraction. According to these two pragmatists, whenever context is ignored, abstractions become what will be here called “pernicious reifications.” That is, whenever one forgets (i) the particular function, (ii) the historical conditions of emergence, and/or (iii) the appropriate analytical level of an abstraction,⁴ the products and processes of abstraction become inappropriately universalized, narrowed, and/or ontologized.

In order to motivate the abstraction-reification account analyzed in this paper, consider a metaphor provided by James:

I have sometimes thought of the phenomenon called “total reflexion” in optics as a good symbol of the relation between abstract ideas and concrete realities, as pragmatism conceives it. . . . [L]et the water [of an aquarium] represent the world of sensible facts, and let the air above it represent the world of abstract ideas. . . . We are like fishes swimming in the sea of sense, bounded above by the superior element, but unable

to breathe it pure or penetrate it . . . and every time we touch it, we are reflected back into the water with our course re-determined and re-energized. The abstract ideas of which the air consists are indispensable for life, but irrespirable by themselves, as it were, and only active in their re-directing function. (*Pragmatism* 63–64)

Abstraction is “indispensable”; it “re-energize[s]” our inferences and activities. Yet, abstractions by themselves are “irrespirable,” and processes of inference, concept-formation, and classification can be abused. For instance, Dewey presents “*the philosophical fallacy*”⁵ with a different water metaphor:

[T]he philosophical fallacy . . . consists in the supposition that whatever is found true under certain conditions may forthwith be asserted universally or without limits and conditions. Because a thirsty man gets satisfaction in drinking water, bliss consists in being drowned. (*Human Nature and Conduct* 123).

For both thinkers, the abstraction-reification account in a nutshell amounts to recognizing that abstraction is powerful and liberating,⁶ yet has a dark side.

This article elucidates the abstraction-reification account diagnosed by James and Dewey and locates it in contemporary scientific work. Section 2 explores the complex process of abstraction in James and Dewey, and with a nod to C. S. Peirce. Identifying three stages in the abstraction process—singling out, symbolizing, and systematizing—clarifies the parallels between James’s and Dewey’s analyses. Section 3 investigates these pragmatists’ warnings against committing abstractionist fallacies, and identifies pernicious reification as neglecting three kinds of context: functional, historical, and analytical-level. Both philosophers implored everyday reasoners, scientists, and philosophers to attend to context. Reification, *qua* pathology of abstraction, results in disease symptoms such as universalized, narrowed, and/or ontologized abstractions. Acknowledging the importance of biographical and social conditions, the genealogy and mutual influence of James’s and Dewey’s perspectives are traced, especially in endnotes. Section 4 explores how James and Dewey avoid reifying the very distinction with which they are weaving their analysis: the abstract vs. the concrete. Finally, following the pragmatic forward-looking attitude, a gesture is made in the conclusion toward developing medicines (pluralism and assumption archaeology) out of the abstraction-reification account. After all, pernicious reification is to abstraction as disease is to health. Such treatments permit de-reifying ill models in contemporary science.

2. Abstraction

James and Dewey share a general understanding of the dynamics and functions of abstraction. Thought itself requires the simplification and selection afforded by abstraction. James writes: “The act of singling out is then called *abstraction*, and the element disengaged is an *abstract*” (*Principles* 1:505), and “at bottom the process [of abstraction] is one of *conception*” (508). He also observes: “Without abstract concepts to handle our perceptual particulars by, we are like men hopping on one foot. Using concepts along with the particulars, we become bipedal” (*Meaning of Truth* 134). Products of abstraction facilitate further (and sometimes novel) thought and action. Now, according to Dewey, “abstraction is indispensable if one experience is to be applicable in other experiences” (*Reconstruction* 166). Elsewhere, he argues that “abstraction is the heart of thought; there is no way—other than accident—to control and enrich concrete experience except through an intermediate flight of thought with conceptions, relations, abstracta” (“In Reply to Some Criticisms” 210). Finally, purposive “selective emphasis, with accompanying omission and rejection, is the heart-beat of mental life” (*Experience* 31). In short, abstraction can be conceptually creative and inferentially generative.

A three-phase schema of the abstraction process helps show the overlap between James’s and Dewey’s perspectives:

1. *Singling out*. Abstraction first identifies and emphasizes a single predicate, part, stage or object of a complex whole, whether the whole be material, ideal or both.
2. *Symbolizing*. Abstraction conceptualizes the predicate (etc.) as belonging to a single kind—a concept, a sign, a mathematical object or function, in short, a symbol.
3. *Systematizing*. Abstraction associates (James) and relates (Dewey) the single symbol to a system of symbols, a system that is fallible, disunified, and one among many.⁷ A particular symbol classification includes laws, causal regularities, and judgments in which concepts (James) and mathematical objects (Dewey) are connected and networked.

Both the *making* and the *use* (for understanding, inference, and intervention) of symbols and symbol systems are contextual and interest-driven. The focus in this section is on healthy, generative abstraction that is sensitive to functional, historical, and analytical-level context. Pernicious consequences of pathological abstraction are analyzed in section 3.

While James often uses “abstraction” as a term of abuse in his lectures of the first decade of the 1900s,⁸ a clear respect for the promise and power of abstraction is evident in *Principles*. Our three-phase schema provides a hook into James’s analysis of abstraction. Consistently with his conceptualism, he holds that properties and parts could be detached both from their whole and from each other. An “element disengaged” by “the act of singling out” is “an *abstract*” (*Principles* 1:505; see above). Moreover, abstraction “leads” (508) to the “process of analysis,” where analysis “means separate attention to each of [a thing’s] parts” (503). Abstraction and analysis are thus the first stage of singling out parts and properties of “elements.” “Elements” can be ideal or material, and “[a]ll are embedded in one world” (508). Note that this discussion is found in a chapter on “Discrimination and Comparison.” Without singling out, there would be nothing to compare.

Reasoning and abstraction are explicitly linked:

For his original concrete S the reasoner substitutes its abstract property, M. What is true of M, what is coupled with M, then holds true of S, is coupled with S. As M is properly one of the parts of the entire S, reasoning may then be very well defined as the substitution of parts and their implications or consequences for wholes. (Principles 2:330; emphasis in original)

This substitution of the entire, rich, concrete S for one of its abstract parts, M, is the second phase of our schema. For James, symbolizing is conception or kind-making. Making a kind involves comparison and the “*sense of sameness*,” which James takes to be “the very keel and backbone of our thinking” (*Principles* 1:459). After all, multiple Ss must be compared and assessed for sameness vis-à-vis being instances of a given kind M. This recognition of sameness produces the “*denkmittel*” of kinds and of “[a] kind’s kind,” which are “logic’s only instruments” and are the means by which “we can travel through the universe as if with seven-league boots” (*Pragmatism* 88). James often uses “kind” and “concept” interchangeably, stressing the “*function*” of the relation between “mental state” and “what the mental state signifies” (*Principles* 1:461). Concepts capture that something such as a feather is *this* (e.g., soft) “*instead of that*” (e.g., rough), but they hardly rule out that the feather “may be of much else *in addition to that*” (e.g., light, rainbow-colored, etc.) (*Principles* 1:461). As he voices in a lecture given at Oxford seventeen years later: “When we conceptualize, we cut out and fix, and exclude everything but what we have fixed. A concept means a *that-and-no-other*” (*Pluralistic* 113). Thus, forming a single kind and concept is, for James, the symbolizing stage of abstraction.

