Received: 22 May 2020 | Revised: 19 August 2020 | Accepted: 21 August 2020

DOI: 10.1002/sres.2739

RESEARCH PAPER

SYSTEMS and BEHAVIORAL RESEARCH SCIENCE WILEY

Pragmatism in professional practice

Richard John Ormerod

University of Warwick, Coventry, UK

Correspondence
Richard John Ormerod, University of Warwick, CV4 7AL Coventry, UK.
Email: ormerodrichard@gmail.com

Abstract

In recent years, there has been a resurgence of interest in the American philosophy of pragmatism. The paper reviews the application of pragmatisms in five selected areas of professional practice: technology, law, politics, medical and social work, and education. Each area is examined for evidence that the ideas of pragmatism have been taken up academically in the research literature. The literature is then examined for evidence that the academic work has permeated the actions of professionals. Each of the chosen practice areas is clearly dominated by pragmatic, instrumental activities. Despite this and a good deal of discussion in the academic literature, there is only limited evidence that professionals, in so far as they exhibit pragmatist behaviour, make any explicit connection with the philosophy of pragmatism. The early pragmatists argued that pragmatic behaviour arises from man's need to solve problems quickly, using his limited understanding of the situation, in order to survive and flourish: no philosophy had been required to guide such behaviour. Today, philosophy is often consulted on questions of ethical and moral dilemmas in most practice areas, but the philosophy of pragmatism may well not feature in such discussions. Experience in operational research (OR) practice is reviewed and compared with that in the five other practice areas. From the reviews, a list of the habits and orientations is synthesized, habits and orientations that could be taken to characterize pragmatism in professional practice.

KEYWORDS

applied philosophy, pragmatism, pragmatism in OR, process of OR, professional practice

1 | INTRODUCTION

The aim of the paper is to explore how the philosophy of American pragmatism has been utilized in professional practice and how this can be crystalized into guidance for future professional practice in general and operational research (OR) in particular. The approach taken has been (i) to describe the philosophical approach of the originators of pragmatism in terms of logic, method and social context; (ii) to search the literature of selected professions for evidence of pragmatism being utilized or exhibited in their practice; (iii) to examine how OR has engaged with pragmatism and how it is reflected in its activities; and (iv) to crystalize the evidence of pragmatic behaviour in professional practice into a list of habits and behaviours reflecting a pragmatic orientation, in other

words, to provide a list of pragmatism in professional practice (PIPP) for both practitioners and academics to reflect on and make use of.

The three main originators of philosophical pragmatism, Charles Sanders Peirce (1839–1914), William James (1842–1910) and John Dewey (1859–1952), were prolific writers. The result was that even at an early stage, there were many versions of pragmatism. As other authors sought to develop and apply the ideas, the number of versions multiplied. Most commentators agree that the core idea of pragmatism is provided by the initial maxim formulated by Charles Sanders Peirce:

> Consider what effects, that might conceivably have practical bearings, we conceive the object of our conception to have. Then, our conception of these effects is the whole of our conception of the object. (Peirce, 1878, p. 293)

It was not until many years later, after James had introduced the term 'pragmatism', that Peirce's maxim came to be referred to as *the pragmatic maxim* (James, 1907). Peirce himself provided many versions of his famous maxim. Wikipedia provides a (pragmatically) useful summary of the scope of application of the maxim:

> Pragmatism is a rejection of the idea that the function of thought is to describe, represent, or mirror reality. Instead, pragmatists develop their philosophy around the idea that the function of thought is as an instrument or tool for prediction, action, and problem solving. Pragmatists contend that most philosophical topics—such as the nature of knowledge, language, concepts, meaning, belief, and science—are all best viewed in terms of their practical uses and successes rather than in terms of representative accuracy. (Wikipedia, 2014a, Pragmatism)

Pragmatism developed in the aftermath of the American Civil War in the context of a Christian society, industrialization and rapid growth of the economy. Modern commentators generally agree that the initial intent of the early pragmatists was to escape from the grip of the Cartesian foundationalism that had dominated philosophical thinking up to then (Bernstein, 2010; Margolis, 2002, 2007; Menand, 1997b; Menand, 2001).

For the interested reader, extracts from the writings of key pragmatist authors can be found in Menand (1997a), and a broad historical account of American pragmatism can be found in Menand (2001). Bernstein (2010) explains the development and influence of pragmatism in the development of philosophical thought. Shusterman (2004) contains papers that explore the range of pragmatism and the limits of philosophy. Margolis (2002, 2007) offers a forward-looking view. Joas (1996) explores creativity in pragmatic action. Lorino (2018) offers a practitioner's perspective. One of the key Kantian insights of philosophy that Dewey built into his approach is that there is always a moral dimension to decision making: all decisions to act are value laden. Perhaps as a consequence, Dewey never felt it necessary to dedicate any of his many works to moral issues alone: his moral views were therefore distributed throughout his many works. Gouinlock (2002) has gathered together key passages on moral choice from Dewey's work in a book titled *The Moral Writings of John Dewey*. For OR readers, Ormerod (2006) provides a brief introduction to the history and ideas of pragmatism and its relevance to OR.

The following section of the paper (Section 2) describes the originators' philosophical approach to practice and inquiry, in terms of logic, method and social context. The next section (Section 3) outlines pragmatism's approach to inquiry. The following two sections (Sections 4 and 5) discuss the philosophical legacy of American pragmatism and the influence on social theory as one important route for pragmatism to permeate academic discussion. The review of the five selected practice areas follows: technology (Section 6); politics (Section 7); legal profession (Section 8); medical and social work (Section 9); and education (Section 10). Next, the relationship between pragmatism and OR is considered, and the implications for OR are summarized in a list of 12 pragmatism in professional practice (PIPP) habits and orientations (Section 11). Finally, some conclusions are drawn (Section 12).

2 | THE ORIGINATORS' APPROACH TO PRACTICE

Whereas it is difficult to summarize the whole of pragmatism satisfactorily, it is easier to compare the stances of the main protagonist. For instance, the philosophers acknowledged as originators of pragmatism, Peirce, James and Dewey, had very different conceptions of pragmatism. Dewey described the difference between Peirce and James:

> Peirce was above all a logician; whereas James was an educator and humanist who wished to force the general public to realize that certain problems, certain philosophic

> debates, have a real importance for mankind, because the beliefs which they bring into play lead to very different modes of conduct. (McDermott, 1981, p. 46)

Rescher characterizes the difference between all three originators thus:

> For [Peirce], pragmatism was primarily a theory of meaning, with the meaning of any concept that has application in the real world inhering in the relations that link experiential conditions of application with observable results. ... For him the meaning of a proposition is determined by the essentially positivist criterion of its experiential consequences in strictly *observational* terms. ...
>
> With James, it was the personal (and potentially idiosyncratic) idea of efficacy and success held by particular people that provided the pragmatic crux, and not an abstract community of ideally rational agents. For him, pragmatic efficacy and applicative success did not relate to an impersonalized community of scientists but to a diversified plurality of flesh-and-blood individuals. Truth for James is accordingly what reality impels and compels human individuals to believe; it is a matter of what pays by way of belief in the course of human activity within the circumambient environment and its acquisition is an invention rather than a revelation.
>
> Dewey, like Peirce before him, saw inquiry as a self-corrective process whose procedures and norms must be evaluated and revised in the light of subsequent experience. But Dewey regarded this reworking in the light of values that are not (as with Peirce) connected specifically to science (namely prediction and experimental control), but rather values that are more broadly rooted in the psychic disposition of ordinary people at large—the moral and aesthetic dimension now being specifically included. Peirce's pragmatism is scientifically élitist, James's is psychologically personalistic, Dewey's is democratically populist. (Rescher, 1995, pp. 710–712; italics in the original)

On the key issue of truth, Hare characterizes the differences as follows:

> For pragmatists, truth, like other concepts, is to be understood in terms of practice. The notion of truth as a relation between belief and reality is not rejected but clarified by reference to actions, future experiences, etc. Each of the pragmatists has a distinctive way of carrying out the practical clarification. Peirce defines truth as the ultimate outcome of inquiry by a 'community of investigators', an outcome of settled 'habits of action'. James clarifies truth in terms of 'leading'. True beliefs, he says, 'lead to consistency, stability and flowing human intercourse'. Dewey identifies truth ('warranted assertibility') with the solution of a problem. Inquiry, he holds, starts with a 'problematic situation' and, if successful, ends with a situation that is so 'determinate' and 'unified' that hesitancy to act has been eliminated. (Hare, 1995)

The American 'originators of pragmatism' were the first to adopted the term 'pragmatism'; however, the seeds had been sown much earlier, and, at the time when the American philosophers were crystallizing their ideas, Ludwig Wittgenstein and Martin Heidegger were independently pursuing similar themes. Given the relatively undeveloped state of philosophical inquiry in the United States at the time and the lack of established traditions and habits, the American pragmatists were free to draw on a rich diversity of philosophical sources for inspiration; these included the medieval thinker Dun Scopus, the German idealists Emmanuel Kant and Georg Hegel, and the British empiricist John Stuart Mill (Bernstein, 2010, p. 7). Despite the decline in the influence of pragmatism after WW2, its resurgence in the 1980s and 1990s, notably in the works of American and German philosophers (Richard Rorty, Hilary Putman, Wilfred Sellars, Donald Davidson and WVO Quine; Karl-Otto Apel, Jürgen Habermas, Hans Joas and Axel Honneth), has encouraged modern commentators to emphasize the continuity and persistence of the pragmatic legacy (Bernstein, 2010, p. 13; see also, Brandon, 1994, 2002).

3 | PRAGMATIC INQUIRY

3.1 | Logic

Peirce regarded logic as the art of devising research methods, a division of philosophy. He was credited by Dewey (1938a, p. 9n) to be 'the first writer on logic to

make inquiry and its methods the primary and ultimate source of logical subject-matter'. Peirce asserted that 'logicality in regard to practical matters is the most useful quality an animal can possess, and might, therefore, result from the action of natural selection. ... That which determines us, from given premises, to draw one inference rather than another, is some habit of mind, whether it be constrained or acquired'. For a man whose thoughts are wholly directed towards practical subjects, drawing inferences is a matter of routine; he follows well beaten paths, which he has learnt how to handle once and for all in the process of learning his business. But, Peirce says 'let a man venture into an unfamiliar field, or where results are not continually checked, and all history shows the most masculine intellect will ofttimes lose his orientation and waste his efforts in directions that bring him no nearer his goal, or even carry him entirely astray. He is like a ship in the open sea, with no one on board who understands the rules of navigation. And in such a case some general study of the guiding principles of reasoning would be sure to be found useful' (Peirce, 1931–58, 5.368).

