



John Dewey's pragmatist alternative to the belief-acceptance dichotomy[☆]



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ABSTRACT

Defenders of value-free science appeal to cognitive attitudes as part of a wedge strategy, to mark a distinction between science proper and the uses of science for decision-making, policy, etc. Distinctions between attitudes like belief and acceptance have played an important role in defending the value-free ideal. In this paper, I will explore John Dewey's pragmatist philosophy of science as an alternative to the philosophical framework the wedge strategy rests on. Dewey does draw significant and useful distinctions between different sorts of cognitive attitudes taken by inquirers, but none can be used to support the wedge strategy.

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1. Introduction

In this paper, I will provide an interpretation of John Dewey's philosophy of science as a resource for the debate over values in science. Dewey's philosophical framework provides fundamental, principled grounds for responding to a common attempt to rescue the ideal of value-free science: *the wedge strategy*. Defenders of the value-free ideal attempt to drive a wedge between the proper realm of science *qua* science and the role of science in policy and decision-making contexts, in some cases by relying on a distinction between the proper cognitive attitudes involved in the two contexts. In particular, the distinction between belief and acceptance, or cognitive acceptance and practical decision, is used in attempts to undermine arguments against the value-free ideal, such as the argument from inductive risks. These distinctions allow defenders of the value-free ideal to mark off a proper, cognitive, epistemically pure realm of science proper, which aims at truth, warranted

acceptability, etc., from a secondary behavioral, practical, decision-making function, where non-epistemic value judgments, such as concerns about ethical risks, play a legitimate role.

I examine these issues in the context of John Dewey's philosophy of science, based in his theory of inquiry. Dewey had little patience for distinctions such as the context of discovery and context of justification, or "pure" or "basic" vs "applied" science,¹ or for any epistemological, cognitive, or logical framework that would drive a wedge between inquiry and practice, science and action. In its place, Dewey gives us a sophisticated, normative theory of inquiry; a distinction between the cognitive objects of proposition and judgment and the corresponding cognitive attitudes of affirmation and assertion; and a theory of truth as pragmatic and attainable, without the absurdities usually associated with the "pragmatist" theory of truth. I devote the bulk of the essay to unpacking Dewey's framework and then showing its utility in the context of values in science—but first, I will discuss the contemporary background that makes this historical project worthwhile.

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¹ See Douglas (2014).

2. Background: Cognitive attitudes and values in science

2.1. The arguments for values in science

The literature on values in science has grown lengthy and complex. The traditional view,² *the ideal of value-free science*,³ is that values play no role in science itself, though they may play a role in how we choose to use it.⁴ “Values” in this context means not the so-called “epistemic values” or “superempirical virtues” such as simplicity, coherence, fruitfulness, and explanatory power, but rather social, ethical, or political values, contextual values (Longino, 1990) or factors (Biddle, 2013; Longino, 2002), or auxiliary motives (Neurath, 1983 [1913]). This view has slowly been eroded by developments in science itself, science policy, technology, and philosophy of science over the past several decades. First, it became clear as a result of notable atrocities of the last century that ethical restrictions must be placed on the methods of science, particularly with regards to human and animal research subjects and environmental impacts. Then it was argued that the *aims* of science, rather than being objective and internal to science, were value-laden (e.g., Kitcher (2001)). Finally, it has been argued that the very internal core of scientific inference itself, theory choice or hypothesis acceptance, requires value judgments.

The two most central arguments against the value-free ideal of science are *the gap argument* and *the error argument*.⁵ Both turn on a kind of indeterminacy between evidence and logic on the one hand and hypothesis or theory on the other. The gap argument relies on the underdetermination of theory by evidence, according to which the evidence alone is never sufficient to determine the correct scientific inference. There are many types and accounts of underdetermination (transient and permanent, local and global, holistic and contrastive, semantic and falsificationist, etc.), and the intricacies need not concern us here. The form of underdetermination we need is one in which the gap between evidence and conclusion cannot be completely filled with purely epistemic considerations (such as simplicity, parsimony, unification, explanatory power, fruitfulness, precision, etc.), but must also appeal to “non-epistemic” or “contextual” factors, e.g., moral, prudential, and political values. Because evidence, logic, and the superempirical virtues do not sufficiently constrain the inference, values must be brought in. The positive accounts of how this works are also various, and admittedly sometimes underspecified and insufficiently constrained (Anderson, 2004).

The error argument is related, though perhaps based on less controversial premises. The error argument relies on the concept of

“inductive risk,” a result of the endemic uncertainty in all ampliative inference. Because of that uncertainty, such inferences always face the possibility of two complementary types of error: false positives, the error of accepting a claim that is false, and false negatives, the error of failing to accept a claim that is true. A policy of strict evidential standards decreases the likelihood of false positive errors, but, as William James (1896) evocatively pointed out, increases the rate of false negative errors. Rudner (1953) makes the further point that when weighing the possibility of these errors against one another, as all ampliative inference requires, scientists face the ordinary moral responsibility of considering the potential consequences of making each kind of error.

The literature that wrestles with these two arguments and the broader discussion of values in science is complex. I will focus in this paper on undermining one version of one strategy for defending the value-free ideal from such arguments.

2.2. Cognitive attitudes and the wedge strategy

Some recognize the power of the gap argument or the error argument, but wish to restrict the scope of the argument to contexts which can be treated as external to science itself. While inductive risk and underdetermination may be problems in certain contexts of the use of science, and thus lead to value-ladenness in science-based policy or technology, this can be separated from the purely epistemic activity of science *qua* science. They drive a wedge between these two contexts; hence, “the wedge strategy.” The old distinction between context of discovery and context of justification (as well as the context of application) is one such wedge. Another wedge, which we are focused on in this special issue, is the distinction between two different types of *cognitive attitude* that different inquiries may aim at.