Systematizing, the third phase of abstraction, concerns the extension of concepts to unexplored objects, as well as the coordination of concepts. James instructively argues as follows:

Though many general characters seem indifferent to each other, there remain a number of them which affect constant habits of mutual concomitance or repugnance. They involve or imply each other. One of them is a sign to us that the other will be found. They hunt in couples, as it were; and such a proposition as that M is P, or includes P, or precedes or accompanies P, if it prove to be true in one instance, may very likely be true in every other instance which we meet. This is, in fact, a world in which general laws obtain, in which universal propositions *are* true, and in which reasoning is therefore possible. Fortunately for us: for since we cannot handle things as wholes, but only by conceiving them through some general character which for the time we call their essence, it would be a great pity if the matter ended there, and if the general character, once picked out and in our possession, helped us to no farther advance. . . . [I]f P have any value or importance for us, M was a very good character for our sagacity to pounce upon and abstract. (*Principles* 2:337–38)

Concepts or kinds are signs of other concepts or kinds. They “hunt in couples.” The “statement” that “M is P”—where M and P are, roughly, two different kinds or concepts—is an “*abstract or general proposition*” (James, *Principles* 2:332). This judgment allows us to predict and explain particular occurrences or other regularities. For instance, if we have coordinated a kind *smoothness* (M, one concept) with *ability to tickle* (P, a consequence or implication, viz., another concept), a new feather, never before observed, of kind M should also exhibit P. The “general laws” coordinating abstract concepts and kinds thus allow us to “advance.” As further analyses of systematizing, James argues that “[w]e of course need a stable scheme of concepts, stably related with one another, to lay hold of our experiences and to co-ordinate them withal” (*Pluralistic* 105). In considering “the stream of thought,” he stresses how the “scheme of relations” or “scheme of relationship” are “essential” to interest-driven thinking (*Principles* 1:259, 266). In short, abstract schemes and systems of concepts or relations are formed in the last stage of abstraction, allowing us to satisfy our purposes.⁹

Throughout his long career, Dewey conceives of abstraction in various ways. He contrasts and thereby groups it with “generalization” (McLellan and Dewey, *Psychology of Number*; Dewey, *Quest for Certainty*), “analysis” and “inquiry” (*Essays*), “symbol use” (*Quest for Certainty*), and “precision”

(*Logic*). Our three-phase schema provides a coherent narrative of Dewey's understanding of abstraction.

Most basically, abstraction for Dewey is singling out. In 1891, still under the influence of neo-Hegelianism and defending that a concept, not a percept, is "knowledge of what the real object is," Dewey argues that both percepts and concepts are "abstract." Percepts are abstract because they are "accidental or limited" and "incomplete" ("How Do Concepts" 145). Concepts are abstract because Dewey ties their intension to "a mode of action, a way of putting things or elements together" and to a "form of construction," on the basis of which "*certain features are omitted*. Nay, they are more than omitted. They are positively eliminated" (144; emphasis in original). Because Dewey's exemplar of concept in this short essay is "triangle" (144), singling out is an outcome of mathematical and abstract construction. Thus, what is omitted is not necessarily a loss—leaving out noise rather than signal is actually a gain. A few years later, in *Psychology of Number*, co-authored with the Canadian educator James McLellan, Dewey defines "abstraction" thus: "the neglecting of all characteristic qualities save just enough to limit each object as *one*" (McLellan and Dewey, *Psychology of Number* 32). This definition individuates objects rather than properties, which is understandable given the topic of the book—number (and its psychology and pedagogy). Dewey also describes abstraction through the example of a child selecting all the red objects from a collection, thereby disregarding "shape, size, material, etc." (27). Thus, in contrast to the 1891 article, Dewey, now in a more functionalist and naturalist mode, is explicit about the role of ends and interests in abstraction, and he admits loss. In 1929, for example, Dewey writes: "*Artificial simplification or abstraction is a necessary precondition of securing ability to deal with affairs which are complex, in which there are many more variables*" (*Quest for Certainty* 173; emphasis in original). He speaks of "abstractive simplification" (*Quest for Certainty* 174) and abstraction as "selective discrimination" (*Logic* 462). In short, abstraction is singling out, even if the early idealist Dewey is less concerned with the dangers of abstraction, especially in mathematics.

To exaggerate, while James's exemplar of symbolizing is concept-formation, Dewey's is mathematical abstraction. In terms of abstracting single entities—that is, symbols—James spends most of his effort analyzing the functional relations among concepts, mental states, and objects represented, while Dewey frequently analyzes the process and purposiveness of mathematical abstraction.¹⁰ According to Dewey, in forming integrated and functional symbols, "*grouping*, the gathering together the like objects (units) into a whole or class, the *sum*" is necessary (McLellan and Dewey, *Psychology of Number*

32; emphasis in original). This second stage of abstraction is also value-laden and interest-driven:

We are now prepared to see the reason for the neglect of the sense qualities (the abstraction) and for the reference to the whole (the generalization) included in all numbering. When we are regarding a thing not in itself, but simply as a means for some end, we take no account of any qualities which it may possess except this one quality of being related to the end. If I am to find out merely the quantity of land in a field, the fact that a part of the field is heavy clay and the rest rich, loamy soil is not taken into consideration; these qualities do not make the size value of the field, and are nothing to my purpose. I restrict attention entirely to the *mathematical* measurements, which in themselves are necessary and sufficient for the end to be reached—the determination of the absolute area of the field. (McLellan and Dewey, *Psychology of Number* 42–43; emphasis in original)

Thus, length or area become single kinds or groups of magnitudes important to measure. As such, they are granted their own units.¹¹ Symbolizing is purposive. As a non-mathematical example of symbolizing, consider Dewey's example of "the trait of flying" (*Reconstruction* 166–67). Dewey notes that "[l]ooked at functionally, not structurally and statically, abstraction means that something has been released from one experience for transfer to another." Abstraction (viz., singling out) "sets free," while generalization (viz., symbolizing) "is the use." Moreover, "[w]hat is called false or vicious abstractionism signifies that the *function* of the detached fragment is forgotten and neglected" (166). Now, in symbolizing "the trait of flying," flying "is detached from the concrete bird. This abstraction is then carried over to the bat, and it is expected in view of the application of the quality to have some of the other traits of the bird. This trivial instance indicates the essence of generalization, and also illustrates the riskiness of the proceeding" (166–67). Again, grouping or generalizing a *single* symbol—whether it be a magnitude or a trait—is the second phase of abstraction.