For Peirce, pragmatism is about logic; he equates logic with the meaning of words, and ultimately his theory of signs (semeiotics). Peirce summarized his position in an (untitled, unfinished) essay published after his death:

> The word *pragmatism* was invented to express a certain maxim of logic, which, as was shown at its first enouncement, involves a whole system of philosophy. The maxim is intended to furnish a method for the analysis of concepts. A concept is something having the mode of being of a general type which is, or may be made, the rational part of the purport of a word. ... The method prescribed in the maxim is to trace out in the imagination the conceivable practical consequences, – that is, the consequences for deliberate, self-controlled conduct, – of the affirmation or denial of the concept; and the assertion of the maxim is that herein lies the *whole* of the purpose of the word, the *entire* concept. ... This maxim is put forth neither as a handy tool ... nor as a self-evident truth, but as a far-reaching theorem solidly grounded upon an elaborate study of the nature of signs [semeiotics]. (Peirce, 1931–58, 8.191)

In another innovation in the logic of drawing inferences, Peirce added abduction or hypothetical explanation (today referred to as *inference to the best explanation*; see Ormerod, 2010a, p. 1212) to deduction and induction. He also made a number of contributions to mathematical and formal symbolic logic.

For Dewey, logic is rooted in inquiry. In his book, *Logic: The Theory of Inquiry*, he states 'The theory, in summary form, is that all logical forms (with their characteristic properties) arise within the operation of inquiry and are concerned with control of inquiry so that it may yield warranted assumptions. This conception implies much more than that logical forms are disclosed or come to light when we reflect upon processes of inquiry that are in use, of course it means that; but it also means that the forms *originate* in operations of inquiry' (Dewey, 1938a, pp. 3–4).

Dewey defines inquiry as the transformation of a puzzling indeterminate situation into one that is sufficiently unified to warrant assertion or coherent action; it starts with doubt and ends with belief or knowledge. He prefers the term 'warranted assertion' because the terms 'knowledge' and 'belief' have other connotations. He believed that progress could be made by the cultivation of intelligent habits in individuals and the maintenance of social structures that that encourage continuous inquiry.

3.2 | Method

Dewey defines the method of inquiry in terms of the logic of inquiry; they are two sides of the same coin. The logic of inquiry derives from the experience of inquiry; it is not disclosed *a priori* to the faculty of *pure reason* (just as the postulates of geometry are not self-evident truths, externally imposed, but are formulations of the conditions that have to be satisfied in procedures that deal with a certain subject matter). The logic consists of postulates for inquiry providing conditions that further inquiry must satisfy if warranted assertibility is to be achieved.

Methods of inquiry are operationally performed (in OR this would take the form of a consultancy project or intervention or part thereof) to enact the logic in practice; logic provides the conditions that the inquiry has to meet. Dewey explains that there are two general types of operation: 'there are operations like hunting for a lost coin or measuring land, and there are operations like drawing up a balance sheet. The former is performed on existential conditions; the latter upon symbols' (p. 15). In OR, we would similarly distinguish between establishing facts empirically and deducing consequences logically.

3.3 | Social context

One of the three branches of Peirce's semeiotics is called objective logic or universal rhetoric (also referred

to as speculative rhetoric). The main purpose of objective logic is to consider questions of inquiry in the context of community. Pierce describes the involvement of community thus:

> The real, then, is that which, sooner or later, information and reasoning would finally result in, and which is therefore independent of the vagaries of me and you. Thus the very origin of the conception of reality shows that the conception essentially involves the notion of a COMMUNITY, without definite limits, and capable of an increase in knowledge. (Peirce, 1931–58, 5.311)

James takes a wider view of community and recognizes the importance of the fact that different people (or groups of people) do not always view the issue from the same perspective. In his first collection of philosophical essays, *The Will to Believe*, James says 'the difference between monism and pluralism is perhaps the most pregnant of all differences in philosophy' (James, 1979; originally published in 1897). In *A Pluralistic Universe*, published in 1909, he says:

> To the very last, there are various 'points of view' which the philosopher must distinguish in discussing the world; and what is inwardly clear from one point remains a bare externality and datum to the other. The negative, the alogical, is never wholly banished. Something—call it 'fate, chance, freedom, spontaneity, the devil, what you will'—is still wrong and other and outside and unincluded, from *your* point of view, even though you be the greatest of philosophers. (James quoted in Bernstein, 2010, p. 55; italics in the original)

James attributes his description of the way that new opinions (beliefs) are adopted, to Dewey and FCS Schiller. According to this view, individuals hold stocks of opinions until they hear of a fact that is incompatible with those theories. They try to hold on to their original opinions until a new idea is discovered which can be 'graft[ed] upon the ancient stock with a minimum of disturbance of the latter, some idea that mediates between the stock and the new experience and runs them into one another most felicitously and expediently' (James, 1907, p. 31). Thus, pluralism exposes individuals to views that differ from their own; they can then decide whether to adjust their own views in the light of what they have heard.

For Dewey, the community of reference must be democratic. Democracy he takes to be a form of social inquiry. He argues that democracy is not defined as one of the options for government, nor does it lie in so-called democratic institutions. Rather, democracy lies in an individual's freedom to hold their own view, freedom to promote these views and freedom to engage in public decision processes; the mark of a democratic community is that individuals do in fact voluntarily participate in social and political lives on questions more usually dominated by institutionalized state and commercial interests. In Dewey's hands, democracy is essentially a question of morality and values, of ideals (Gouinlock, 2002). Thus, rather than pitting individual interests against community interests, Dewey brings the two together in his concept of a democratic community in which individuals freely engage. As Festenstein puts it in the *Stanford Encyclopaedia of Philosophy*:

> Dewey is anti-elitist, and argues that the capacity of the wise few to discern the public interest tends to be distorted by their position. Democratic participation is not only viewed as a bulwark against government by elites, but also as an aspect of individual freedom—humanity cannot rest content with a good 'procured from without.' Furthermore, democracy is not 'simply and solely a form of government', but a social and personal ideal; in other words, it is not only a property of political institutions but of a wide range of social relationships. This ideal is common to a range of social spheres, and should take 'industrial, as well as civil and political' forms. (Festenstein, 2014)

4 | THE PHILOSOPHICAL LEGACY OF AMERICAN PRAGMATISM

Pragmatism emphasizes doubt and uncertainty. After WW2, at a time when the United States wanted clarity and certainty in the Cold War, American pragmatism as such fell from favour. Even so, Peirce's reputation in the philosophical domain remained intact on the basis of his groundbreaking work on semeiotics. Similarly, James continued to be held in high regard as a result of his contribution to psychology. However, Dewey's even-handed treatment of capitalism and communism could not be countenanced.

In Europe, some of the most influential philosophers of the day developed ideas that can be considered to be similar to those of pragmatism. The later

Wittgenstein (1953), for instance, argued that the meaning of words lies in the use to which they are put in a particular context and can only be understood in terms of that usage. Heidegger (1962, 1977) looked at the meaning of an object (he takes a carpenter's hammer as an example) arguing that its significance emerges from its use at a time and place, particularly when problems arise. Popper developed his logic of science on the fallibility of any conclusion reached (Ormerod, 2009). None of these developments were explicitly linked to pragmatism, but they helped pave the way for American pragmatism to return to favour, particularly in the hands of Rorty.

It is beyond the scope of this paper to explore the use made of the original ideas of pragmatism by philosophers such as Rorty, Putman, Davidson, Quine and Habermas in the latter half of the 20th century. A description and an analysis of the development of pragmatism at the end of the 20th century can be found in Margolis (2002); a recent account of 'the pragmatic turn' in philosophy is given in Bernstein (2010). The aim of this paper is to follow the diffusion of pragmatic ideas into some selected professional practices. However, as a step towards understanding this penetration of pragmatic ideas, the closely related academic domain of social science is considered in the next section.

5 | PRAGMATISM AND SOCIAL THEORY

Pragmatism has been a theme throughout the history of the development of social theory from Max Weber (1864–1920) and Émile Durkheim (1858–1917) to Dewy and Habermas (see, for instance, Durkheim, 1983; Dewey, 1922, 1925; Festenstein, 1997). American pragmatism of the 19th and 20th centuries is characterized by its understanding of human action as a *creative action.* For instance, abduction in Peirce's logic of science is aimed at the creative generation of new hypotheses. For pragmatism, creativity is always embedded in a *situation*; actors confront problems in a particular set of circumstances. However, the solution to these problems, the choice of action to be taken, is not clearly prescribed beforehand by reality but calls for creativity. James regarded the ability to make choices as an attribute crucial to the survival of the human organism in its environment; the making of such choices involves the exercise of *freedom.* The unifying element running through Dewey's work is his recognition that *problem solving* applied not only to instrumental action but also to inquiry into the meaningfulness to be experienced in action itself. The key role of creativity in the ideas of the pragmatists is not devoted to the creative generation of innovation as such, but to the creative solution of problems; the pragmatists endeavoured to link creative problem solving to everyday *experience* and action (Joas, 1993, pp. 4–5).

In its heyday, American pragmatism was viewed in Europe (where the foundations of the social sciences were being forged) through stereotypes depicting the United States as primarily concerned with creating wealth through industrialization and growth; as a result, pragmatism was largely ignored. However, Günter Jacoby observed:

> [Pragmatism was indeed a uniquely American conception but should be understood] not as a philosophy of the dollar, however, but as a philosophy of life, of human creation, of possibilities. For the American pragmatists, cognition is thus not a process of acquisition in the narrow sense, but rather a process of life in the broader sense. ... For the joy of creating things oneself and the belief in the greater possibilities of the human being: that is indeed American. (Jacoby,-1912, p. 173; quoted in Joas, 1993, p. 5)

In American thought, it is not only the artist but also the engineer and inventor who are the incarnations of creativity. Furthermore, according to Dewey, creativity is intimately connected to community and the democratic process. As Joas (1993, p. 7) puts it, '... the pathos of creativity does not engender visions of permanent revolution or a macro-subject that can shape society by totalitarian means, but instead is related to the program of a democratic welfare state'.