In response to these arguments, defenders of the value-free ideal like Giere (2003) and Mitchell (2004) emphasize a difference between inquiry which aims at *belief* and inquiry that aims at *action*. As Giere puts it,

The concept of “evaluating” theories can be ambiguous. One understanding is an *epistemic* evaluation as to suitability for *belief*. But another is a *practical* evaluation as to suitability as a basis for *action*. It may be scientifically unacceptable to *believe* in the truth of a theory because it conforms to a moral ideal, but it is not unacceptable to *decide* to rely on such a theory for purposes of practical action or policy. In practical decision making it is not truth, but expected utility, that matters. (p. 20)

Elliott and Willmes (2013) understand this critique in terms of the distinction between *belief* and *acceptance*, and they agree with Giere and others that evaluations aiming at belief (or at truth) are context-independent and value-free. On the other hand, they argue that *acceptance* is often the more appropriate cognitive attitude for scientists, e.g., when making recommendations for policymaking or faced with underdetermination. Elliott and Willmes (2013) follow L. Jonathan Cohen (1992) in distinguishing belief from acceptance⁶:

² Like many “traditional” or “orthodox” views in philosophy of science, it is far from clear how much orthodoxy it really achieved. Hempel and Nagel, two of the philosophers responsible for crafting the supposed orthodoxy, actually accepted the inductive risk argument (see below). Prior to that, the value-free ideal was even less commonly accepted. Perhaps the halcyon period for “traditional” philosophy of science was the decade from the late 60’s to the late 70’s—not a very venerable tradition. (This is a problematic claim, since this is precisely when the historicist revolution of Kuhn, Feyerabend, Lakatos, and Toulmin was wrecking havoc.) Starting in the late 70s and early 80s, the value-free ideal was set upon by feminist, pragmatists, and social constructivists, and has been eroded slowly ever since.

³ AKA the ideal of epistemic purity. See Wilholt (2009); Biddle (2013).

⁴ The related view in the philosophy of technology, which claims that even technological development is value free, is “technological neutrality” (Kaplan, 2009).

⁵ For more on these arguments (using these terms), see Intemann (2005); Elliott (2011); Brown (2013). Other defenders of the gap argument include Nelson (1990) and Longino (1990), and see also Anderson (2004). The error argument is also known as the argument from “inductive risk.” It was given that name by Hempel (1965), but laid out earlier and perhaps most clearly in Rudner (1953). Perhaps the first to pose the argument was William James (1896) (see Magnus (2013)). Contemporary philosophy of science owes the resurgence in importance of the error argument from inductive risks to Douglas (2000, 2009). See also Wilholt (2009).

⁶ Steel (2013) makes a related argument in somewhat different terms. He sees the wedge strategy in terms of an objection to a “behavioral” notion of acceptance, which critics regard as unacceptable for science—instead, they say, we need a “cognitive” account of acceptance, such that inductive risks are handled by appeal only to cognitive, rather than practical, utilities. (Cognitive utilities would be akin to the traditional “epistemic values” or “superempirical virtues.”) Like Elliott and Willmes (2013), Steel follows Cohen’s account of acceptance, which, Steel argues, is as cognitive as one might like, but one that still allows for inductive risks and thus the error argument.

First then, and very briefly, belief that p is a disposition, when one is attending to issues raised, or items referred to, by the proposition that p , normally to feel it true that p and false that not- p , whether or not one is willing to act, speak, or reason accordingly.⁷ But to accept the proposition or rule of inference that p is to treat it as given that p . More precisely, to accept that p is to have or adopt a policy of deeming, positing, or postulating that p —i.e. of including that proposition or rule among one's premises for deciding what to do or think in a particular context, whether or not one feels it to be true that p . (Cohen, 1992, p. 4)

So belief is a disposition to feel that p is true or to regard it as true without necessarily being willing to act on, assert, or reason with it, while acceptance is taking p as a premise in deliberation or action. It should be clear that with these different epistemic attitudes, there will be correspondingly different standards, and thus different values will be appropriate.

Elliott and Willmes (2013) in effect accept the wedge strategy, but seek to minimize its impact. They agree that insofar as one's goal is merely to determine whether one should believe that some hypothesis is true (in Cohen's sense), then the value-free ideal is appropriate. What they deny is the further claim that belief is the only, or the main, or the central scientific attitude. Scientists *qua* scientists are often, perhaps mostly, concerned with forms of acceptance where non-epistemic value judgments are appropriate.⁸ Nonetheless, in some instances, scientists are pursuing a *purely* epistemic activity, trying to determine which claims we should believe to be true. It is worth exploring whether we must capitulate to the defender of the value-free ideal on this point, or whether a more thorough rejection is in order.

The wedge strategy has its roots in classic philosophical notions about knowledge, justification, and belief, not least of which is the traditional analysis of knowledge as justified true belief ($K = JTB$). Not that the proponent of the wedge strategy is committed to some outdated analysis of knowledge,⁹ but rather, our traditional ideas about this quartet of epistemic concepts is one source of the wedge strategy. To wit, science should be regarded as our best knowledge-making enterprise. If we are interested in seeking knowledge, conformity to our values or considerations of the expected utility of potential claims seems irrelevant. Whether we are ought to believe something, whether something is true, and whether we know something seem questions for which non-epistemic values are irrelevant.¹⁰ Scientists may sometimes (or often) engage in

activities beyond knowledge-seeking, accepting claims for a variety of contextual purposes, some of which may require value judgments. But the core of science as an epistemic enterprise must be value-free—or so the wedge strategy would have it.

Another world of ideas is possible. John Dewey provides a systematic alternative approach to scientific inquiry, knowledge, and truth. On this alternative, the distinctions underlying the wedge strategy—belief/acceptance, knowledge/action, truth/utility—cannot be made. Rather, we should say that while such distinctions might be made fluidly for certain purposes in particular contexts, that no such distinction is valid in general, at the level of epistemology or logic. So, while we might in certain contexts, for certain purposes wish to distinguish between accepting an idea and genuinely believing it, there is no *general* way to draw that distinction that could be used to defend a value-free domain of science. (I would add, indeed, that when such a distinction is drawn in a context for some purpose, it does not mark a difference between a value-laden and value-free domain; this would be another way of arguing to the conclusions of this paper.)