A symbol alone is barely useful. It must be related to, and manipulated vis-à-vis, other symbols. Only then does it become functional. Dewey develops the powerful notion of "acting without acting" to describe the liberating and imaginative power of the systematizing stage of abstraction:

By means of symbols, whether gestures, words or more elaborate constructions, we act without acting. That is, we perform experiments by means of symbols which have results which are themselves only symbolized, and which do not therefore commit us to actual or existential consequences. If a man starts a fire or insults a rival, effects follow; the

die is cast. But if he rehearses the act in symbols in privacy, he can anticipate and appreciate its result. (*Quest for Certainty* 121)

This “intellectual transition from concrete to abstract” (123) permits flexibility, experimenting, and learning, without having any effect (yet) on affairs in the world. Manipulating systematically related symbols permits simulation. Results can then be implemented intelligently in the world. In addition to simulation, systematized abstract symbols also allow us to logically analyze a complex and problematic situation. While Dewey’s 1938 *Logic* is the locus of his most detailed analysis of the pattern of inquiry, the 1916 *Essays in Experimental Logic* provides as precise a statement of the analytical function of a symbol system as any:

They (the concepts or universals of the situation) are (together with the sign-capacity of the data) the *means* of knowing the case in hand; they are the agencies of transforming it, through the actions which they call for, into an object—an object of knowledge, a truth to be stated in propositions. (*Essays* 34; emphasis in original)

The symbol system, consisting of concepts and universals, assists us in taking apart, troubleshooting, and transforming a complex and problematic “situation,” to use a term of art Dewey employs to great effect in *Logic* (105–22). Examples of problematic situations include a romantic relationship in trouble, or deciding what to do with a certain area of Brazilian rainforest. Thus, a situation may involve multi-faceted ethical, political, and scientific complexities. That is, should we prioritize saving indigenous peoples and/or biodiversity, or provide incentives for cash crops grown by agribusiness? Through the use of abstractions, we transform the myriad “brute existences” (Dewey, *Essays* 35) of the situation into reconstructed objects of knowledge, and come to understand their mutual relations, and the source of the problem, given our needs and interests. Dewey calls this transformation “inquiry” and “analysis and abstraction” (39), defining “logical analysis” as “physical resolution for the sake of getting assured evidential indications of objects as yet unknown” (39). Thus, the systematizing stage of abstraction allows us to (i) act without acting, and (ii) transform complex and problematic situations. Indeed, a key purpose of the former is to achieve the latter. Dewey, now also influenced by George Herbert Mead, powerfully summarizes abstraction in a letter to James dated 21 November 1904, thus: “In logical phrase, without the psychical no abstraction, and without abstraction no prescient control” (qtd. in Perry, 527).

Charles S. Peirce is, of course, an important background figure in this discussion. A brief statement of the way Peirce imagines abstraction therefore provides a segue between this section and the next. Peirce differentiates “precision” from “hypostatic abstraction,” where the former “consists in supposing a state of things in which one element is present without the other, the one being logically possible without the other” (*Essential Peirce* 2:270; compare 350–52), and the latter is what happens when “something, that one has thought about any subject, is itself made a subject of thought” (*Collected Papers* 5.534).¹² Peirce shares the pragmatic view that precisive abstraction results in purpose-driven partiality, but he sees hypostatic abstraction more as a virtue than a vice, especially in the practices of mathematics and semiotics. Interestingly, his analysis of the inevitability and power of ontologizing numbers and adjectives, for instance, seems to be the converse of James’s and Dewey’s much more cautionary analyses. A logician and semiotician, Peirce emphasizes the positive aspects of “hypostatization” (the Greek cognate of “reification”).¹³ Although this article attends to James’s and Dewey’s tales of pernicious reification, it would be anti-pluralist not to take Peirce’s optimism seriously. In fact, the overarching project motivating this article is one of encouraging the generative aspects of abstraction while avoiding pernicious reification.

3. Pernicious Reification: “Vicious Abstractionism,” “the Psychologist’s Fallacy,” and “*the* Philosophic Fallacy”

Pernicious reification is to abstraction as disease is to health. While the *Oxford English Dictionary* starts its definition of “reification” thus: “The making of something abstract into something more concrete or real,” the concept is here considered more generally, as a failure of abstractions to operate in life-giving, knowledge-giving, and generative ways. Pernicious reification is abstraction gone wrong, resulting in universalized, rigid and narrow, and ontologized abstractions. What happens when we deny or forget that, to borrow James’s phraseology (*Principles* 1:461), a *this* actually is much more than just a *this-rather-than-a-that*? Which nefarious consequences can result from imagining a feather merely as soft or a person solely as a murderer? And recalling Dewey’s thirsty man drowning in bliss, what happens when we take our abstractions to be universal a-contextual explanatory gods? How can forgetting the particular function of an abstraction, its historical conditions of emergence, and its appropriate level of analysis impair epistemic and moral reasoning, knowledge, and inquiry in everyday affairs, science, and

philosophy? Neglecting the intrinsic fragility and contextuality of abstraction is captured by James in his analysis of “vicious abstractionism” and “the psychologist’s fallacy,” and by Dewey via his “*the philosophic fallacy*,” which is actually a family of fallacies. In what follows, we shall see how James and Dewey hold that the pernicious reification of abstractions is the disregard of context, in particular, (i) functional, (ii) historical, and (iii) analytical-level context. Such dismissal may be conscious or unconscious, implicit or explicit, intentional or unintentional, and leads to universalized, narrowed, and/or ontologized abstractions.¹⁴ Panaceas for such pathological states of abstraction include pluralism (James) and self-critical assumption archaeology (Dewey).

James, ever the pluralist and radical empiricist, worries about abstractionism because it over-intellectualizes and makes absolute our always-subjective classifications, which are only good and true from particular perspectives and for certain purposes.¹⁵ In a well-known characterization of “vicious abstractionism,” James writes:

Let me give the name of “vicious abstractionism” to a way of using concepts which may be thus described: We conceive a concrete situation by singling out some salient or important feature in it, and classing it under that; then, instead of adding to its previous characters all the positive consequences which the new way of conceiving it may bring, we proceed to use our concept privatively; reducing the originally rich phenomenon to the naked suggestions of that name abstractly taken, treating it as a case of “nothing but” that concept, and acting as if all the other characters from out of which the concept is abstracted were expunged. Abstraction, functioning in this way, becomes a means of arrest far more than a means of advance in thought. . . . *The viciously privative employment of abstract characters and class names* is, I am persuaded, one of the great original sins of the rationalistic mind. (*Meaning of Truth* 135–36; emphasis in original; footnotes suppressed)

Although classifications can be useful, producing “positive consequences” since they are “teleological weapons of the mind,” harm comes with the belief and insistence that certain abstracted features embody situations and phenomena completely—for example, this man who killed another man is “nothing but” a murderer (and, indeed, “murderer” is even defined solely in terms of intentional agents wrongfully killing other intentional agents).¹⁶ Vicious abstractionism is indifferent to other properties of particulars (e.g., the man is also a loving father, an expert carpenter), or to other concepts.¹⁷ This is a mistake, as other particulars or concepts may (i) interact with the small handful of conceptual properties chosen or (ii) be useful for different purposes and in distinct contexts,

or both. Vicious abstractionism thus carves the boundaries of the sensible and the possible rather narrowly indeed.¹⁸ This pathology emerges from the neglect of the functional context of an abstraction:

[The] function . . . to enlarge mentally our momentary experiences by *adding* to them the consequences conceived . . . is. . . too often forgotten by philosophers . . . [and] is often converted into its exact opposite, and made a means of diminishing the original experience by *denying* (implicitly or explicitly) all its features save the one specially abstracted to conceive it by. (James, *Meaning of Truth* 135; emphasis in original)

Following our three-stage schema of abstraction—and recalling that functional context is one of the crucial contexts highlighted in the present analysis of reification—it is clear that vicious abstractionism amounts to neglecting the function of the concept as singling out one or a few properties and relating those to a limited and fallible network of concepts. Indeed, “It is but the old story, of a useful practice first becoming a method, then a habit, and finally a tyranny that defeats the end it was used for. Concepts, first employed to make things intelligible, are clung to even when they make them unintelligible” (James, *Pluralistic* 99). By suppressing healthy local function, this illness of abstraction results in universalized and narrowed concepts.