> Steady, incremental change through the democratic process, with all its confusion and imperfections, is the political expression of this philosophical creed. These ideas, moderate, meliorist, democratic and sensitive to the possibility that no perfect reconciliation of liberty and equality can be attained, are the consequences of pragmatism for politics. (Kloppenberg, 1986, p. 194; quoted by Joas, 1993, p. 7)

Creative innovation, situated problem solving, freedom of choice, and communities and the democratic process are four themes at the heart of pragmatism. To understand how these come to inform pragmatism's theory of action (theories of action provide foundational concepts in social theory), we need to explore pragmatism's handling of *doubt.* Pragmatism is a philosophy of action, but, unlike the functionalism of Talcott Parsons (1902–1979),

it did not develop its model of action by posing the question: what dimensions must be added to the utilitarian notion of the solitary actor rationally pursuing his ends, if the undeniable but, within the framework of utilitarianism, inexplicable fact of the existence of social order is to be theoretically grasped? (Joas, 1993, p. 18).

> Pragmatism is, certainly, no less critical of utilitarianism than were the classical theorists of sociology [Pareto, Weber and Durkheim]. It does not, however, attack utilitarianism over the problem of social action, but over the problem of action and consciousness. Pragmatism developed the concept of action in order to overcome the Cartesian dualisms. ... The concept of rationality and the normative ideal of their mode of thought are theoretically grasped in the idea of self-regulated action. This conception of social order is informed by ideas about democracy and the structure of communication within a community of scientists. (Joas, 1993, p. 18)

Descartes' concept of the individual's right to doubt had, up to the time of pragmatism's development, provided the foundation for philosophy and a basis for challenging existing ideas and institutions. The pragmatists challenged this Cartesian conception of doubt as too much of a black-and-white affair.

> We cannot begin with complete doubt [Descartes' starting point]. We must begin with all the prejudices which we actually have when we enter upon the study of philosophy. These prejudices are not to be dispelled by a maxim, for they are the things which it does not occur to us *can* be questioned. Hence this initial scepticism will be a mere self-deception, and not real doubt .... (Peirce, 1931–58, 5.265; italics in the original)

Hence, the Cartesian notion of a solitary doubter is replaced by the idea of a cooperative search for truth for the purpose of coping with real problems encountered in the course of action. Truth as a correct representation of reality is replaced by truth as an increase in the power to act in a particular environment. Peirce himself exercised practically no direct influence on sociologists. James did have an influence but it was very diffuse, and he focused primarily on the subtleties of subjective experience. Pragmatism's main influence on sociology was channelled through the work of Dewey and George Herbert Mead (1863–1931) (Joas, 1993, pp. 19–20).

5.1 | The Chicago School of Management

For a crucial period, when the ideas of pragmatism and the social sciences were being developed together, a number of the researchers who were engaged in the effort were located at the Chicago School of Management, including the distinguished scholars Dewey, Mead and Jane Addams (1860–1935). When it came to applying philosophical pragmatism to practice (deciding what to do), the work of John Dewey provides the most complete account. Dewey became deeply involved in the social issues of the day, especially with the reform of American schools, but also with matters of national and international politics. While at the University of Chicago, Dewey was deeply affected by his first-hand observation of the famous 1894 Pullman strike, the violence, and the subsequent court cases. 'The strike showed what a tangle of contradictions and anachronisms lay in the accumulated mixture of Christian piety, laissez-faire economics, natural law doctrine, scientific determinism, and popular Darwinism that characterized many people's attitude in the decades after the Civil War' (Menand, 2001, p. 299).

Joas suggests the 'the significance of pragmatism for early American sociology is generally seen only in the pressure it exerted to engage in empirical research and to deal "pragmatically" with social problems, and not in the basic theoretical framework that pragmatism bestowed on the Chicago school of sociologists' (1993, p. 240). From the 1920s up to the 1950s, Dewey's approach to philosophy held sway in the United States; but in sociology, Peirce, James and Dewey are almost unknown (Joas, 1993, p. 240). For instance, Nicolini (2012) in his book, *Practice Theory, Work and Organization*, mentions pragmatism but does not elaborate.

5.2 | Pragmatism and social theory

The research at the Chicago School between 1895 and 1940 resulted in the transformation of pragmatism into a theory of the social sciences and empirical social research. For the creative solution of moral problems, Mead placed at the centre of his thought 'the tension between the creativity of action and the communicative character of human sociality' (Joas, 1993, p. 239). His theory of the self, the differentiation between the 'Me' and the 'I', formed the basis of the symbolic interactionist perspective in sociology. The concept 'Me' represents the perception of me by others, whereas 'I' represents the perception I have of myself in the light of my understanding of the perception of others. Many leaders of other sociological schools came to recognize that important elements of Mead's work were already contained in their

favoured approach, but Joas (p. 244) argues that only in the case of Habermas could one argue that Mead was in fact a central influence in the formation of his thinking. In the *Theory of Communicative Action*, Habermas admits Mead to the small circle of sociological classics alongside Marx, Weber and Durkheim.

In 2011, Holmwood, referring to recent developments, says that pragmatism 'has come to be seen as a way of re-framing these issues outside the limitations of a postmodern sensibility, and "old" pragmatism appears to be a plausible model for a "new" pragmatism well suited to current times ....' (2011, p. 16).

Social science, despite its, by now, lengthy history, is still developing its intellectual foundations. In particular, sociology is grappling with its core question, namely, how to understand human action (agency), structure and culture and the relationship between them; this understanding also needs to account for the 'problem of order', the focus of Parsons' work (Archer, 2003; Holmwood, 2011). In terms of pragmatism, Holmwood differentiates between old and new pragmatism:

> 'Old' pragmatism is associated with the writings of Peirce, James, Mead and Dewey (among others) and, while there are differences in their approaches—as befits their common conception of the absence of a guaranteed 'method'—they were generally suspicious of attempts to establish truth either in terms of correspondence with an external reality, or in terms of some transcendentally deduced norm. (Holmwood,-2011, p. 20)

Further, Holmwood argues that a 'new' pragmatism is now emerging from the work of Rorty, Habermas and others. He also notes that 'Rorty's (earlier) favourable judgement about Foucault's work and his conception of "reactive, abnormal discourse" can challenge the false closure of normal discourse' (Rorty, 1981, p. 389). (Thus at the time, the adoption of Habermas' and later Foucault's ideas by Flood, 1990, and Jackson, 2003, in their approaches to critical systems thinking [CST] seems justified). Today, it seems that the pragmatists have the better arguments. But, the discourse about the theoretical merits of pragmatism is just as impenetrable as Habermas and Foucault to practitioners. However, when it comes to putting these various philosophies into practice, it is much easier to orchestrate a dialogue in which temporary understanding through communication in a particular context is sought (the approach of pragmatism) than to try to achieve Habermas' 'ideal speech situation', which sets aside the substance of social life (the institutional hierarchies, the social relationships, and the beliefs of individuals) that confronts those involved trying to address a particular problem (Holmwood, 2011, p. 21).

Baert summarized the influence of pragmatism on social theory thus:

> John Dewey's legacy is the development of a progressive, praxis-driven theory of education, while G.H. Mead is remembered for having broken with a Cartesian concept of an isolated, non-social self. Both have contributed successfully to the construction of an interactionist theory of society that has been influential in sociology, educational science and social psychology. It should also be acknowledged that the Chicago School was heavily embedded in American pragmatism, as were a number of subsequent social scientists and critical commentators such as C. Wright Mills. (Baert, 2005, p. 146)

In 2010, Bernstein wrote 'Today, the vigorous creative discussion of pragmatic themes by thinkers all over the world is more widespread than it has ever been in the past' (2010, p. xi). The question now addressed is how much progress has pragmatism (original and recent) made in penetrating the five selected practice areas?

6 | PRAGMATISM AND TECHNOLOGY

The focus of pragmatism is action. In a broad sense, all action, even the most mundane domestic activity, involves 'engineering', as the title of a book by Henry Petroski puts it: *To Engineer is Human* (Petroski, 1992). Engineers are primarily concerned with designing and implementing instrumental action to achieve defined ends. Of course, these ends have to be defined by someone, and engineers, with their knowledge of what might be practically achieved, may well be involved; but it is very likely that other nonengineering arguments put forward by nonengineers will dominate. The nonengineers may include the client(s) of whatever stripe, politicians, affected parties, interest groups, unions, advisors and so on.

For engineers, carrying out their primary role of instrumentally meeting defined ends within the limits of safety (often enshrined in law), cost, engineering standards, available materials and accessible expertise, pragmatism is inherent in their day-to-day activities. It is not surprising to find that there is practically no discussion of philosophical pragmatism in the engineering literature

because such a discussion would be redundant. More generally, the philosophical foundations of engineering are hardly discussed at all. However, there are some examples of recent exceptions to this (see, for instance, Blockley, 1995; Blockley & Dias, 2010; Davis, 1998; Dias, 2007; Stainer & Stainer, 2003), and a number of relevant papers can be found in the journal *Science and Engineering Ethics*.

In the philosophy literature, discussion of the place of technology in human affairs is more frequently found. In *The Question Concerning Technology and other Essays* (first published as *Die Frage nach der Technic* in 1954), Heidegger places man's relationship with his tools at the centre of his existential/phenomenological philosophy (Heidegger, 1977; translated by Lovitt). In *The Illusion of Technique*, William Barrett selects three philosophers, Wittgenstein, Heidegger and James (representing British, Continental and American thinking), to consider ways in which we, as members of a technological society, could lose our primary relationship to the core of Being (Barrett, 1978).