Dewey does not deny these distinctions because he is a vulgar pragmatist who wishes to reduce the judgments of science to their practical utility, but rather because Dewey's account attends carefully to the practices and activities of the scientists, in their context. As I will show, according to Dewey, the basic judgments made by scientists are generally value-laden by necessity. Most controversially, even "truth" as an aim is not insulated from value judgments. Opponents of the value-free ideal of science may do well to adopt a Deweyan approach.

3. Dewey's situational theory of inquiry: An overview

One of the central concerns of John Dewey's career has been the theory of inquiry, what he called "logic." His view, in its mature form, can be found in his 1938 *Logic: The Theory of Inquiry* (LW 12). I have argued elsewhere (Brown, 2012) that this theory of inquiry is the core of Dewey's philosophy of science. So we must start with Dewey's definition of inquiry:

Inquiry is the *controlled or directed transformation of an indeterminate situation* into one that is so *determinate* in its constituent distinctions and relations as to convert the elements of the original situation into a *unified whole*. (*Logic* 1938, LW 12: 108, emphasis added).¹¹

I have highlighted the key terms necessary for deciphering this definition. First, we must understand what a "situation" is, and how it can be "indeterminate" or "determinate." Then we must understand what Dewey means by "controlled or directed transformation" of such a situation, and lastly what he is after with the goal of a "unified whole."

3.1. Situation

Dewey's concept of "situation" has proved to be one of his most difficult to understand, but it is also absolutely essential to understanding what inquiry is and does. Critics and sympathetic interpreters alike have generally misunderstood the idea; its

⁷ Let me register a note of suspicion, to be taken up below, at the very idea of a cognitive attitude which involves no change in behavior, utterance, or reasoning towards the object of that attitude. One need not be a behaviorist to be concerned about mental posits that make no such differences. Cohen is led to this claim because he finds a number of counterexamples to the claim that dispositions to act or speak as if p are either necessary or sufficient conditions for belief that p (pp. 8–11). One wonders why Cohen is willing to accept the hedging indicated by "normally" for the first part of the definition, but not for the connection to belief and action. I do not see why we should accept such a hedged definition but then not regard the connections to action, reasoning, and assertion as essential merely because they are defeasible.

⁸ Steel (2013) seems less pluralistic in this respect: Cohen's notion of acceptance is the appropriate attitude for scientists, inductive risk will be a general problem, and values will be part of managing inductive risk for any inquiry.

⁹ Though it is widely recognized that that $K = JTB$ won't do, thanks to Gettier, most epistemologists hope that small changes, such as strengthening J to some J^* , or adding a fourth condition X , so that $K = J^*TB$ or $K = JTB + X$, will suffice. The revised or added conditions generally are not taken to involve values, though the "pragmatic encroachment" literature may be an important exception here. See Miller (2014).

¹⁰ Most so-called epistemic or cognitive values too, perhaps, beyond the minimal criteria of "internal consistency" and basic "predictive competence." See Laudan (2004); Douglas (2009), pp. 103, 107. The issue turns on whether the other "epistemic values" are really indicative of truth (or empirical adequacy, etc.); see Douglas (2009), pp. 93–4; Elliott and McKaughan (2014), pp. 2–3.

¹¹ Unless otherwise noted, references to John Dewey are parenthetical citations to the critical edition, *The Collected Works of John Dewey, 1882–1953*, edited by Jo Ann Boydston (Dewey 1969–1991), published as *The Early Works: 1882–1898* (EW), *The Middle Works, 1899–1924* (MW), and *The Later Works, 1925–1953* (LW). Citations are made with these designations followed by volume and page number.

misunderstanding lies at the core of [Bertrand Russell's \(1939\)](#) misplaced criticisms. Here is how Dewey describes situations:

What is designated by the word 'situation' is not a single object or event or set of objects and events. For we never experience nor form judgments about objects and events in isolation, but only in connection with a contextual whole. This latter is what is called a 'situation'... In actual experience, there is never any such isolated singular object or event; *an* object or event is always a special part, phase, or aspect of an environing experienced world – a situation... There is always a *field* in which observation of *this* or *that* object or event occurs. Observation of the latter is made for the sake of finding out what that *field* is with reference to some active adaptive response to be made in carrying forward a *course* of behavior. (*Logic* LW 12:72–3)

It may be clear why these passages have occasioned much misunderstanding. One key phrase is “enviroming experienced world”—a situation involves an environment, a context; it contains a center or focus of experience; it is a world: it has the same kind of unity or thematic coherence as “the world of professional baseball” or “the post-9/11 world.” Two other key phrases are “active adaptive response” and “course of behavior”—a situation is centered around a *practice or activity* of an organism or agent.

Dewey's “situation” concept is less mysterious than it may at first appear. A situation is constituted by whatever participates in the central practice or activity, and the relevant environment of that practice or activity. The appropriate sense of “environment” is not from physics, i.e., a certain surrounding spatio-temporal region, but the complex environment of ecology or ecological psychology defined in terms of the organisms that directly interact and co-evolve with it.¹² The horizon of the situation is bounded by relevance rather than spatiotemporal proximity. The situation is the background in which all discriminations of objects and events are made; it is the stage on which the activity or practice plays. Dewey contends that “the most pervasive fallacy of philosophic thinking goes back to neglect of context” (“Context and Thought,” LW 6:5). He provides an account of situations which helps us avoid two ways of disregarding context: analytic theories of inquiry that focus on uncontextualized individual objects or universalizing theories of inquiry that focus on unified accounts of everything (LW 6:6–9).