In chapter 6 of his *Principles of Psychology*, “The Methods and Snares of Psychology,” James describes the “assumptions of Psychology” with a table (1:184; see table 1):

Table 1.

1	2	3	4
The Psychologist	The Thought Studied	The Thought's Object	The Psychologist's Reality

The psychologist, #1, takes #2–#4 to be “realities,” and to be “*his* total object” of study (*Principles* 1:184, 1:197; emphasis in original). Furthermore, James critically reviews three psychological methods: introspective, experimental, and comparative. In the section on “the sources of error in psychology” (194–98), he presages his analysis of vicious abstractionism, and also identifies another important kind of pernicious reification: “the psychologist’s fallacy.” With respect to the first, following “[e]mpiricist writers,” James argues that once we have a word “to denote a certain group of phenomena, we are prone to suppose a substantive entity existing beyond the phenomena, of which the word shall be the name” (195). We (literally) hypostasize—reify—the term. Conversely, “the *lack* of a word . . . leads to the directly opposite error. We are then prone to suppose that no entity can be there” (195; emphasis

in original). This is a hypostasis of absence. In both cases, we ontologize our concepts (or lack thereof) inappropriately.

James presents the psychologist's fallacy in two ways:

The *great* snare of the psychologist is the *confusion of his own standpoint with that of the mental fact* about which he is making his report. I shall hereafter call this the "psychologist's fallacy" *par excellence*.

Another variety of the psychologist's fallacy is the assumption that the mental state studied must be conscious of itself as the psychologist is conscious of it (*Principles* 1:196, 197; emphasis in original)

Concerning the first version, James held our language to be a co-perpetrator of the fallacy. Under James's analysis, the use of a concept ("rock," "feather," "smooth") is ambiguous as to whether it denotes and connotes the thought studied (#2 above) *or* the thought's object (#3 above).¹⁹ If we fail to differentiate our concepts, perhaps through indexing (e.g., feather_{psychologist's thought'}, feather_{subject's thought'}, and feather_{object'}), confusions will result. One conflation is nefariously identifying the thought with the thought's object, thereby forgetting the functionality, subjectivity, and partiality of the thought. Such pernicious reification may be exacerbated by the psychologist herself conflating her thoughts (and her thoughts' objects) with the thoughts of her subject of study (and the subject's thoughts' objects). This psychologist-subject conflation occurs not because of the concepts available to us in language, but because of the inherent subjectivity of psychological inquiry. It is a conflation of levels of analysis. In the psychologist's fallacy there are thus two main kinds of conflation: thought with thought's object and psychologist with subject of study. The former is an inappropriate ontologizing, the latter, a dangerous narrowing and ontologizing of descriptions, borrowing too much from the psychologist's standpoint.

Dewey takes the scientific method as his model for healthy inquiry and for analyzing ontological petrifications of contextual function.²⁰ Dewey's most general formulation of abstraction-gone-awry is found in *Experience and Nature*:

Selective emphasis, choice, is inevitable whenever reflection occurs. This is not an evil. Deception comes only when the presence and operation of choice is concealed, disguised, denied. Empirical method finds and points to the operation of choice as it does to any other event. Thus it protects us from conversion of eventual functions into antecedent existence: a conversion that may be said to be *the* philosophic fallacy, whether it be performed in behalf of mathematical

subsistences, esthetic essences, the purely physical order of nature, or God. (34; emphasis in original)

Reasoning and inquiry done well require identifying loci of choice of assumptions, methods, and goals. Lest “eventual functions” be converted to “antecedent existence”—that is, lest a partial and selective abstraction be substituted in thought for the fuller reality (which includes the inquirer) that preceded it and made it possible—the inquirer, whether an individual or a collective, should be aware of the choices made, in a historical, developmental context, for particular purposes. Dewey argues that the reflexive, goal-oriented, and data-sensitive “empirical method,” so powerful in the sciences, “will state when and where and why the act of selection took place, and thus enable others to repeat it and test its worth” (*Experience* 34). Indeed, Dewey holds this method, which I prefer to call “assumption archaeology,” to be key for the reconstruction of philosophy. This method promises to alleviate stark contrasts and scholastic arguments between philosophical schools (e.g., empiricism vs. rationalism; rationalism vs. historicism), which so “startle the beginner and . . . become the plaything of the expert,” by locating the “source” of disagreement in “choice that is disguised or denied” (*Experience* 35). Troubleshooting these schools’ suppositions, protocols, and purposes permits de-reification—that is, the ontological deflation of always partial, yet often useful, philosophical traditions.

It will be instructive to understand the function of exposing the philosophic fallacy before turning to an extended example, and a comparative natural history. For Dewey, philosophical debates surrounding metaphysical or ethical realism are quintessential outcomes of philosophers neglecting context, and reifying tentative outcomes of inquiry. Dewey prefers a philosophy focused less on metaphysics and more on transformation, reconstruction, and the process of inquiry (*Logic; Reconstruction*). Thus, his mature description of the nature and purpose of philosophy is as follows:

Philosophy is criticism; criticism of the influential beliefs that underlie culture; a criticism which traces the beliefs to their generating conditions as far as may be, which tracks them to their results, which considers the mutual compatibility of the elements of the total structure of beliefs. Such an examination terminates, whether so intended or not, in a projection of them into a new perspective which leads to new surveys of possibilities. (“Context and Thought” 19)

Criticism permits identifying, troubleshooting, and re-imagining choice and selection. Ralph Sleeper argues that “[Dewey] is rejecting the whole idea of

metaphysics as foundational to the rest of philosophy; rather, he is reconstructing it as the ground-map of the province of criticism, the background that shows both why inquiry is necessary and why it is possible" (*Necessity of Pragmatism* 61). Metaphysics is an outcome of inquiry, in a particular historically situated and functional context—that is, the very practice of Philosophy *qua* discipline. We should not lose sight of the partiality of metaphysics nor of the importance of criticism as a social and epistemic function of Philosophy. Together with transformation, reconstruction, and inquiry, criticism forms the contextual matrix for Dewey's anxiety vis-à-vis the philosophical fallacy. As Horace S. Thayer observes, for Dewey "the role of philosophy is criticism" (*Meaning and Action* 460). Larry Hickman also refers to Dewey's instrumentalism as "criticism of criticism" (*Pragmatism as Post-Postmodernism* 156).