7 | PRAGMATISM AND POLITICS

While engineering is about taking action (building a new hospital or airport), politics is about deciding what the aims of such action should be (whether and where to build a new hospital or airport). Politics determines the aims, engineering the means. In practice, however, the aims may have to be adjusted (sometimes substantially) in the light of the means and vice versa. It was Dewy who worked through the implications of pragmatism for politics arguing that any sharp distinction between aims and means was likely to lead to errors in thinking. As a result, he developed a radically new stance emphasizing that ends and means should be codetermined in the light of the specific circumstances, in other words the context.

At the time he was formulating his ideas, most philosophers held that a description of the world is true if, and only if, it corresponds to an independently existing order and false in so far as it fails to do so. Dewey believed that, on the contrary, there was no determinate way that the world can be understood to be, set apart from the interpretative workings of human cognitive faculties. In philosophical terms, this means he rejected metaphysical realism (Festenstein, 1997, p. 4). Knowledge claims are vindicated, not by reference to their origins or foundations but by the (humanly determined) norms and rules of rational inquiry, norms and rules that are themselves subject to rational criticism. He held that all claims are fallible and that 'doubt' requires as much justification as 'belief'. In philosophical terms, he thus rejected scepticism (p. 5). The interpretive workings of human cognitive faculties, which can be described in terms of moral and philosophical ideas, are shaped by historical circumstances and therefore change over time (pp. 5–6).

If we reject scepticism but cannot hope to build on certainties, how are we to resolve society's dilemmas? Dewey turns to members of society to conduct inquiries and resolve the issues; any findings must be scrutinized and tested by other members of the community. This is his democratic ideal in which individuals are able to express their individuality through community engagement. For Dewey, democracy is the cornerstone of political philosophy, the protector of popular interests, the defender of free expression, individuality, and the conduct of social inquiry. Democracy informs decision makers of the possible consequences of their policies and allows all fixed ideas of an established order to be questioned; it protects the interests of each individual against the potential or actual exploitation by an elite class.

Dewey argues that inquiries start with a 'problematic' situation, one in which something must be done. The aim of the inquiry is not only to change the beliefs of those involved but also to resolve the problematic situation by taking action. Given the inevitable uncertainties and doubts, any such action is *experimental* in character. Inquiry is a problem-solving activity, which is progressive and communal; what counts as knowledge is the result of such inquiries conducted competently according to values and norms, which are constantly reappraised in the light of the experience of searching for a satisfactory solution (the aim of the inquiry). Dewey called his approach *Intelligent Action*.

Any situation, which requires a balance to be struck between individual and societal rights, gives rise to a moral dilemma: a balance must be struck between the freedom of the individual smoker to enjoy his cigarette and the right of individuals to be protected from the resulting second-hand smoke; a balance must be struck between the right of an accused person to be afforded a fair trial and the right of members of the community to be protected from criminal activity. For Dewey, democracy is the mechanism that enables the contradictions, inherent in any attempt to promote freedom of the individual, to be resolved. Thus, the centre of Dewey's moral philosophy lies in an ethical account of individual self-realization through participation in collective forms of life. Democracy is experimental in that it allows a profound questioning of the ideas of the established order (Festenstein, 1997, p. 24).

Not all champions of liberalism were convinced that this approach would find the right balance; equally not

all egalitarians believed the powers of the established and big business would be sufficiently curtailed. While Dewey's democracy was expressed as an ideal and did not support any particular institutional arrangements, supporters and critics alike agreed that the American constitutional and institutional arrangements could be depicted as an attempt to put such ideals into practice. In fact, some critics saw in the political philosophy expounded by Dewey a cunning attempt to underpin the American *status quo* and the power of the elite. For outsiders, it was an American philosophy, born of American conditions, used for American purposes. Whether this was fair or not (and there was much more to the argument than indicated here), there is no doubt that pragmatism was seized on by the political class to justify claims about the wisdom of the American way. This position held sway until the conditions of the Cold War made the emphasis on uncertainty and reappraisal unhelpful to the claim that the Western liberal democratic approach was morally superior to the communist centrally planned approach of the Soviet Union. As a result, Dewey's pragmatism was frozen out. Since the end of the Cold War, claimed by the West as a victory for freedom, Dewey's political theories have been reappraised; for many, an approach that seeks to balance individual freedom, liberalism, experimentalism, community, democracy and egalitarianism has relevance and merit. These ideas (moderate, meliorist, democratic and sensitive to the possibility that no perfect reconciliation of liberty and equality can be attained) are the consequences of pragmatism for politics (Festenstein, 2014; Kloppenberg, 1986, 1996).

8 | PRAGMATISM AND THE LEGAL PROFESSION

8.1 | Oliver Wendell Holmes Jr. (1841–1935) and his legacy

Although the originators of pragmatism are usually given as Peirce, James and Dewey, Oliver Wendell Holmes Jr. made a significant contribution. Along with Peirce and James, he was an active member of the Metaphysical Club, a discussion club that met to exchange philosophical ideas in the second half of the 19th century. It was these discussions at the Metaphysical Club (Chauncey Wright and Nicholas St. John Green were also participants making significant contributions) that gave rise to pragmatism (Menand, 2001). As things developed, Holmes was less influential in the development of the philosophy of pragmatism, as he decided to pursue a full-time legal career to allow him to apply the ideas of pragmatism in the context of professional practice. However, Holmes can be credited with influencing some directions within pragmatism. As Menand puts it: 'The emphasis on the community as the ground for our conduct and beliefs echoes Holmes's conception of "experience" (a term Dewey used, in *Experience and Nature*, in the same sense Holmes had: as a name for culture)' (Menand, 1997a, p. xxiv; italics in the original).

As a jurist, Holmes rose to great heights in the American legal profession, becoming one of the most influential American common law judges of all time. He served as Chief Justice of the Massachusetts Supreme Court and was appointed to the Supreme Court of the United States in 1902 by Theodore Roosevelt, temporarily acting as Chief Justice of the United States from January to February 1930.

At the beginning of his book, *The Common Law* (Holmes, 1881), Holmes explains his general view of the common law (the basis of English and American Law) thus:

> The life of the law has not been logic; it has been experience. The felt necessities of the time, the prevalent moral and political theories, intuitions of public policy, avowed or unconscious, even the prejudices which judges share with their fellow-men, have had a good deal more to do than syllogism in determining the rules by which men should be governed. ... In order to know what it [the law] is, we must know what it has been and what it tends to become. ... The substance of the law at any given time pretty nearly corresponds, so far as it goes, with what it is then understood to be convenient .... (Holmes, 1881)

At the same time as he pursued his career as a jurist, Holmes was Weld Professor of Law at the Harvard Law School (Holmes, 1995). *The Journal of Legal Studies* has identified Holmes as one of the three most cited American legal scholars of the 20th century. Holmes' ideas and legal opinions gave rise to an interest in the implications of pragmatism for legal practice that has continued to this day.

8.2 | The classical model of legal argument

The classical picture of legal argumentation in the United States is historically attributed to Christopher Columbus Langdell (1826–1906). 'Langdell applied the principles of pragmatism to the teaching of law as the result of which

students were compelled to use their own reasoning powers to understand how the law might apply in a given case' Wikipedia (2014b). Langdell put the first case book together as an educational tool and bundled this type of book with a Socratic style of teaching that reigns supreme in legal practice and education today. The philosopher Ronald Dworkin is by far the most influential current advocate of the main elements of the classical view. While Dworkin disavows the deductivist picture offered by Langdell, and allows in a moral dimension, in his attachment to traditional legal materials and practices, he is clearly a proponent of the classical view. The legal pragmatist finds much to argue with in this picture of jurisprudence (Butler, 2014).

8.3 | Legal pragmatism

Legal pragmatists such as Daniel Farber, Thomas Grey, Margaret Radin and Richard Posner think that the picture of jurisprudence as proposed by Dworkin is severely flawed. Butler explains:

> The legal pragmatist thinks that the classical view is overly legalistic, naively rationalistic and based upon misunderstandings of legal institutions. As opposed to the self-imposed limitations entailed by the classical view of judicial decision-making, legal pragmatists emphasize the eclectic nature and the diverse aims of the law. More specifically, legal pragmatists largely agree upon four main aspects of a pragmatist version of jurisprudence: (1) the importance of context; (2) the lack of foundations; (3) the instrumental nature of law [instead of an emphasis upon consistency with the essence of past decisions the pragmatist judge looks to the worldly implications of his or her decision]; and (4) the unavoidable presence of alternate perspectives [a suspicion of broad generalities and an acknowledgment of eclectic manners of description]. (Butler, 2014)

Richard Posner in his book *Law, Pragmatism and Democracy* gives a very full account of his conception of legal pragmatism (Posner, 2003). He argues for a conception of the liberal state based on a pragmatic theory of government. He explains his approach as being based on 'everyday pragmatism', which is distinct from although related to philosophical pragmatism (p. 384).

The operation of the law is fundamentally pragmatic, at least in the United States, the United Kingdom and other counties whose legal system is based on English common law. It would seem that the greatest direct impact of pragmatism on legal practice has been via the judicial opinions of Holmes. Pragmatism is now embedded in legal education, and it can be expected that it influences its students when they enter practice. Butler (2014) questions whether legal pragmatism provides a good description of legal practice. For instance, judges seldom have the necessary factual data to base their decision on the likely consequences (and even if they do, they may not be able to digest and may not be capable of interpreting all the relevant empirical evidence). However, this seems to overstate the case as pragmatism's concentration on the particular case in a particular context allows for a judge finding ways round the issue, such as accepting the advice of an expert. Even if it is concluded that pragmatism is no better at describing the actual process that the classical model, it may have a normative role to play: in other words, instead of describing what does factually happen, it can be used to specify what ought to happen.

9 | PRAGMATISM IN MEDICAL AND SOCIAL WORK

Medical practice involves mainly instrumental activities such as diagnosis, treatment and surgery. However, ethical and moral dilemmas are ever present, often dominating activities such as intensive and geriatric care. In social work, there are instrumental activities (such as finding suitable accommodation), but moral issues dominate decision making. Increasingly, the overlapping interests of health and social work are recognized. Historically, the practical application of pragmatism to social practice can be traced back to the Chicago school of sociology (Addams, 1910).