A situation has a “pervasive qualitative character” that is both felt by the participants in the situation as well as an objective features of the situation. On the objective side, the relations and interactions between the constituents of the situation will have an overall character. They might be harmonious or discordant, culminating or dissipating, stable or tempestuous. The pervasive quality Dewey is talking about is not a property of particular objects or relations but of the situation as a whole, as is the aesthetic quality of a painting or the character of a person. Perceptually, Dewey claims that the participants can perceive that quality, not cognitively or intellectually but in a direct, experiential fashion, and indeed, that perceiving the pervasive quality of a situation is prior to all other perception and cognition.¹³ Finally, it is important to point out, as Dewey does at the end of his essay “Context and Thought,” that the context of a particular situation exists within

more inclusive contexts, such as our individual lives, culture, and the human condition in general (LW 6:20–1). Nevertheless, the situation is the primary scene of human practice, thinking, and inquiry.

3.2. Indeterminate situations

The kind of situation that spurs inquiry is called an “indeterminate situation,” i.e., it is a situation with a pervasive quality of indeterminacy. The sense of “indeterminate” at issue is forward-looking and tied to the focal practice or activity of the situation:

The situation in which it occurs is indeterminate, therefore, with respect to its *issue*. If we call it *confused*, then it is meant that its outcome cannot be anticipated. It is called *obscure* when its course of movement permits of final consequences that cannot be clearly made out. It is called *conflicting* when it tends to evoke discordant responses. Even were existential conditions unqualifiedly determinate in and of themselves, they are indeterminate in *significance*: that is, in what they import and portend in their interaction with the organism. The organic responses that enter into the production of the state of affairs that is temporally later and sequential are just as existential as are enviroming conditions. (*Logic* LW 12:110)

If a situation is an organism or organisms (agent or agents) acting in and with an environment, an indeterminate situation is one where the action is halted or disrupted by some lack of coordination between the organisms and environment. Habit and practice do not fully determine how the situation will or should proceed. Agent and environment are out of step. The agent no longer has the same degree of control over the situation, so the future course of the situation and its activities is indeterminate.

This indeterminacy is generally keenly felt by the participants as confusion or doubt, but it is also an objective fact about the relationship between the agent(s) and environment:

It is the *situation* that has these traits. *We* are doubtful because the situation is inherently doubtful. Personal states of doubt that are not evoked by and are not relative to some existential situation are pathological; when they are extreme they constitute the mania of doubting. Consequently, situations that are disturbed and troubled, confused or obscure, cannot be straightened out, cleared up and put in order, by manipulation of our personal states of mind. The attempt to settle them by such manipulations involves what psychiatrists call “withdrawal from reality.” Such an attempt is pathological as far as it goes ... It is, accordingly, a mistake to suppose that a situation is doubtful only in a “subjective” sense. (LW 12: 109–10)

This may seem to many readers like an unreasonable supposition. Whatever indeterminacy may exist must be in the minds of inquirers, because the future itself is in fact determinate. The “indeterminacy” is just a lack of knowledge on our part of how things will turn out. Without delving into abstruse metaphysics, Dewey would retort here that the human agents are part of the situation, not removed from it. Their expectations, knowledge, ignorance, activities, and practices do not take place in some other realm, outside of the situation. The indeterminacy, confusion, doubtfulness, etc. thus produced is not merely a feature of the mind alone but of the whole interacting, encompassing situation. So, to say that Dewey's theory of inquiry is “situational” is to say that it is directly concerned with a situation. Resolving an indeterminate situation, unlike changing one's mind, requires reconfiguring the situation.

¹² The idea is perhaps best captured in the ecological psychology of J.J. Gibson (1979), who distinguishes the “environment” as “the surroundings of animals” from “the physical world” (7–8). The environment consists of that which is “ambient” for a particular organism, i.e., of what the organism perceives and responds to, what plays a part in its activities.

¹³ For more on Dewey's concept of “situations,” see his essay “Qualitative Thought” (1930, LW 5) and “Context and Thought” (1931, LW 6); [Burke \(1994, 2000, 2009a,b\)](#); [Browning \(2002\)](#); [Brown \(2012, §5\)](#).

When faced with an indeterminate situation, a range of options are available to the agent(s), e.g., they can push through blindly until there is a clear way forward, they can remove themselves from the situation, or they can attempt to deliberately transform the situation to restore equilibrium and return to a smoothly functioning practice. Once the situation is recognized as something we should attempt to fix, as one which has a problem to be identified and solved, Dewey refers to it as a “problematic situation” rather than an “indeterminate” one. If that attempt is controlled and directed by what wisdom has accrued from such attempts in the past, we have a genuine attempt at inquiry.

Scientific inquiry and everyday or common sense inquiry are different not in kind, but in subject-matter, in the kinds of situations that spur them, or the types of problems that are common to them. Common sense inquiry has to do mainly with indeterminacies that arise for everyday practices and activities, with “the use and enjoyment of the objects, activities and products... of the world in which individuals live” (LW 12:66). Science arises out these common sense inquiries because of the continuity between them, as more general or abstract instruments and theories are developed for use in inquiries. The practices of science are the practices of creating and improving general tools of inquiry. The situations include the laboratory, the seminar, the journals, the scholarly debates. The proximate objects of science tend to be theories, instruments, and techniques. The ultimate test of scientific results is their applicability in more immediate inquiries. There is obviously a continuum, rather than a sharp distinction, between the types of inquiry Dewey calls “common sense” and “scientific.”

3.3. The pattern of inquiry

Controlled and directed inquiry follows a formal structure or “pattern of inquiry.” That pattern is two-dimensional according to Dewey. The first dimension is temporal, the second dimension is functional. The first dimension is what we might call the “stages of inquiry”, moving from an initial indeterminate situation, through inquiry proper, to final judgment. This is the dimension of transformation. The second dimension we might call “the phases of inquiry,” a set of interrelated and reciprocal operations that generate observed facts of the case, a statement of the problem, a well-reasoned hypothesis about how to resolve the situation, and experimental tests of that hypothesis. It is this dimension that makes inquiry controlled and directed.¹⁴

A simplified version of this “pattern” is shown in Fig. 1. The temporal progression is from a pre-cognitive awareness of an unsettled situation, through problem-solving inquiry, to a final judgment and resolution. The phases of inquiry, however, are not ordered in time; there is no step-by-step recipe for successful inquiry. Rather, they are functional moments, reciprocally revisited, specifying conditions to be satisfied. While observation, problem statement, and suggestion of hypotheses are emphasized relatively early in the inquiry, and reasoning and experiment grow in importance towards the end, any phase may be revisited at any time. Dewey is fond of the saying, “a problem well put is half-solved” (LW 12:112), and indeed, one can not be sure the problem has been properly identified until the solution is settled. And, as we will see, the cognitive attitudes appropriate to the stages of inquiry and of judgment are very different.