Exposing the philosophic fallacy is an important, perhaps the central, strategy of Dewey's "The Reflex Arc Concept in Psychology."²¹ In this classic article, Dewey refuses to partition the cohesive behavioral unit of "co-ordination" ("Reflex Arc" 97) according to dualistic categories such as "sensation" and "idea," "peripheral" and "central" (96) or—perhaps the most recalcitrant binary—the "metaphysical dualism, first formulated by Plato," "soul" and "body" (104). Using these categories as partitioning tools on a whole behavioral act, a mere "series of jerks" results (99). Moreover, for Dewey, a stimulus per se does not pre-exist a response, whether metaphysically, temporally, or even logically. In the "child-candle" example, which Dewey attributes to *Principles* (1:25, 1:97), the "so-called response is not merely *to* the stimulus; it is *into* it" and should be characterized as "seeing-of-a-light-that-means-pain-when-contact-occurs" rather than as "mere seeing" (98; emphasis in original). Dewey's refusal to partition, and his denial of pre-existence, are diagnoses of abstraction-gone-awry, as we shall now see.

Three versions of the philosophic fallacy are diagnosed in "The Reflex Arc." First, in an "explanatory analysis" inviting "reconsideration of the reflex arc idea," Dewey argues that "stimulus and response are not distinctions of existence, but teleological distinctions, that is, distinctions of function, or part played, with reference to reaching or maintaining an end" ("Reflex Arc" 104). Standard discussions of the reflex arc, Dewey contends, incorrectly convert "eventual functions into antecedent existence," as he would put it in *Experience and Nature*. Second, not only is function dynamic, interactive, and context-dependent (e.g., there is no pure stimulus, since stimulus always involves motion and conscious attention), but "*conscious*" behavior must also be distinguished from "organized instincts or habits" (105, emphasis in original). Conscious and instinctual behavior are distinct, and it is seductively easy to read intentional

goal-oriented behavior into cases such as the hen sitting on an egg immediately upon contact with it (104). Furthermore, “the onlooker or psychological observer can interpret [an unbroken act] into sensation and movement” (106). For Dewey, to conflate conscious and instinctual behavior or to confuse divisions made by the observer with absolute divisions in the behavioral act, or both, “is virtually the psychological or historical fallacy” (105). Third, Dewey worries about not respecting that “the circle is a co-ordination” (109):

The reflex arc theory, by neglecting, by abstracting from . . . genesis and . . . function gives us one disjointed part of a process as if it were the whole. It gives us literally an arc, instead of the circuit; and not giving us the circuit of which it is an arc, does not enable us to place, to centre, the arc. (108–09)

The function of behavior as integrated and continuous with the environment and with other behavioral acts is neglected when *arc* rather than *circuit* or *circle* (109) is employed to describe and explain a behavioral act.²²

The neglect of functional, historical, and analytical-level contexts leads to perniciously reifying a one-way, partitioned, and mechanistically glued reflex arc. We forget *functional* context when we read functional roles (of the behavioral act) and teleological distinctions (for the analyst) as pre-existent entities (first version), and we interpret the coordinated behavioral unit as a linear arc rather than a whole circle (third version). We neglect *historical* context when we conflate fallible stages selected for describing conscious (or instinctual) behavior with ontological phases of instinctual (or conscious) processes (second version). Finally, we dismiss *analytical-level* context when we confuse observer categories with behavior stages (second version). These confusions lead to diseased abstractions, including a universalized, narrowed, and ontologized theory and description of behavior—namely, the reflex arc theory. Dewey’s trenchant 1896 unmasking of abstraction-gone-awry in analyses of behavior remains pertinent to behavioral, cognitive, and computer sciences today.²³

Dewey explores a host of other fallacies. It will be instructive to sketch out five of these. However, precisely characterizing each one, including its exact relation with the philosophic fallacy (e.g., subsumptive, cross-cutting, and collaborative), is beyond the scope of this article.

- (1) *The Fallacy of Neglect of Context* (my term): I should venture to assert that the most pervasive fallacy of philosophic thinking goes back to neglect of context (“Context and Thought” 5).
- (2) *The Analytic Fallacy*: The trouble is not with analysis, but with the philosopher who ignores the context in which and for the sake of

which the analysis occurs. In this sense, a characteristic defect of philosophy *is* connected with analysis. There are a multitude of ways of committing the analytic fallacy. It is found whenever the distinctions or elements that are discriminated are treated as if they were final and self-sufficient (“Context and Thought” 6–7; emphasis in original).

- (3) *The Fallacy of Unlimited Universalization* (my term): When context is taken into account, it is seen that every generalization occurs under limiting conditions set by the contextual situation. When this fact is passed over or thrown out of court, a principle valid under specifiable conditions is perforce extended without limit (“Context and Thought” 8).
- (4) *The Fallacy of Application* (my term): Abstraction from use in special and direct situations was coincident with the formation of a science of ideas, of meanings, whose relations to one another rather than to things was the goal of thought [e.g., mathematics]. It is a process, however, which is subject to interpretation by a fallacy. Independence from any specified application is readily taken to be equivalent to independence from application as such (*Quest for Certainty* 123).
- (5) *The Fallacy of Definition*: The fallacy of definition is the other side of the fallacy of rigid classification, and of abstraction when it is made an end in itself instead of being used as an instrument for the sake of experience. A definition is good when it is sagacious. . . . Theorists and literary critics . . . are still largely in thrall to the ancient metaphysics of essence according to which a definition, if it is “correct,” discloses to us some inward reality that causes the thing to be what it is as a member of a species that is eternally fixed (*Art as Experience* 220).

The fallacy of definition is close to James’s vicious abstractionism. In short, Dewey is clearly as worried about the dangers of abstraction as about its promises.

James and Dewey critique pathologies of abstraction in similar ways, identifying and exposing “vicious abstractionism,” “the psychologist’s fallacy,” and various “philosophic fallacies” to great effect.²⁴ Vicious abstractionism primarily neglects functional context, so that narrowed and universalized concepts, such as “bird” and “freedom,” rigidly defined, ensue. A version of the psychologist’s fallacy favored by James and Dewey alike, which primarily ignores analytical-level context, conflates the psychologist’s (more generally: analyst’s) perspective with that of the subject of study. This results in inappropriately narrowing a variety of possible descriptions to a single one—the analyst’s—and also in the

ontologizing of said description. Finally, Dewey's "philosophic fallacy," which mainly dismisses functional or historical context, is a variegated family of diagnoses of pernicious reification. Depending on the exact fallacy Dewey is exposing, diseased states of universalized, narrowed, and/or ontologized abstractions are identified. Table 2 summarizes our analysis:

Table 2.

	Vicious Abstractionism	The Psychologist's Fallacy	The Philosophic Fallacy
Main context(s) neglected (i.e., reification etiology)	Functional	Analytical-level	Functional Historical
Symptoms of diseased abstractions	Universalized Narrowed	Narrowed Ontologized	Universalized Narrowed Ontologized

James and Dewey also provide resources for developing treatments for pernicious reification. In a nutshell, James advocates a pluralism (often at the level of individuals) of conceptual classifications and interests, while Dewey explicitly defends a self-reflexive excavation of myriad selections made, often unconscious or otherwise invisible, by inquirers (often at the level of collectives) in building their abstractions. Importantly, James is less interested in tracing the genealogy of choice. He favors celebrating a plurality of interests and purposes by many individual subjects. Conversely, Dewey is not a pluralist about scientific method. Perhaps as a further neo-Hegelian inheritance, he advocates continuity between science and everyday reasoning, and believes in the overcoming of distinctions into an overarching synthesis in communal inquiry (see Phillips, "John Dewey's *The Child and the Curriculum: A Century Later*"; Thayer 460–87). In short, while James's primary medicine for treating pernicious reification is pluralism, Dewey's is assumption genealogy, or, as I prefer, assumption archaeology.