Miller et al. (1996) suggest that pragmatism's ideas are still relevant and have proposed a method of moral problem solving inspired by Dewey, which they call *clinical pragmatism* (Fins et al., 1997):

> In approaching moral problems, the method of clinical pragmatism [Fins & Bacchetta, 1995] seeks solutions that are workable in the real contexts of clinical settings in which clinicians and patients interact. ... Clinical pragmatism embraces principles, however, it understands them as tools for guiding conduct, not as absolute, fixed moral laws. The goal of clinical pragmatism is to reach consensus on good outcomes in cases that pose moral problems by

> a thorough process of inquiry, discussion, negotiation, and reflective evaluation. (pp. 129-130)

The method of clinical pragmatism is a series of interconnected steps: (1) assess the patient's medical condition; (2) determine and clarify the clinical diagnosis; (3) assess the patient's decision-making capacity, beliefs, values, preferences and needs; (4) consider family dynamics and the impact of care on family members and others intimately concerned with the patient's well-being; (5) consider institutional arrangements and broader social norms that may influence patient care; (6) identify the range of moral considerations relevant to the case in a manner analogous to the clinical process of differential diagnosis (the process of weighing the probability of one disease versus that of other diseases possibly accounting for a patient's illness); (7) suggest provisional goals of care and offer a plan of action including plausible treatment and care options; (8) negotiate an ethically acceptable plan of action; (9) implement the agreed upon plan; (10) evaluate the results of the intervention; and (11) undertake periodic review and modify the course of action as the case evolves (Fins et al., 1997). Fins, one of the three authors of this method was at the time Director of Medical Ethics at the New York Hospital. In 2005, Felleman suggested this approach had begun to be adopted in medical practice: 'By creating clinical pragmatism the medical community has begun to reform its procedures and values to better reflect the democracy which supports it. Intersubjective systems minded clinicians who practice social work, are in a unique place to benefit from this medical change of heart' Felleman (2005).

Juhl (2014), reflecting on his own experiences as a practicing psychologist, developed an approach to the application of pragmatism in medical and social care (later generalized to other organizational settings), which he calls *pragmatic inquiry*. The aim of pragmatic inquiry is to create new knowledge based on practice, knowledge that is useful for, and validated in, practice. The idea is to encourage medical practitioners to write up their experiences, validate them and then use what has been learnt to influence practice. The cycle is then repeated. Juhl proposes that validity should be 'viewed differently from a quantitative and a qualitative tradition. In a quantitative tradition of measuring, the theme of validation is asking if the researcher is measuring and addressing what they are intending to measure?' (Juhl, 2014, pp. 260–261). For qualitative methods, validation becomes a question of choosing between competing and falsifiable interpretations. Using a framework suggested by Kvale (2002), Juhl suggests using the following three perspectives to ensure validity:

1. *Quality of the research process*: (a) Take a self-reflexive, self-critical position so that the researcher does not believe too much in just one interpretation of the data; (b) ensure the approach is internally consistent and presents a coherent argument. Pay attention to examples that are deviant and consider how they can be used in the research; (c) continually examine whether the what, why and how of the research are connected in a meaningful way; and (d) look at the way that theoretical reflections are drawn on to strengthen the argument.
2. *Communicative validity*: (a) Engage in an ongoing conversation with research supervisors, colleagues, students and customers; (b) write examples in the experience-based examples in such a way that the reader is able to follow what went on, what theoretical ideas informed the conduct of the inquiry, and what theoretical and practical reflections came out of the situations.
3. *Pragmatic validity*: 'qualitative research is only valid, if it is useful. The important point in pragmatic validity is that research is not "just" *grounded in* practice but the research must also be *useful for* practice. Meaning, that the research is leading to new actions for either the person being researched, the person researching or the people reading about the research .... In pragmatic inquiry ethics ... becomes a matter of showing how the knowledge can be used for something good and useful' (Juhl, 2014, pp. 262–263; italics as in the original).

10 | PRAGMATISM AND EDUCATIONAL PRACTICE

In the 1890s, Dewey began to develop an educational philosophy based on the theory that children learn by doing (Dewey, 1902, 1915). With Adams and others, he applied this approach experimentally in the field of early childhood education (Addams, 1910). In 1916, his basic educational philosophy was published in *Democracy and Education* (Dewey, 1916). Two decades later, he published his updated educational philosophy, taking into account what had been learnt form the experimental applications of his ideas about learning by doing in *Experience and Education* (Dewey,1938b). The first paragraph of the preface to this second book reads:

> All social movements involve conflicts which are reflected intellectually in controversies. It would not be a sign of health if such an important social interest as education were not also an area of struggles, practical and

> theoretical. But for theory, at least for the theory that forms a philosophy of education, the practical conflicts and the controversies that are conducted on the level of these conflicts, only set a problem. It is the business of an intelligent theory of education to ascertain the causes for the conflicts that exist and then, instead of taking one side or the other, to indicate a plan of operations proceeding from a level deeper and more inclusive than is represented by the practices and ideas of the contending parties. (Dewey, 1938b, p. 5)

Dewey argues that a philosophy of education, to have any effect on practice, has to be turned into a plan of action:

> A philosophy of education, like any theory, has to be stated in words, in symbols. But so far as it is more than verbal it is a plan for conducting education. Like any plan, it must be framed with reference to what it is to be done and how it is to be done. The more definitely and the more it is held that education is a development within, by, and for experience, the more important it is that there shall be clear conceptions of what experience is. Unless experience is so conceived that there is a plan for deciding upon subject-matter, upon methods of instruction and discipline, and upon material equipment and social organisation of the school, it is wholly in the air. (Dewey,-1938a, p. 28)

An example of developing principles for curriculum development and methods of teaching for elementary education is given in the Appendix. At the end of *Experience and Education*, Dewey sums up his overall approach to education thus:

> I am not, I hope and believe, in favor of any ends or any methods simply because the name progressive may be applied to them. The basic question concerns the nature of education with no qualifying adjectives prefixed. What we want and need is education pure and simple, and we shall make surer and faster progress when we devote ourselves to finding out just what education is and what conditions have to be satisfied in order that education may be a reality and not a name or a slogan. It is for this reason alone that I have emphasized the need for a sound philosophy of experience. (Dewey, 1938b, pp. 90–91)

There is no doubt that Dewey's work has as a profound effect on academics who conduct research into education philosophy and practice; this is borne out by citation indices; for instance, according to Google Scholar (accessed in 19 May 2020), Dewey's *Democracy and Education* has some 40,000 citations and his *Experience and Education* 36,000. For comparison, Wittgenstein's *Philosophical Investigations* has 50,000 citations and Popper's *Logic of Scientific Discovery* some 30,000.

It does seem that pragmatism has become embedded in educational practice, although the evidence is more anecdotal. In 1995, Bruce Kimball argued that there was a trend in undergraduate education since the 1960s that reflected a move towards a pragmatic educational philosophy based on learning by doing (Menand, 1997b, p. xxx). However, it is by no means clear whether pragmatism provided the inspiration or whether behaviour that accorded with pragmatism took root naturally. As Menand puts it:

> Whether the educators responsible for this shift in the paradigm of the college experience ever thought of themselves as pragmatists, it is clear that the developments Kimball traced are consistent with the pragmatic, particularly the Deweyan, tradition, and that if this movement ever becomes coherent and self-conscious enough to acquire a philosophical label, 'pragmatist' is an obvious choice. (Menand, 1997b, p. xxx)

These principles have been more or less realized in science education, especially in secondary schools and on the college and university levels. But whether these principles are to guide elementary school education continues to be a hotly debated issue. However, change occurs so rapidly that to be a productive member of society one must be able to continue to learn; learning how to learn is the most important skill children can acquire. Learning to be flexible, to be willing to listen to a variety of viewpoints and to regard social policies as experiments that one can modify if things do not work out as one had hoped, is the habit of mind that a pragmatist education will attempt to foster. For Dewey, a community improves as its members come to have more and more interests in common and as it comes to be more and more open to intercourse with other communities. These are the social conditions for continued individual growth, for a lifelong education.

11 | PRAGMATISM IN OPERATIONAL RESEARCH

The debates of philosophers and social theorists tell us that methodological theorists are in danger of becoming 'spectators' of problems. However, OR practitioners are necessarily engaged in finding solution to problems in the context in which they are working, their activities and views providing a counterpoise to the theorists, although not necessarily contradicting them. For OR, Peirce would seem to fit the logical, analytic aspects; James and Dewey are more relevant for the investigatory, problem structuring policy development and participatory (democratic) aspect. Perhaps the single most important insight from an OR perspective is the relationship between ends and means. As Holmwood explains, our understanding of ends and means in a particular context evolves as we engage in dialogue about the issue in hand:

> Because there are unintended consequences of action (or, in the case of scientific activities, unexpected implications of new extensions), action will give rise to further problems and, therefore, the need for new reconstructions and new settlements. So, too, any new partners entering dialogue will alter the terms of a settlement as new criteria and meanings are enunciated and negotiated (and previous exclusions understood). These will be different from those previously held by the parties informing their actions prior to their mutual engagement. Any settled belief (or consensus) is only temporary and consensus is not a condition of dialogue (whether in science or other forms of social life). Learning, then, is a consequence of dialogue and, as Dewey (1916) argued, inclusion is a condition of democratic dialogue, where the greater number of participants and positions from which dialogue is engaged increases the potentiality for learning. (Holmwood, 2011, p. 21)

Philosophical pragmatism has a long history in OR. Charles West Churchman (1913–2004) and Russell Ackoff (1919–2009), both with a background in philosophy, based their approaches to OR on pragmatist thinking as taught to them by the pragmatist Edward A. Singer, Jr. (1873–1954). Werner Ulrich, a doctoral student and research colleague of Churchman, drew on both Churchman and Jürgen Habermas (1929–) to develop his approach, critical systems heuristics (CSH). Habermas had built pragmatism into his own philosophy. Others who favoured Habermas were thus also drawing on pragmatism, perhaps unwittingly. It is as well to remember that Churchman wanted to place moral considerations at the centre of all OR including technical or 'hard' OR. It is not surprising that his proposals were collectively rejected by the American OR Community who were predominantly engaged in solving demanding instrumental questions using 'hard' OR techniques.