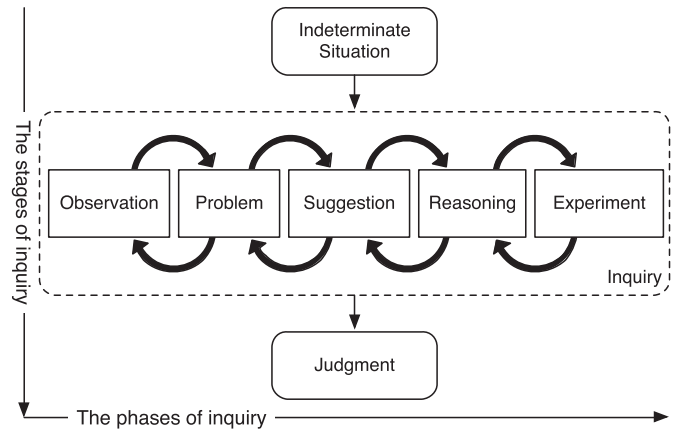


Fig. 1. The pattern of inquiry.

3.4. Judgment and resolution

Inquiry concludes in *judgment*—a decision to act in order to resolve the problematic situation. This decision is obviously contextual and practical. It is important to point out that for Dewey, a judgment always has “existential consequences” (LW 12:124). In a court case when a judge issues a judgment, existential changes directly follow: a person is imprisoned or set free, injunctions on action are set or lifted, a debt is incurred or relieved. So too, when a judgment is made in inquiry, a course of action is set in motion. The goal is a “determinate situation” or a situation that forms a “unified whole” in the sense that, where successful, inquiry results in a return to a smoothly functioning practice or activity, with the coordination between agent and environment restored, and the roadblock in question has been removed. This determinacy is not complete or permanent—as the practice progresses or the situation changes, new indeterminacies may arise. The settlement is contextual in nature.

It is especially worth emphasizing what it does and does not mean to say that Dewey’s theory of inquiry is “situational.” It does mean a very strong form of contextualism, as already mentioned. But that contextualism is not a form of relativism (in the usual sense). The truth or warrant of a judgment is not relative to cultural prejudice or arbitrarily held standards. The inquiry itself is concerned to make *objective* changes in the situation to resolve a likewise *objective* tension or indeterminacy therein. Likewise, contextualism does not imply radical parochialism, the impossibility of shared communication or generality in results. But generality is a special achievement of certain inquiries, that must be rechecked, reestablished, and maintained. It does not come for free.

Scientific inquiry in particular *does* aim at a certain form of generality, but the term “generality” is crucially vague. In a formal sense, scientific judgments are general because of their *systematicity*¹⁵; they are not one-off responses to immediate practical issues, but systematic theories or techniques. The problematic situations that scientific judgments attempt to directly resolve concern not “direct existential application” but rather “their systematic relations of coherence and consistency with one another” (LW 12:71), which is why their generality in the sense of general applicability must be established one situation at a time, hence the importance of emphasizing the account’s situationism. Generality in the sense of universality is thus (at best) an ideal, rather than something that can be established or guaranteed by inquiry.

¹⁴ In earlier work (Brown, 2012), I referred to the former as “the definition of inquiry” or “the sequence of inquiry,” and the latter as “the pattern of inquiry,” traced the development of this pattern in Dewey’s thinking, and discussed a variety of alternative interpretations of the view.

¹⁵ Compare Hoyningen-Huene (2013).

I concluded the §2 by discussing the classic ($K = JTB$) analysis of knowledge and suggesting that Dewey provides an alternative framework. Notice that “belief” has not figured prominently in Dewey’s account of inquiry. Dewey’s theory of inquiry is *situational* in a further sense because it is concerned with transforming situations rather than transforming mental states. Inquiry generally, science included, does not directly produce belief, but rather judgments, i.e., decisions to reform situations.

We saw above that Cohen (1992) considers belief to be a feeling that some proposition (or other cognitive object) is true, whether or not the believer is willing to act, speak, or reason on the basis of that belief. Dewey would doubtless regard so disconnected a definition of belief as a useless posit. And indeed, pragmatists like Dewey tend to subscribe to just the opposite sort of view, that beliefs are just what one is disposed to act on. To simplify the complexity of Dewey’s view,¹⁶ it would be fair to say that beliefs are judgments whose original justification has been lost, that have become habits of thinking and acting, perhaps even long passed down from the original inquirers that arrived at them. Beliefs in this sense are never really *justified*, as any serious doubts about them will lead to inquiry and judgment. The vast majority of our beliefs, however, never come under any doubts, and without any reason to doubt them, we cannot do otherwise than rely on them.

We might replace the formula that knowledge is justified true belief with an alternative: knowledge is justified true judgment. But if judgment is the name for the conclusion of an inquiry, then “justified judgment” is redundant—inquiry does not conclude (though it may come to a hasty end) until the judgment is thoroughly justified by observed fact, careful reasoning, and experimental test. This suggests an alternative formula: knowledge is true judgment ($K = T\mathcal{J}$)—a modest re-translation of the familiar $K = JTB$ into Dewey’s working concepts.

In order to show how Dewey’s framework undermines the wedge strategy, I will proceed to show how knowledge according to this minor revision of the classic formula is thoroughly value-laden. Unlike “belief” or “justified belief” according to Cohen (1992); Giere (2003); Elliott and Willmes (2013), etc., Deweyan judgment requires judgments concerning non-epistemic or non-cognitive, e.g., social, political, or ethical values. In the next section, I will explore Dewey’s theory of judgment and related cognitive attitudes. In the following sections, I will look at Dewey’s account of truth. In the concluding section, I will show why these are inescapably value-laden.