4. Interweaving the Abstract and the Concrete

As we have seen above, James and Dewey are deeply engaged with the relationship between the abstract (e.g., concepts, judgments, symbols) and the concrete (e.g., percepts, brute existences,²⁵ and existential causes²⁶). Moreover, both consistently argue that the abstract and the concrete suffuse one another, and hence that the distinction—the abstraction—should not itself be turned into a dualism and reified. It would thus be instructive to conclude the main

analysis with a brief consideration of how James and Dewey interweave the abstract and the concrete. Ultimately, the distinction remains fallibly and contextually useful for James's and Dewey's abstraction-reification account.

In *The Principles of Psychology*, James sides with the "conceptualist"²⁷ over the "nominalist"²⁸ ("Conception," chap. 12:472–73), and defends a teleological view of the abstract: "*classification and conception are purely teleological weapons of the mind*" ("Reasoning," chap. 22:335²⁹; emphasis in original). The abstract is useful because it conditions and structures the concrete, albeit hardly in the Kantian manner of postulating single, universal, unalterable, and infallible *a priori* categories (or pure concepts) of the understanding such as unity, necessity, or causality and dependence. Rather, for James, the process of "comparison"³⁰ (e.g., *Principles* 2:641ff.) is fundamental to creating concepts, classifications, and the "*determinate system*" of "*necessary and eternal relations which [the mind] finds between certain of its ideal conceptions*" (661; emphasis in original). Because "*the conceiver is a creature with partial purposes and private ends*" (*Principles* 1:482; emphasis in original), a plurality of interest-driven and fallible classifications are possible. Conceptual systems can replace each other in particular contexts and over time. Each constitutes the world. Conversely, the concrete always feeds back on the abstract, as James poetically notes in *A Pluralistic Universe*: "[A]ll these abstract concepts are but as flowers gathered, they are only moments dipped out from the stream of time, snap-shots taken, as by a kinoscopic camera, at a life that in its original coming is continuous" (105). Moreover, the abstract and the concrete mutually depend on one another in that the percept is a "terminus" of a cognitive process guided by concepts, whereas the percept "verifies" the concept (James, *The Meaning of Truth* 64). For James, the concrete and the abstract interact dynamically, neither being ontologically nor epistemologically fundamental to the other.

We find a similar abstract-concrete interactionism in Dewey. In one of the first essays from his early neo-Hegelian idealist phase, "Kant and Philosophic Method" (1884), Dewey takes Kant to task for holding that "[t]hrough the categories make experience, they make it out of a foreign material to which they bear a purely external relation" (39).³¹ This critique of the "dualism between [Kant's] *a priori* form and his *a posteriori* content" ("Knowledge as Idealization" 190) is sustained throughout Dewey's career. In 1897, Dewey argues that the emergence and persistence of Kant's allegedly dualistic answer to "how is knowledge possible?" can be accounted for in terms of social and political conditions. Concrete sensations represent a radical force: "the demand for freedom, for personal initiation into experience, for variety and progress" ("Significance" 18). In contrast, abstract reason denotes a conservative force: "the demand for general

order, for continuous and organized unity” (“Significance” 18). Only by turning to broader social and political conditions can we begin to understand the “war” (“Significance” 19) between sensationalists and idealists. Indeed, emphasis on institutions and historical context also marks Hegel’s influence on Dewey. Twenty years later, Dewey insists both that “no theory of Reality in general, *überhaupt*, is possible or needed” and that “there is no problem of knowledge in general” (“Need for a Recovery” 39, 23; emphasis in original). Indeed, the ongoing “quarrel” (14) between empiricists and rationalists, with their respective focus on the concrete *a posteriori* and the abstract *a priori*, is stabilized by another binary: “the idea of invidiously real reality” vs. “the spectator notion of knowledge,” where the latter claims that “[k]nowing is viewing from outside” (41–42). Rationalists focus on the mechanics of the viewer; empiricists explore the qualities and regularities of the world viewed. Dewey prefers a transactional, interactive, non-dualistic analysis of “the pattern of inquiry” (*Logic*, chap. 6) and “the empirical method” (*Experience and Nature*, chap. 1) that does justice to “specific events in all their diversity and thatness” (“Need for a Recovery” 39) and that sees abstractions as simultaneously constitutive of, and emerging from, social contexts of inquiry. Moreover, as Buxton and Shook emphasize, the organism-environment interactionism informs Dewey’s *a priori-a posteriori* and abstract-concrete interactionism, even in his early work.³²

In short, James and Dewey are hardly slavishly committed to a reified distinction—a dualism—between the abstract and the concrete. Both hold that humans have particular ways of thinking, cognizing, and reasoning—that is, of abstracting—allowing us to satisfy our needs and interests. While all abstractions, including distinctions, are fallible and limited, the abstract-concrete distinction is a particularly important and powerful one, for James and Dewey. It even permits a reflective analysis of itself.

5. Conclusion: Abstraction and Pernicious Reification Today

Following the pragmatic forward-looking spirit, we should continue using the abstraction-reification account recovered from William James’s and John Dewey’s work. Moreover, the treatments they suggested should be articulated. Very briefly, Kitcher and Longino provide fertile analyses for furthering James’s de-reifying medicine of pluralism, while Foucault and Hacking reveal expansive vistas of assumption archaeology, a territory through which Dewey also traveled extensively.

Scientific models and modeling consist of abstractions and are built through various kinds of abstractive processes (e.g., Cartwright; Martínez and Huang;

Winther, “Mathematical Modeling in Biology”). Through singling out, symbolizing, and systematizing, models carry clear promises for intervention in, and representation of, complex processes. But they can also be dangerous. James’s and Dewey’s warnings that various abstractionist fallacies potentially lead to universalized, narrowed, and ontologized abstractions are instructive for understanding pernicious reification in a variety of sciences, including economics, physics, and the biological sciences. The last shall be the focus here.

The philosophic fallacy, vicious abstractionism, and the psychologist’s fallacy can be clearly exposed in selfish gene theory à la Dawkins. This theory attempts to explain all morphology, physiology, and behavior from a few basic premises, including gene-gene competition and strong gene-phenotype correlation. These assumptions were chosen for specific reasons, but need not have been so selected. Thus, the philosophic fallacy was committed, with a universalized and ontologized abstraction resulting. Moreover, these conventional assumptions winnow a rich family of selective (e.g., kin and group) and non-selective (e.g., developmental and architectural constraints, drift) evolutionary models down to an inflexible model of genic selection, thereby effecting a narrowed evolutionary theory.³³ Dawkins does leave a place for culture in this theory, although here the reductionist dynamics of cultural change parallels that of genetic change: biological (or cultural) evolution is seen to be solely the outcome of genes (or memes—that is, units of cultural transmission and variation) duking it out on the ecological (or cultural-ecological) stage. Both “gene” and “meme” are rigidly and narrowly defined, in a “nothing but” viciously abstractionist manner. Furthermore, analytical-level is neglected—i.e., the psychologist’s fallacy—in conflating cultural processes with biological ones. Sometimes, when scientists or philosophers have a hammer, everything looks like a nail, in what Abraham Kaplan, a follower of James and Dewey, calls “the law of the instrument” (28). In short, Dawkin’s hammer—the selfish gene theory or model—is universalized, narrowed, and ontologized.