11.1 | Moral dilemmas in OR

From the discussion of selected professional practices, it can be seen that while moral issues are inherent in all decisions, for some professions, instrumental considerations are to the fore; in other professions, the moral issues are dominant. Engineering is an example of the former, social work the latter. Most OR projects consists of predominantly instrumental activity; for instance, it is difficult to imagine that significant moral issues will be involved if a stock control system is to be updated (for instance, to allow for seasonality or to accommodate different types of product). If the product stocked is say blood or pharmaceuticals, it may be a different matter. Even for fairly standard products, moral issues may be significant; for instance, optimizing a supply chain will need to take into account the impact on the environment (local traffic, carbon footprint and so on). For projects likely to lead to more fundamental change, for instance, changes to strategy or organization, or projects for clients in the public services, such as the prison service or the health service, moral issues are likely to be to the fore (Wallace, 1994; Wax & Cassel, 2018).

11.2 | Education for a career in OR

The main preparation vehicles for a career in OR have been bachelor courses in mathematics and business studies and masters courses in management science and OR. Initially, most courses concentrated on teaching mathematical and statistical techniques (particularly in the United States). In the United Kingdom the 1-year Master of Science (MSc) courses located at business schools in the 1970s, 1980s and 1990s generally contained two nontechnical elements. First, there were subjects (for instance, macroeconomics; microeconomics; marketing; systems; organizational behaviour; and corporate strategy) taught in common with the Master of Business Administration (MBA) students; second, each student was required to undertake a project for a business or public sector client. MSc courses located in mathematics departments continued to concentrate on technical

excellence (Mingers, 1991). The business school course structures were in line with the pragmatist emphasis on the importance of context, and the project was an example of learning by doing (Drake, 2018) as advocated by Dewey. These innovations emerged without recourse to any philosophy; they were simply thought to improve the student's preparation for a career in OR practice. In the 1990s, masters courses again faced the challenge of preparing the student for a new approach to OR intervention, namely, 'soft' OR. By then, the existing business school courses, which included business context and a client project, could be depicted as 'traditional' in structure and the introduction of soft OR as 'progressive'. As Dewey reminds us, each change in a progressive direction, in time, becomes cemented in, establishing a tradition; this in turn becomes the target of criticism for a new generation of progressives. He warns that a progressive approach is not necessarily better than sticking with the traditional approach. The traditional methods have some advantages; for instance, they do not require the details to be thrashed out and codified; it is enough to maintain established habits. It has in fact proved difficult to integrate 'soft' OR into the existing UK MSc structures, but changes have been introduced (Ackermann et al., 2020; Ormerod, 2014a).

11.3 | OR academic research

The justification, or warrant, for the outputs of OR academic research is generally taken to lie in the fundamental disciplines in which the research is placed, for instance, mathematics, science, sociology, psychology or economics. However, although OR academic research can be justified in these terms, ultimately, it needs to find its way into practice and be found to be helpful. After all, OR is a practice discipline (Ormerod, 2010b). In the United Kingdom at least, there is increasing pressure from private and public funding bodies to focus on the practical implications, as pragmatism would require.

11.4 | OR practice

In practice, there has been a fairly sharp division between 'hard' OR dominated by agreed instrumental aims, and 'soft' OR dominated by communicative (participative) activity and ethical concerns (Heyer, 2004; Keys, 1991). While both 'paradigms' exhibit a consequentialist orientation, the 'soft' approaches place greater emphasis on both the mutability of ends and means and the possibility of learning through dialogue. These are, of course, archetypically pragmatist orientations.

Pragmatists do not like dualities. Today, some hard approaches have moved towards the soft orientation, for instance, multicriteria decision analysis, data envelopment analysis and discrete-event simulation. Some soft methods have added a hard dimension by adding in, or interfacing with, some hard techniques. Yet other methods, such as systems dynamics, have always been somewhere in the middle. Thus, the indications are that there is a strongly pragmatist orientation throughout OR practice.

From the preceding discussion of the penetration of pragmatism in different practice domains, it has been possible to identify some cases of the explicit use being made of philosophical pragmatism, but these instances are rare. Much easier to identify have been practices that can be recognized as adopting a pragmatic approach, which may have been undertaken in the name of pragmatism, but much more likely have developed naturally as habits found to be useful in the conduct of day-to-day professional activities with no direct connection to pragmatism. It is proposed that these behaviours, which either result from explicitly adopting pragmatism or simply emerge, be referred to collectively, as pragmatism in professional practice (PIPP).

The above examination of selected areas of professional practice gives rise to the following list of PIPP habits and orientations, a list that applies to all professional practices; the sources given in brackets are suggestions as to where OR students, researchers and practitioners might look for evidence of the adoption of a pragmatic orientation in the OR and systems academic literature:

1. *Consequences—applying the pragmatic maxim*: For practice, plans, intentions and actions are evaluated by their expected consequences (Boothroyd, 1978; Checkland, 1981, Friend & Hickling, 2005; Nonaka & Zhu, 2012; Ormerod, 2010d; Rosenhead, 2001; Roy, 1987). This involves using inferences, predictions, forecasts and scenarios (Bennett et al., 2001; O'Brien & Meadows, 1998; Ormerod, 2010a, 2010c).
2. *Rejection of thought as the mirror of reality*: Pragmatism is a rejection of the idea that the function of thought is to describe, represent or mirror reality. Instead, pragmatists develop their philosophy around the idea that the function of thought is to act as an instrument or tool for prediction, action and problem solving (Checkland, 1981; Jackson, 2003).
3. *Acceptance of fallibility*: Central to pragmatism, any conclusions about facts or theories, are fallible and are likely to be re-evaluated and changed as a result

of new or changed viewpoints and evidence (Checkland, 1981; O'Brien & Meadows, 1998; Ormerod, 2009, 2014b).

4. *Recognizing the mutability of aims*: Not only theories are subject to continuous change, but aims can also be reconsidered in the light of facts and the options available (Brans, 2002, 2004; Belton & Stewart, 2002; Checkland, 1981; Nonaka & Zhu, 2012; Ormerod, 2010c).
5. *Appreciating that ethics and moral choice lie at the centre of decision making*: Ethics and moral choices are the central issue for decision making and action; in other words, action and choice are value-laden (Belton & Stewart, 2002; Brans, 2002, 2004; Brans & Gallo, 2007; Churchman, 1979; Nonaka & Zhu, 2010; Midgley, 2000; Ormerod & Ulrich, 2013; Ulrich, 1983).
6. *Appreciating the importance of social context*: This includes both taking a holistic view and taking account of the local context of the decision in focus (Boothroyd, 1978; Checkland, 1981; Churchman, 1971; Jackson, 2003; Midgley, 2000; Nonaka & Zhu, 2012; O'Brien & Meadows, 1998; Ormerod, 2019; Rosenhead, 1992; Ulrich, 1983).
7. *Adopting a democratically participative orientation:* Involve the affected in a participatory process (Brans, 2002, 2004; Belton & Stewart, 2002; Checkland, 1981; Ulrich, 1983; Nonaka & Zhu, 2010).
8. *Applying critical thinking during inquiry* (Flood, 1990; Flood & Jackson, 1991; Jackson, 1991, 2003; Midgley, 1997; Midgley, 2000; Mingers, 1980, 2000; Ormerod, 2009; Ulrich, 1983, 2006, 2007).
9. *Articulating methods and plans to implement ideas in practice*: Philosophies for practice amount to nothing until they are converted into methods and plans for action; however, such methods should be flexible and plans subject to revision (Boothroyd, 1978; Flood & Jackson, 1991; Friend & Hickling, 2005; Ormerod, 2010b; Ulrich, 2003).
10. *Facilitating creativity*: Learning by doing is a creative act. Workshops and investigations encourage creative learning (Checkland, 1981, Eden, 1988; Flood, 1990; Flood & Jackson, 1991; Nonaka & Zhu, 2012).
11. *Treating decisions as experiments*: Be prepared to change or abandon decisions if the intended consequences do not materialize or unintended consequences emerge (trial and error) (Boothroyd, 1978; Ormerod, 2009; Rosenhead, 2001).
12. *Recognizing the differing interests of stakeholder* (Bennett et al., 2001; Checkland, 1981; Eden, 1988; Flood, 1990; Flood & Jackson, 1991; Ulrich, 1983).

Some of the characteristics listed are overlapping. The sources cited will undoubtedly exclude some useful books and papers, and I would expect the list of characteristics and sources to change over time.

Shusterman suggests that:

> As a philosophical movement, pragmatism has had difficulty in extending its sway beyond American shores, and even in its native America, it was, for a few decades, repeatedly pronounced dead until its stunning revival in the 1980s. Despite its ardent commitment to changing much more in the world than the contents of philosophy journals and seminar syllabi, pragmatism's contribution to reconstructing the experience and practices of social life still leave much to be desired. This unfulfilled ambition should not be the cause for discouragement but rather a reason for exploring more carefully the range of pragmatism and the limits of philosophy, with the aim of extending their resources and productive influence beyond their current limitations. (Shusterman, 2004, p. 1)

12 | CONCLUSIONS

The paper reviews the penetration of pragmatisms in five selected areas of professional practice. Each of the chosen practice areas is clearly dominated by pragmatic, instrumental activities; and there is an abundance of evidence that behaviour in professional practices is consistent with pragmatism's precepts. Despite this, and a good deal of discussion in the academic literature, there is only limited evidence that professionals, in so far as they exhibit a pragmatist behaviour, make any explicit connection with the philosophy of pragmatism; of course, the same could be said of, for instance, Wittgenstein and his theories on the use and meaning of language. The early pragmatists argued that pragmatic behaviour arises from man's need to solve problems quickly, using his limited understanding of the situation, in order to survive and flourish: no philosophy had been required to guide such behaviour. Today, philosophy is often consulted on questions of ethical and moral dilemmas in most practice areas, but the philosophy of pragmatism may well not feature in such discussions. From the reviews, a list of the habits and orientations is synthesized, habits and orientations that could be taken to characterize pragmatism in professional practice (PIPP). In one area of OR, 'soft OR',

pragmatism is relatively influential. However, OR as practiced in the United States, where the world's biggest OR community is located, is overwhelmingly 'hard OR' and the United States' very own philosophy is currently largely ignored.