4. Propositions and judgments, affirmation and assertion

Dewey’s theory of inquiry features two main kinds of cognitive attitudes—*affirmation* and *assertion*—directed at two different cognitive objects or acts—*proposition* and *judgment*. Dewey’s use of the terms is highly idiosyncratic, which may lead to some confusion. It is important to keep in mind that Dewey uses terms in ways that are at odds with their settled meanings in contemporary logic, but that he started at a time when those meanings were not so settled, and took them in a different direction.

Dewey emphasizes the distinction between propositions and judgments throughout the *Logic*:

[J]udgment may be identified as the settled outcome of inquiry. It is concerned with the concluding objects that emerge from inquiry in their status of being conclusive. Judgment in this sense is distinguished from *propositions*. The content of the

latter is intermediate and representative and is carried by symbols; while judgment, as finally made, has *direct* existential import. (*Logic* LW 12:123)

Propositions are intermediate, symbolic representations. They are not merely statements (or the abstract meaning of statements), but they are symbolic representations that play certain functional, intermediate roles in inquiry. Dewey’s use of the term is much closer to its etymological roots: a proposition is a *proposal*, a provisional account of what is going on or what could be done. It is a means or an instrument to resolving the situation. In the *Logic*, Dewey provides a detailed taxonomy of propositions that need not concern us, but the main division is between propositions that are factual or existential, dealing with observable conditions of the situation, and propositions that are hypothetical or conceptual, dealing with possibilities and operations for altering the situation. Judgment, by contrast, is final and direct, and rather than merely symbolic, involves existential changes to the situation. A judgment includes not only a claim about how things are, but a decision to act in a certain way in order to resolve the problematic situation, and is not truly made until that action is initiated. In terms of the pattern of inquiry, propositions are what are generated and used in the various stages of inquiry, whereas a judgment is the final outcome.

The cognitive attitudes adopted towards propositions and judgments are thus different; propositions are affirmed, while judgments are asserted. To affirm a proposition, according to Dewey, is to accept it as worthy of pursuit, as providing a likely but revisable representation of facts or possibilities. Because of the reciprocal structure of the phases of inquiry, a proposition is always tentative and revisable until the inquiry concludes. To assert a judgment, however, is to accept it as the proper resolution of the problematic situation. In asserting the judgment, the inquirer makes a claim about how things are and what is to be done about them, and resolves to act on that claim. They also assert the rightness of that course of action. As discussed above, a judgment has direct existential consequences, because it sets a course of behavior in motion. Dewey cautions inquirers to maintain a tentative attitude of affirmation towards propositions, whereas judgment requires a more serious degree of commitment.

Even more puzzling, perhaps, is Dewey’s insistence that only judgments can be evaluated as true or false, while propositions are evaluated as “valid” or “invalid.” Dewey makes this distinction because judgments are *final* in nature while propositions are *instrumental*.

... since means as such are neither true nor false, truth-falsity is not a property of propositions. Means are either effective or ineffective; pertinent or irrelevant; wasteful or economical, the criterion for the difference being found in the consequences with which they are connected as means. On this basis, special propositions are *valid* (strong, effective) or *invalid* (weak, inadequate) ... (*Logic* LW 12: 287)

Not only are propositions and judgments, affirmation and assertion different in terms of the strength of commitment, tentative or settled. These attitudes are really adopted for different purposes. Propositions are instrumental, means to an end (resolving the problematic situation); they are affirmed as suitable means or not, as “valid” or “invalid”.¹⁷ Judgments are final, the goal of inquiry. They are asserted as warranted problem-solutions; that assertion

¹⁶ The details of which would require exploring Dewey’s psychology and philosophy of mind and his relation to Peirce, James, and Alexander Bain.

¹⁷ We just have to get over the fact that Dewey used these terms contrary to their usual meaning in contemporary logic. If one were to try to set out a Deweyan view for contemporary purposes, rather than focusing on interpreting Dewey’s own views, it may be best to drop this particular Deweyan terminology.

puts action in motion. If they successfully resolve the problem, as we shall see below, they are *true* (if not, *false*).

This is a stark contrast to Cohen (1992)'s account of belief and acceptance. Recall that belief that *p*, for Cohen, is merely the feeling that *p* is true, independent of a willingness to act or assert *p*, while to accept that *p* is to act or speak or reason on the basis of *p*. I have already discussed reasons for concern about an account of belief so disconnected from action. Further, on Cohen's account, belief and acceptance are attitudes taken towards propositions with a purely descriptive content. On the other hand, for Dewey, the content of a proposition or judgment includes not only description but action, and the attitude of assertion includes not only the endorsement of the descriptive content of a judgment but also the claim to normative correctness of the judgment.

Judgment and proposition, or assertion and affirmation, are the fundamental types of cognitive attitude on Dewey's account. The affirmation of a proposition can capture both the attitude of pursuit and the attitude of acceptance for the purposes of deliberation (inquiry). The assertion of a judgment is the *only* attitude that resolves an inquiry—though we might in the meantime decide that we should continue, defer, or give up on the inquiry—but judgment is as various as the different situations that spur it, the different problems it resolves. There is thus a unity-in-plurality of goals for inquiry.

Having covered one half of the “knowledge is true judgment” ($K = T/\mathcal{J}$) formula (judgment) let us move on the other: truth.

5. The pragmatist theory of truth reconsidered

Few contemporary philosophers of science who have been influenced by John Dewey would go so far as to speak positively about the pragmatist theory of truth, much less subscribe to it. Many sympathetic interpreters of Dewey insist, as a virtue of his view, that he never really shared a theory of truth with pragmatists like William James, or that he gave up any discussion of truth later in his career, dealing instead with safer notions like “warranted asserability.”