In contrast to Dawkins, biologists Richard Levins and Richard Lewontin have engaged in sustained critiques of the pernicious reification of abstract models. For them: “The problem for science is to understand the proper domain of explanation of each abstraction rather than become its prisoner” (Levins and Lewontin 150). For example, Lewontin claims that “[n]o issue is of greater importance in the study of biology” than the following: “How are we to recognize the ‘true’ characters of organisms rather than imposing upon them arbitrary divisions that obscure the very processes that we seek to understand?” (Lewontin xvii). Indeed, the dangers of vicious abstractionism in diagnosing “characters” in theoretical (e.g., phylogenetic; Winther, “Part-

Whole Science”) and applied (e.g., medical) contexts are severe and require investigation. Moreover, when biological model-building involves the statistical tool of analysis of variance (ANOVA), we may end up “confusing the spatiotemporally local analysis of variance with the global analysis of causes” (Levins and Lewontin 122). Finally, the delineation of “racial” groups also notoriously involves pernicious reifications in the context of population genetic modeling (e.g., Kaplan and Winther, “Prisoners of Abstraction?”; Winther and Kaplan, “Ontologies and Politics of Biogenomic ‘Race’”). In each of these three cases, contextually useful abstractions are universalized or inappropriately conflated with the world, or both.³⁴ Assumption archaeology and considering a plurality of alternatives would allow us to start de-reifying them.

Each of these cases, and more, would benefit from an in-depth and contextual application of the abstraction-reification account James and Dewey elucidated, and the panaceas—pluralism and assumption archaeology—that they suggested. Indeed, without explicit attention to abstraction pathologies such as the psychologist’s fallacy, vicious abstractionism, and the philosophic fallacy, we will never fully understand the pitfalls and perils—epistemological, ontological, and moral—of modeling, experiment, and other scientific practices involving abstraction, so important to science in society. James and Dewey provide essential resources for understanding the pernicious reification of scientific abstractions, and for interceding intelligently and responsibly to block and overcome it.

NOTES

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1. See James, *Meaning of Truth* 134–36.
2. See Dewey, “Reflex Arc.”
3. See Hegel 116–17.
4. Abstraction at everyday, scientific or meta-scientific (i.e., philosophical) levels.
5. Dewey uses both “philosophic” and “philosophical” to name this fallacy—but this difference does not make a difference.
6. See Dewey, *Reconstruction* 166: “Abstraction is liberation.”
7. The system is not a mutually exclusive, collectively exhaustive, complete Aristotelian

dichotomous bin classification. James and Dewey never claim that abstraction produces ideal classifications, and would agree with Bowker and Star, who, after pithily characterizing an ideal classification system, write: “No real-world working classification system that we have looked at meets these ‘simple’ requirements [i.e., consistent, complete classificatory principles; mutually exclusive categories; complete system]” (10–11). Yet, tentative and non-rigid symbol systems are formed via abstraction, James and Dewey believe.

8. In the chapter “Percept and Concept—The Import of Concepts” in his posthumously published textbook *Some Problems of Philosophy. A Beginning of an Introduction to Philosophy* (1911), James argues that concepts are abstractions (*Writings of William James* 234), and that: “They steer us practically every day, and provide an immense map of relations among the elements of things” (243). However, in the next chapter “Percept and Concept—The Abuse of Concepts,” concepts are indeed abused. We learn that “[c]onceptual knowledge is forever inadequate to the fulness of the reality to be known” and, in order to defend his “insuperability of sensation” thesis, James wishes to prove that concepts “falsify as well as omit, and make the [perceptual] flux impossible to understand” (245). Moreover, not only are single concepts misleading, but the entire “map remains superficial through the abstractness, and false through the discreteness of its elements” (245). Both symbolizing and systematizing are understood as dangerous. In light of this concept abuse, James’s admission in the “Import of Concepts” chapter that percepts and concepts are like two blades of a single scissor, both needed “to live or to understand life” (243) seems somewhat inconsistent. In part because of Henri Bergson’s influence (see “Bergson and Intellectualism,” chap. 6 of *Pluralistic*; Goodman, “William James”), James worried increasingly in his final years about the dangers posed by pathological abstraction.

9. This three-stage schema analysis of James’s articulation of abstraction also elucidates his “two great points in reasoning” (*Principles* 2:340; emphasis in original), namely: “First, an extracted character is taken as equivalent to the entire datum from which it comes” and “Second, the character thus taken suggests a certain consequence more obviously than it was suggested by the total datum as it originally came.” The first point concerns the stages of singling out and symbolizing; the second, systematizing.

10. This is not to fallaciously omit their interests in other forms of abstraction. After all, Dewey is also interested in concept-formation and concept-use (e.g., concepts are their abstract mode of construction, in “How Do Concepts”), and James in mathematical abstractions (e.g., “Necessary Truths and the Effects of Experience,” the last chapter of *Principles*).

11. See also Tristan.

12. Dewey recognized this distinction, especially in the context of “mathematical discourse” (*Logic*, chap. 20). He used the distinction to great effect in insisting on the “non-existential nature” of “propositions” used in inquiry (*Logic* 462–63), thereby avoiding the pernicious consequences of ontologized abstractions used as means of inquiry. See also Burke.

13. For secondary literature on this important topic, see, for example, Reese, Short, Stewart, and Stjernfelt.

14. The tradition of biases and heuristics in reasoning of Amos Tversky and Daniel Kahneman provides a set of deep psychological reasons for reification, which cannot here be explored (see Winther, Rev. of *Collected Papers*, by Stephen Stich).

15. McDermott encapsulates this key aspect of James’s philosophy thus: “To use a contemporary term, James is a master phenomenologist of the original and novel qualities of personal life” (*Writings of William James* xii).

16. Compare Hegel’s pithy characterization of abstraction: “This is abstract thinking:

to see nothing in the murderer except the abstract fact that he is a murderer, and to annul all other human essence in him with this simple quality" ("Who Thinks Abstractly?" 116–17). James critiques Hegel's "method of double negation" as "the vividest possible example of this vicious intellectualism" in that "Hegel treats this not being a concept of anything else as if it were *equivalent to the concept of anything else not being* [i.e., the negation of a concept is itself reified as a not being] . . . [and] then . . . the pulse of dialectic commences to beat and the famous triads begin to grind out the cosmos" (*Pluralistic* 52; emphasis in original; see Morse).

17. Elsewhere, James defines the term "vicious intellectualism" thus: "*The treating of a name as excluding from the fact named what the name's definition fails positively to include*" (*Pluralistic* 32; emphasis in original).

18. Compare A. N. Whitehead: "The disadvantage of exclusive attention to a group of abstractions, however well-founded, is that, by the nature of the case, you have abstracted from the remainder of things. In so far as the excluded things are important in your experience, your modes of thought are not fitted to deal with them" (59). Whitehead baptized one type of abstractionism as "the fallacy of misplaced concreteness" (chaps. 3 and 4).