ORCID

Richard John Ormerod https://orcid.org/0000-0002-4031-3496

REFERENCES

Addams, J. (1910). *Twenty years at Hull-House*. New York: Macmillan.

Ackermann, F., Alexander, J., Stephen, A., & Pincombe, B. (2020). In defense of soft OR: Reflection on the teaching of soft OR. *Journal of the Operational Research Society*, *71*, 1–15. https://doi.org/10.1080/01605682.2018.1542960

Archer, M. S. (2003). *Structure, agency and the internal conversation*. Cambridge: Cambridge University Press.

Baert, P. (2005). *Philosophy of the social sciences: Towards pragmatism*. Cambridge: Polity Press.

Barrett, W. (1978). *The illusion of technique*. London: Kimber.

Belton, V., & Stewart, T. J. (2002). *Multiple criteria decision analysis: An integrated approach*. Dordrecht: Kluwer.

Bennett, P., Bryant, J., & Howard, N. (2001). Drama theory and confrontation analysis. In J. Rosenhead, & J. Mingers (Eds.), *Rational analysis for a problematic world revisited: Problem structuring methods for complexity, uncertainty and conflicts* (pp. 225–248). Wiley, Chichester.

Bernstein, R. J. (2010). *The pragmatic turn*. Cambridge: Polity Press.

Blockley, D. I. (1995). A tribute to Karl Popper. *Civil Engineering Systems*, *12*, 179–180.

Blockley, D. I., & Dias, W. P. S. (2010). Managing conflict through ethics. *Civil Engineering and Environmental Systems*, *27*(3), 255–262.

Boothroyd, H. (1978). *Articulate intervention: The interface of science, mathematics and administration*. London: Taylor and Francis.

Brandon, R. (1994). *Making it explicit*. Cambridge MA: Harvard University Press.

Brandon, R. (2002). *Tales of the mighty dead: Historical essays in the metaphysics of intentionality*. Cambridge MA: Harvard University Press.

Brans, J. P. (2002). Ethics and decisions. *European Journal of Operational Research*, *136*, 340–352.

Brans, J. P. (2004). The management of the future. Ethics in operational research: Respect, multicriteria management: Happiness. *European Journal of Operational Research*, *153*, 466–467.

Brans, J. P., & Gallo, G. (2007). Ethics in OR/MS: Past, present and future. *Annals of Operations Research*, *153*, 165–178.

Butler, B. E. (2014). Legal pragmatism. Internet encyclopedia of philosophy. Retrieved from http://www.iep.utm.edu/leglprag/. Accessed on 21 May 2020.

Checkland, P. B. (1981). *Systems thinking, systems practice*. Chichester: Wiley.

Churchman, C. W. (1971). *The design of inquiring systems*. New York: Basic Books.

Churchman, C. W. (1979). *The systems approach and its enemies*. New York: Basic Books.

Davis, M. (1998). *Thinking like an engineer: Studies in the ethics of a profession*. Oxford: Oxford University Press.

Dewey, J. (1902). *The child and the curriculum*. Chicago IL: Chicago University Press.

Dewey, J. (1915). *The school and society*. Chicago IL: Chicago University Press.

Dewey, J. (1916). *Democracy and education: An introduction to the philosophy of education*. London: Macmillan.

Dewey, J. (1922). *Human nature and conduct*. New York: Henry Holt.

Dewey, J. (1925). *Experience and nature*. New York: W.W. Norton.

Dewey, J. (1938a). *Logic: The theory of inquiry*. New York: Henry Holt.

Dewey, J. (1938b). *Experience and education*. New York: Kappa Delta Pi.

Dias, W. P. S. (2007). Engineering as cyclic problem solving—Some insights from Karl Popper. *The Structural Engineer*, *85*(2), 32–37.

Drake, M. J. (2018). Teaching OR/MS with cases: A review and new suggestions. *INFORMS Transactions on Education*, *19*, 57–66. https://doi.org/10.1287/ited.2018.0204

Durkheim, É. (1983). In J. B. Allcock (Ed.), *Pragmatism and sociology*. Translation by Whitehouse, J.C. Cambridge: Cambridge University Press.

Eden, C. (1988). Cognitive mapping: A review. *European Journal of Operational Research*, *36*, 1–13.

Felleman, D. (2005). Pragmatism and clinical practice. *Journal of Social Work Value and Ethics*, *2*(1). Retrieved from https://jswve.org/download/2005-1/JSWVE-Spring-2005-Complete.pdf. Accessed on 21 May 2020

Festenstein, M. (1997). *Pragmatism and political theory: From Dewey to Rorty*. Chicago IL: University of Chicago Press.

Festenstein, M. (2014). Dewey's political philosophy. The Stanford encyclopedia of philosophy. Retrieved from https://plato.stanford.edu/entries/dewey-political/. Accessed on 21 May 2020.

Fins, J. J., & Bacchetta, M. D. (1995). Framing the physician-assisted suicide and voluntary active euthanasia debate: The role of deontology, consequentialism, and clinical pragmatism. *Journal of the American Geriatrics Society*, *43*, 563–568. https://doi.org/10.1111/j.1532-5415.1995.tb06107.x

Fins, J. J., Bacchetta, M. D., & Miller, F. G. (1997). Critical pragmatism: A method of moral problem solving. *Kennedy Institute of Ethics Journal*, *7*, 129–143.

Flood, R. L. (1990). *Liberating systems theory*. New York: Plenum Press.

Flood, R. L., & Jackson, M. C. (1991). *Creative problem solving: Total systems intervention*. Chichester: Wiley.

Friend, J., & Hickling, A. (2005). *Planning under pressure: The strategic choice approach* (Third ed.). Oxford: Butterworth-Heinemann.

Gouinlock, J. (2002). *The moral writings of John Dewey* (Revised ed.). Amherst NY: Prometheus Books.

Hare, P. H. (1995). Pragmatic theory of truth. In T. Honderick (Ed.), *Oxford companion to philosophy* (pp. 709–710). Oxford: Oxford University Press.

Heidegger, M. (1962). *Being and Time*. Translated by Macquarrie, J. & Robinson, E. Oxford: Blackwell. (First published in 1927)

Heidegger, M. (1977). *The question concerning technology and other essays*. Translated by Lovitt, W. New York: Harper and Row.

Heyer, R. (2004). Understanding soft operations research: The methods, their application and its future in the defense setting. DSTO-GD-0411. DSTO Information Science Laboratory. Retrieved from https://apps.dtic.mil/dtic/tr/fulltext/u2/a428464.pdf. Accessed on 17 August 2020.

Holmes, O. W. (1881). *The common law*. Little, Brown and Company: Boston MA.

Holmes, O. W. (1995). In S. M. Novick (Ed.), *The collected works of Justice Holmes* (The Holmes devise memorial ed.). Chicago IL: University of Chicago Press.

Holmwood, J. (2011). Pragmatism and the prospects of sociological theory. *Journal of Classical Sociology*, *11*, 15–30.

Jackson, M. C. (1991). *Systems methodology for the management sciences*. New York: Plenum.

Jackson, M. C. (2000). *Systems approaches to management*. New York: Kluwer.

Jackson, M. C. (2003). *Systems thinking: Creative holism for managers*. Chichester: Wiley.

Jacoby, G. (1912). Der Amerikanische Pragmatismus und die Philosophie des Als Ob. *Zeitschrift für Philosophie Und Philosophische Kritic*, *147*, 172–184.

James, W. (1907). *Pragmatism: A new name for some old ways of thinking*. Indianapolis IN: Hackett. (New edition published in 1981 with an introduction by Kuklick, B.)

James, W. (1979). *The will to believe and other essays in popular philosophy*. Cambridge MA: Harvard University Press. (Originally published in 1897)

Joas, H. (1993). *Pragmatism and social theory*. Chicago IL: The University of Chicago Press.

Joas, H. (1996). *Creativity of action*. Cambridge: Polity Press.

Juhl, A. G. (2014). Pragmatic inquiry. A research method for knowledge creation in organisations. In G. Simon, & A. Chard (Eds.), *Systemic inquiry: Innovations in reflexive practice research* (pp. 244–266). Farnhill: Everything Is Connected Press.

Keys, P. (1991). *Operational research and systems: The systemic nature of operational research*. New York: Plenum.

Kloppenberg, J. T. (1986). *Uncertain victory: Social democracy and the progressivism in European and American thought, 1870–1920*. Oxford: Oxford University Press.

Kloppenberg, J. T. (1996). Pragmatism: An old name for some new ways of thinking? *The Journal of American History.*, *83*, 100–138.

Kvale, S. (2002). *Interview*. Hans Reitzels Forlag: Copenhagen.

Lorino, P. (2018). *Pragmatism and organization studies*. Oxford: Oxford University Press.

Margolis, J. (2002). *Reinventing pragmatism: American philosophy at the end of the 20th century*. Ithaca NY: Cornell University Press.

Margolis, J. (2007). *Pragmatism without foundations: Reconciling realism and relativism* (2nd ed.). London: Continuum.

McDermott, J. J. (Ed.) (1981). *The philosophy of John Dewey*. Chicago IL: University of Chicago Press.

Menand, L. (Ed.) (1997a). *Pragmatism: A reader*. New York: Random House.

Menand, L. (1997b). An introduction to pragmatism. In L. Menand (Ed.), *Pragmatism: A reader* (pp. x–xxxiv). New York: Random House.

Menand, L. (2001). *The metaphysical club: A story of ideas in America*. London: HarperCollins.

Midgley, G. (2000). *Systems intervention: Philosophy, methodology and practice*. New York: Kluwer/Plenum.

Midgley, G. (1997). Mixing methods: developing systemic intervention. *In* J. Mingers & A. Gill *Multimethodology: the theory and practice of combining management science methodologies*, (249–290). Chichester: Wiley.

Miller, F. G., Fins, J., & Bacchetta, M. D. (1996). Clinical pragmatism: John Dewey and clinical ethics. *Journal of Contemporary Health Law and Policy*, *13*, 27–51.