The hesitancy towards this feature of pragmatism is not without some justification. We all know the bumper sticker version of the pragmatist theory of truth: “Truth is what works.” Despite several attempts at clarification and further nuance, William James was never quite able to escape the ridicule that this phrase evoked, nor to effectively distance himself or pragmatism from it. Contemporary pragmatists are still occasionally subjected to that ridicule.

Anyone who has looked into discussions of the pragmatist theory of truth, especially by careful interpreters of pragmatism (critical or sympathetic) knows that things are more complicated than that and that the bumper sticker does not really capture what the pragmatist is getting at.¹⁸ Furthermore, between Peirce, James, and Dewey, at least, there was serious disagreement about how pragmatism related to the theory of truth. Here is Dewey, trying to distance himself from the account of truth he finds attributed to him by William James.

Since Mr. James has referred to me as saying ‘truth is what gives satisfaction’ (p. 234), I may remark... that I have never identified any satisfaction with the truth of an idea, save *that* satisfaction which arises when the idea as working hypothesis or tentative method is applied to prior existences in such a way as to fulfill what it intends. (“What Pragmatism Means by Practical” MW 4:109)

What Dewey means when he tells us that the truth of a hypothesis is its success in fulfilling what it intends depends on the elements of his theory of inquiry and judgment discussed above. Namely, a hypothesis (or more carefully, a judgment) intends to resolve the problematic situation that occasioned it, and so, a judgment is true if and only if it successfully resolves the problematic situation that spurred it.

To understand why, I must discuss what Dewey calls “The Logic of Judgments of Practice.” This infrequently cited doctrine turns out to be central to how Dewey understands his work as a form of “pragmatism,” hence its prominent place in two of Dewey's works on logic.¹⁹

5.1. Science and the logic of judgments of practice

In 1916, Dewey published his second of three major works on logic, *Essays in Experimental Logic*. The significance of the final essay in that work, “The Logic of Judgments of Practice,” has often been overlooked. Therein is stated Dewey's views on science as a practice, the relation of scientific inquiry and value judgment, his account of truth, and indeed Dewey's fundamental definition of his pragmatism. The rhetorical structure of the chapter is somewhat difficult, beginning innocently enough by positing a form of judgment—practical judgment—that has hitherto been ignored or inadequately treated by logicians:

Propositions exist relating to agenda—to things to do or be done, judgments of a situation demanding action. There are, for example, propositions of the form: M. N. should do thus and so; it is better, wiser, more prudent, right, advisable, opportune, expedient, etc., to act thus and so. And this is the type of judgment I denote practical. (MW 8:14)

Dewey considers, as an example of practical judgment, the question of buying a suit (MW 8:31). The situation calls for making a practical judgment, e.g., “I should buy that gray suit,” or “I should buy this pinstripe suit,” or “I should not buy anything today.” Facts and value judgments about the different suits—e.g., price, durability, style, comfort, seasonal appropriateness—play a significant role in coming to that judgment.

Judgments of practice have a variety of features that Dewey enumerates throughout the chapter (see Welchman (2002) for discussion of these features). Judgments involve an open, incomplete future situation (an indeterminate situation, as described above); without such a situation, the judgments would be otiose. Judgments of practice modify their subject matter, because they require the subject-matter be acted upon. They make a difference for better or worse by way of those modifications. Judgments of practice carry an assertion of both the rationality and acceptability of the end pursued and the possibility and efficacy of the means to reach it. They require (tentative) factual propositions that are accurate, relevant, and adequate. They propose a course of action, rather than (merely) describing a state of affairs. Judgments of practice have modal qualities referring to, e.g., possibility, necessity, permissibility, futurity, betterness, etc.

Dewey points out that judgments of practice have peculiar truth conditions:

Their truth or falsity is constituted by the issue. The determination of end-means... is hypothetical until the course of action indicated has been tried. The event or issue of such action is the

¹⁸ Haack (1976) is a classic in the genre.

¹⁹ The final chapter of *Essays in Experimental Logic* (1916) and Chapter 9 of *Logic: The Theory of Inquiry*.

truth or falsity of the judgment ... In this case, at least, verification and truth completely coincide. (LJP, MW 8:14)

If my judgment was “I should buy *this* suit,” then that judgment was *true* if doing so worked out²⁰ if the consequences of that judgment are satisfying, they fulfill the needs that prompted buying the suit, they do not have unintended negative consequences, if I do not feel regret for my decision, then it was the right to say that I should buy it. What else could the truth of a judgment of practice involve? And indeed, there is a straightforward way in which truth of the judgment is due to correspondence—the judgment corresponded with the future consequences intended by the judgment.

Here is where Dewey makes the clever rhetorical shift that has often been missed or misunderstood. Having established judgments of practice as a particular kind of judgment, with interesting features and truth-conditions, different from “ordinary” judgment, Dewey proposes the following hypothesis:

We may frame at least a hypothesis that all judgments of fact have reference to a determination of courses of action to be tried and to the discovery of means for their realization. In the sense already explained all propositions which state discoveries or ascertainment, all categorical propositions, would be hypothetical, and their truth would coincide with their tested consequences effected by intelligent action. (MW 8:22)

This is Dewey’s definition of *pragmatism*: pragmatism is the hypothesis that all judgments are judgments of practice. What he originally (for rhetorical purposes) forwarded as a special form a judgment (practical) with a logic different from ordinary (descriptive, theoretical) ones, he ends up arguing is in fact fully general, and thus that the traditional ideas about the form and logic of judgments are empty.

Based on this point, the connection to science should be clear.

To say that something is to be learned, is to be found out, is to be ascertained or proved or believed, is to say that something is to be done. Every such proposition in the concrete is a practical proposition. Every such proposition of inquiry, discovery and testing will have then the traits assigned to the class of practical propositions. They imply an incomplete situation going forward to completion, and the proposition as a specific organ of carrying on the movement. (MW 8:64)

Science is a type of inquiry, inquiry ends in judgment, and all judgments are judgments of practice. As Dewey puts it in one of the later sections of “The Logic of Judgments of Practice,” science is a “practical art.” Namely, science is the practice of systematized problem solving.