19. Recall also James's related discussion of "the *function* of the mental state in signifying just that particular thing" (*Principles* 1:461; emphasis in original). Similarly, Dewey makes a "fundamental distinction" between "a mental state" and "the *function* of that state," analogizing this to distinguishing between "the heart" as a "*thing*" and "the *work* done by that thing and its *value* for the organism" ("How Do Concepts" 142; emphasis in original). Because it would further clarify an important distinction between the thought and its function, perhaps James's table should be five-fold, with "The Thought's Function" between #3 above and #4 in Table 1 above.

20. Dewey admittedly abstracts scientific method as a single, monist "pattern of inquiry." Much work in philosophy of science today emphasizes methodological pluralism (e.g., Winther "Interweaving Categories" and references therein).

21. In "The Superstition of Necessity," Dewey also exposes a variety of philosophical fallacies surrounding pernicious imputations of incorrect parts and causal paths failing to respect the complexity of the whole. Consider this passage: "When we say something or other *must* be so and so, the 'must' does not indicate anything in the nature of the fact itself, but a trait in our *judgment* of that fact" (20; emphasis in original).

22. See Phillips, "James, Dewey, and the Reflex Arc" 566–67.

23. Conflating conscious and/or intentional action with "programmed" activity, and confusing the observer's understanding with the actual process, are also discussed in contemporary literature. Heil observes "that Fodor's mistake is to confuse the mechanics of description with the doings of persons engaging in the activities which the description purports to describe" ("Does Cognitive Psychology Rest on a Mistake?" 325). Similarly, Oyama complains about a "subtle, repeated process at work" in conflating descriptive and prescriptive rules, in the biological and cognitive sciences: "order is abstracted from one system and imposed on a second, then the imposed order-as-program is abstracted from the second and projected into the first" (*Ontogeny of Information* 72). Brian Cantwell Smith writes about "inscription errors" (*On the Origin of Objects* 49–50).

24. Many questions remain about both the unity and pluralism of pragmatism as a whole (e.g., Bernstein; Shook; Sleeper), and of individual pragmatists (e.g., Buxton; Phillips, "James, Dewey," "Organicism"; Reck). I follow Buxton's, White's, and especially Shook's work in arguing for a continuity between Dewey's early idealism and his

subsequent functionalism, and for a thesis of only moderate influence of James on Dewey. Concerning James's genealogy, a letter from James to Dewey, dated 23 March 1903 (to which Dewey was responding in the passage quoted in note 11 above), reads, "you [the "Chicago School of Philosophy"] have all come from Hegel and your terminology *s'en ressent*, I from Empiricism, and though we reach much the same goal it superficially looks different from the opposite sides" (Perry 521–22; emphasis in original; see also McGranahan). However, given some of James's early essays such as "The Association of Ideas," as well as *Principles*, it is clear that James was not an empiricist in any simple sense. Regarding the residue of Dewey's idealism in his pragmatism, Shook claims that "Dewey never rejected two central principles of idealism: experience is philosophically absolute, and knowledge transforms experience to create its objects" (Shook 215). Moreover, Dewey already presaged James's "the psychologist's fallacy" as early as "The Psychological Standpoint" (125; see Shook 49) and "Illusory Psychology" where he berates the contemporaneous philosopher Shadworth Hodgson for the "threefold confusion of the individuality of immediate feeling, of constructed fact of experience and of philosophical interpretation of the fact" ("Illusory Psychology" 171). Even so, we should not forget the influence of James on Dewey vis-à-vis "the principles of evolutionary and naturalized epistemology" (Shook 103). See also Misak.

25. See Dewey, *Essays* 35.

26. See Dewey, *Logic* III.

27. Characterized thus: "Conceptualism says the mind can conceive any quality or relation it pleases, and mean nothing but it, in isolation from everything else in the world" (James, *Principles* 1:470). According to James, conceptualism permits and extols the power of conception, discrimination and comparison, association, and reasoning (chaps. 12, 13, 14, and 22, respectively, of *Principles*). These are the chapters that most influenced Dewey (Jane Dewey 24). Dewey also writes: "It was reserved for James to think of life in terms of life in action. This point, and that about the objective biological factor in James's conception of thought (discrimination, abstraction, conception, generalization), is fundamental when the role of psychology in philosophy comes under consideration" ("From Absolutism to Experimentalism" 158).

28. Described thus: "Nominalism says that we really never frame any conception of the partial elements of an experience, but are compelled, whenever we think it, to think it in its totality, just as it came" (James, *Principles* 1:468). George Berkeley is James's choice example of a nominalist.

29. Dewey cites this passage approvingly early and late, both in "Self-Realization as the Moral Ideal" (1893) (46–47) and in "William James as Empiricist" (1942) (11). A letter from Dewey to James dated 27 March 1903, reads: "the articles [of *Studies in Logical Theory*; Dewey articles reprinted in *Middle Works* 2] all go back to certain ideas of life activity, of growth, and of adjustment, which involve teleological and dynamic conceptions rather than ontological and static ones" (qtd. in Perry, 522). However, Dewey's instrumentalism predates James's *Principles*, as Shook shows. Even James's analysis of interests in his critique of the narrowness of Spencer's definition of Life and mind as "adjustment of inner to outer relations" in his 1878 "Remarks on Spencer's Definition of Mind as Correspondence" is cited neither in Dewey's *Psychology* nor in any of the early essays in *Early Works* 1.

30. James's emphasis on comparison and what we today call "the comparative method" as fundamental to thinking and abstraction (and as invariably leading to pluralism) is

refreshingly distinct from the philosophical bias to understand thinking and abstraction as involving subsumption of concrete events and processes under laws or causal regularities. I am grateful to Sergio Martínez for discussions on this point.

31. Importantly, Dewey was never a neo-Kantian. George Sylvester Morris, a neo-Hegelian critic of British Empiricism and Kant alike, taught Dewey and influenced him during his doctoral studies at Johns Hopkins in the early 1880s.

32. Phillips draws perhaps a too-strong distinction between “Neo-idealistic or philosophical organicism” and “Biological organicism,” shoe-horning pre-1891 Dewey into the former category (“Organicism in the Late Nineteenth and Early Twentieth Centuries” 421). Shook belies such an idealized narrative of Dewey’s development. For instance, already in “The New Psychology” from 1884, Dewey writes: “The idea of environment is a necessity to the idea of organism” (56). In the 2nd edition (1889) of Dewey’s *Psychology*, an instructive analogy developed at some length provides further evidence for his pre-Jamesian organicism: “As the tree is not merely passively affected by the elements of its environment—the substances of the earth, the surrounding moisture and gases—as it does not receive and keep them unaltered in itself, but reacts upon them and works them over into its living tissue—its wood, leaves, etc.—and thus grows, so the mind deals with its experiences” (151; the passage in the 1891 3rd edition is identical, 132–33). Indeed, “[t]he mind is not a storehouse. . . . It is not a chest, in the drawers and pigeon-holes of which the factors of its life are packed away, classified and labelled” (150–51; the passage in the 1891 3rd edition is identical, 132).

33. See discussion in Lloyd.

34. Darwinian Tree of Life models and “information” talk provide further examples of pernicious reification in biology (e.g., Doolittle, Oyama).

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