5.2. Pragmatism, truth, and science

From a pragmatist point of view, science is a practice, and scientific inquiry, like all inquiry, is an attempt to resolve an indeterminate situation that arises in that practice. The form of the final judgment that resolves an inquiry is what Dewey has called a “judgment of practice.” Like all practical judgments, scientific judgments are true or false according to their consequences. This is not the vulgar pragmatism that would measure the truth of a claim

according to whether the consequences of believing it are congenial. Rather, the consequences in question are tied to the consequences *intended* by the judgment. As all judgments involve a solution to a particular problem and a transformation of an indeterminate situation, then the truth of that judgment is determined by whether the transformation of the situation, carried out, resolves the problem and eliminates the specific indeterminacy in question.²¹

We can thus provide the following definitions of judgment and truth:

(J) A judgment \mathcal{J} concludes an inquiry I as a decision to act to resolve a indeterminate situation S that occasioned I, to transform S into a determinate, unified whole.

(T) \mathcal{J} is true iff \mathcal{J} resolves S.

Dewey’s particular form of contextualism appears here in the way that \mathcal{J} is indexed to I and S.

We now have a full view of Dewey’s theory of knowledge, viz., what is required to be a true judgment (the closest analogue, in his theory, to a true, justified belief). What, then, on Dewey’s view, are we to say about the role of values in knowledge?

6. Values in science from a pragmatist point of view

According to Dewey, judgment is a species of action, and indeed a species that can have serious consequences, as it tends to transform human practices and the environments in which they take place. Propositions are symbolic representations of states of affairs and hypothetical courses of action. Judgment is a decision to act in a situation in order to resolve the problem that occasioned it. Judgment has direct existential consequences. A particular judgment is true (or false) in a situation insofar as it succeeds (or fails) in resolving the problem that makes that situation indeterminate. It is not widely disputed that what Dewey calls “propositions” are value-laden. Affirming a proposition in Dewey’s terms is akin in some respects to the decision to pursue a hypothesis or to accept it for the purposes of inquiry; even according to the wedge strategy, these can be value-laden decisions. What remains is to show how judgment and truth can be value-laden.

Judgment is value-laden primarily due to our ordinary ethical and social responsibilities. When we decide to act, it is appropriate to hold us accountable to the appropriate norms of action. When our actions have consequences that impact ourselves and others, we have an obligation to weigh those consequences when making a decision. Judgments transform our environments and our practices. Within the limits of what can successfully resolve a problematic situation, we are obligated by these responsibilities to make choices in accordance with our best value judgments, lest we be negligent in effecting those transformations. Because scientific judgments will generally be applied in a wide variety of situations to resolving more immediate problems, we must weigh the foreseeable consequences of that process in considering scientific judgments. If any inquiry is value-free, it is not, as Elliott and Willmes (2013) suggest, because the inquirers adopt different cognitive attitudes or goals, but rather the subject-matter of the inquiry is so far removed from matters of concern or applicability as to have no foreseeable

²⁰ Dewey rejects the sort of non-cognitivism about practical judgment that would argue that such judgments are not candidates for truth or falsity, though admittedly the significance of this particular judgment is minor.

²¹ Of course, such resolutions are in a sense temporary—as situations change, causing new problems to arise, the matter will eventually need to be revisited. If there is any pragmatist sense to be made of William James’s talk of “temporary truths” (James, 1907), it must be in terms of the contextual nature of judgment.

consequences for what we value.²² In this context, Dupré (2007) argues that, “if most or all of physics is value free, it is not because physics is science but because most of physics simply doesn’t matter to us”(p. 31).

Truth is likewise value-laden, for much the same reason. What counts as an adequate solution depends on what we care about. How sensitive we are to the way our practices impact others, the environment, etc. will change whether we are able to carry on with the practice or whether it becomes indeterminate. Successful resolution depends on what is ethically, politically, and socially acceptable as a transformation of the existing situation. A resulting situation that is problematic for value judgment is in that sense an unacceptable resolution, and thus false.²³

Dewey was concerned to show that the advancement of science does not require an abandonment of social responsibility:

My hypothesis is that the standpoint and method of science do not mean the abandonment of social purpose and welfare as rightfully governing criteria in the formation of beliefs... (“The Problem of Truth” MW 6:57, emphasis added)

Our judgments are not mere attempts to mirror a static world beyond us, but are attempts to manage and change the world to render the precarious stable, the problematic straightforward, the doubtful trustworthy. Knowing and doing are intimately connected; the act of knowing modifies the thing known.²⁴ We can thus only answer the question of what we know by appealing, in part, to what we care about—ethically, politically, and socially.

This is a radically different view from the view at base of the wedge strategy, according to which we must distinguish between the practical, value-laden realm of acceptance, and the cognitive, value-free realm of belief, truth, or knowledge. Doubtless it is further than some defenders of the value-free ideal would like to go. Nonetheless, the view has much to recommend it. It was the considered view of one of the most respected philosophers of science of the early twentieth century. It is a view that takes scientific practice rather than abstract theory as its fundamental ground. Furthermore, it is one option available to those of us who see the value-free ideal of science as not only unreachable but fundamentally undesirable.

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²² Pursuing such inquiries, however, requires taking a certain stance on what is socially valuable to pursue. See Kitcher (2001, 2011).

²³ This does not mean that inquiry is always subject to a conservatism about our values. This is why I prefer the term “value judgment” to “values.” In the course of inquiry, we may find that previously held values must give way, and we thus make new value judgments. Resolving apparent conflicts between values and evidence is a key part of inquiry, and much the same as resolving apparent conflicts between facts or between facts and theories.

²⁴ Or at least, on the basis of what I’ve argued here, the act of knowing modifies the world around us. Whether the thing known in particular is changed would be a further claim for certain cases. This theme in Dewey is taken up further by Shook (2000) and Godfrey-Smith (2002). This same idea appears in the later work of Paul Feyerabend (particularly in Feyerabend (2001)) under the heading of “causal-semantic actions,” which I explore in Brown (forthcoming).