Mingers, J. (1980). Towards an appropriate social theory for applied systems thinking: Critical theory and soft systems methodology. *Journal of Applied Systems Analysis*, *7*, 41–50.

Mingers, J. (1991). The content of MSc operational research courses: Results of a questionnaire to OR groups. *Journal of the Operational Research Society*, *42*, 375–382.

Mingers, J. (2000). The contribution of critical realism as an underpinning philosophy for OR/MS and systems. *Journal of the Operational Research Society*, *51*, 1256–1270.

Nicolini, D. (2012). *Practice theory, work & organisation: An introduction*. Oxford: Oxford University Press.

Nonaka, I., & Zhu, Z. (2012). *Pragmatic strategy: Eastern wisdom, global success*. Cambridge: Cambridge University Press.

O'Brien, F., & Meadows, M. (1998). Future visioning: A case study of a scenario-based approach. In R. G. Dyson, & F. A. O'Brien (Eds.), *Strategic development: Methods and models*. Chichester: Wiley.

Ormerod, R. J. (2006). The history and ideas of pragmatism. *Journal of the Operational Research Society*, *57*, 892–909.

Ormerod, R. J. (2009). The history and ideas of critical rationalism: The philosophy of Karl Popper and its implications for OR. *Journal of the Operational Research Society*, *60*, 441–460.

Ormerod, R. J. (2010a). Rational inference: Deductive, inductive and probabilistic thinking. *Journal of the Operational Research Society*, *61*, 1207–1223.

Ormerod, R. J. (2010b). Justification of OR. *Journal of the Operational Research Society*, *61*, 1694–1708.

Ormerod, R. J. (2010c). OR as rational choice: A decision and game theory perspective. *Journal of the Operational Research Society*, *61*, 1761–1776.

Ormerod, R. J. (2010d). Articulate intervention revisited. *Journal of the Operational Research Society*, *61*, 1078–1094.

Ormerod, R. J. (2014a). OR competences: The demands of problem structuring methods. *EURO Journal on Decision Processes*, *2*, 313–340.

Ormerod, R. J. (2014b). Logic and rationality in OR interventions: An examination in the light of the 'critical rationalist' approach. *Journal of the Operational Research Society*, *64*, 469–487.

Ormerod, R. J. (2019). The history and ideas of sociological functionalism: Talcott Parsons, modern sociological theory, and the relevance for OR. *Journal of the Operational Research Society*, electronically published, 1–27. https://doi.org/10.1080/01605682.2019.1640590 Accessed on 03 September 2020.

Ormerod, R. J., & Ulrich, W. (2013). OR and ethics: A literature review. *European Journal of Operational Research*, *228*, 291–307.

Peirce, C. S. (1878). How to make our ideas clear. *The Popular Science Monthly*, *12*, 286–302.
Peirce, C. S. (1931–58). The collected papers of Charles Saunders Peirce. Retrieved from https://colorysemiotica.files.wordpress.com/2014/08/peirce-collectedpapers.pdf. Accessed on 20 June 2020.
Petroski, H. (1992). *To engineer is human*. New York: Vintage Books.
Posner, R. A. (2003). *Law, pragmatism and democracy*. Cambridge MA: Harvard University Press.
Rescher, N. (1995). Pragmatism. In T. Honderick (Ed.), *Oxford companion to philosophy* (pp. 710–713). Oxford: Oxford University Press.
Rorty, R. (1981). *Philosophy and the mirror of nature*. Princeton, NJ: Princeton University Press.
Rosenhead, J. (1992). Into the swamp: The analysis of social issues. *Journal of the Operational Research Society*, *43*, 293–305.
Rosenhead, J. (2001). Robustness analysis: Keeping your options open. In J. Rosenhead, & J. Mingers (Eds.), *Rational analysis for a problematic world revisited: Problem structuring methods for complexity, uncertainty and conflicts* (pp. 181–208). Chichester: Wiley.
Roy, B. (1987). Meaning and validity of interactive procedures as tools for decision making. *European Journal of Operational Research*, *31*, 297–303.
Shusterman, R. (2004). Introduction. In R. Shusterman (Ed.), *The range of pragmatism and the limits of philosophy*. Malden MA: Blackwell.
Stainer, A., & Stainer, L. (2003). Management decision-making: An ethical perspective. *Municipal Engineer*, *156*(4), 223–227.
Ulrich, W. (1983). In B. Haupt (Ed.), (Paperback version published in 1994)*Critical heuristics of social planning: A new approach to practical philosophy*. Chichester: Wiley.
Ulrich, W. (2003). Beyond methodology choice: Critical systems thinking as critically systemic discourse. *Journal of the Operational Research Society*, *54*, 325–342.
Ulrich, W. (2006). Critical pragmatism: A new approach to professional and business ethics. In L. Zsolnai (Ed.), *Interdisciplinary yearbook of business ethics* (Vol. I) (pp. 53–85). Oxford, UK, and Bern, Switzerland: Peter Lang Academic Publishers.
Ulrich, W. (2007). Philosophy for professionals: Towards critical pragmatism. *Journal of the Operational Research Society*, *58*, 1109–1113.
Wallace, W. A. (1994). *Ethics in modeling*. Oxford: Pergamon.
Wax, M. L., & Cassel, J. (Eds.) (2018). *Federal regulations: Ethical issues and social research*. New York: Routledge.
Wikipedia. (2014a). Pragmatism. Wikipedia.
Wikipedia. (2014b). Christopher Columbus Langdell. Wikipedia.
Wittgenstein, L. (1953). *Philosophical investigations*. Translation by Anscombe, G.E.M. Oxford: Blackwell.

How to cite this article: Ormerod, R. J. (2021). Pragmatism in professional practice. *Systems Research and Behavioral Science*, *38*(6), 797–816. https://doi.org/10.1002/sres.2739

APPENDIX A

Extracted from the Educational System Blogspot. (2013). *Implication of pragmatism in educational system.* The extracts have been subjected to editing resulting in some minor changes.

https://educational-system.blogspot.com/2013/02/implications-of-pragmatism-in.html

Accessed on 21 May 2020.

AIMS AND PRAGMATISM

Pragmatists do not believe in any preconceived aims of education. Aims cannot be conceived of as final, fixed and immutable. Aims arise out of the ongoing experience and should lie wholly within the child's experience. Living as we do, in a changing world with an uncertain and shifting future, human experience is prone to change. And so the need to reshape our aims to meet the needs of such a dynamic environment as ours has become where the invention of every machine means a new social revolution. So it has been said that education has no aims. 'Continuing education', says a UNESCO booklet, 'has become a necessity in almost every field of life from housekeeping to atomics'. Education is a lifelong process and not as something to discipline the recalcitrant person into conformity with the pre-existing truth. The pupil should be able to, as they say, 'think through' the problems. Education for Dewey is a process of individual growth and development. But 'growth itself', says Brubacher 'has no end beyond further growth'. In other words, he goes on to say 'education is its own end'. Education means more education.

PRAGMATISM AND CURRICULUM

In the field of curriculum development, the following principles have been prescribed by pragmatists.

1. PRINCIPLE OF UTILITY: According to this principle, only those subjects, activities and experiences should be included in the curriculum that are useful to the present needs of the child and also meet the future expectations of adult life. As such, language, physical well-being, physical training, geography, history, science, agriculture and home science for girls, should be included in the curriculum [the reference to girls here should, of course, be omitted].

2. PRINCIPLE OF INTEREST: According to this principle, only those activities and experiences in which the child takes an interest should be included in the curriculum. According to John Dewey, these interests are of four varieties, namely: (1) interest in conversation, (2) interest in investigation, (3) interest in construction and (4) interest in creative expression. Keeping these varieties of interests in view, at the primary stage, the curriculum should include reading, writing, counting, art, craftwork, natural science and other practical work of simple nature.
3. PRINCIPLE OF EXPERIENCE: The third principle of a pragmatic curriculum is the child's activity, vocation and experience. These three should be closely integrated. The curriculum should consist of a variety of learning experiences that promote original thinking and freedom to develop social and purposeful attitudes.
4. PRINCIPLE OF INTEGRATION: A pragmatic curriculum deals with the integration of subjects and activities. According to pragmatism, knowledge is one unit. Pragmatists want to construct flexible, dynamic and integrated curriculums, which aid the developing child and the changing society more and more as the needs, demands and situation require.

PRAGMATISM AND METHODS OF TEACHING

The whole emphasis of method of teaching in pragmatism is on the child, not the book, or the teacher or the subject. The dominant interest of the child is 'to do and to make'. The method should be flexible and dynamic. It must be adaptable and modifiable to suit the nature of the subject matter and potentiality of the students. The pragmatist's curriculum provides for creative and purposeful activities in the teaching–learning process. Pragmatists regard school as a 'miniature of society' where the child gets real experiences to act and behave according to his interests, aptitudes and capacities.

The project method is a contribution of pragmatist philosophy in education. According to Kilpatrick, 'a project is a whole hearted purposeful activity carried out in a social environment'. The child learns by doing says John Dewey. All learning must come as a product of action. Learning by doing makes a person creative, confident and co-operative. Pragmatists also emphasize the discovery and enquiry methods. The methods, like problem solving, play-way, experimental and laboratory techniques, which follow the principle of learning by doing, can be used according to the pragmatic view.

TEACHER: Pragmatism regards teacher as a helper, guide and philosopher. The chief function of the pragmatic teacher is to suggest problems to his pupils and to stimulate them to find by themselves the solutions that will work. The teacher must provide opportunities for the natural development of innate qualities of children. His main task is to suggest problems to his pupils and to guide them to find out solutions.

DISCIPLINE: To utilize the interest of the pupil is the basis of discipline here. The teacher and pupils attack a problem jointly. The teacher's role is that of a guide and a director; it is the pupil who acts, learning thus becomes a cooperative venture—a joint enterprise. Pursuit of common purposes enforces its own order. Education becomes a social process of sharing between the members of the various groups and all are equal partners in the process .... The discipline proceeds from the life of the school as a whole.

CONTRIBUTIONS OF PRAGMATISM TO EDUCATION

Pragmatism provides definite aims of education. The student is prepared to live in society and learn skills and attitudes, which are required by him [or her] to live as a useful member of society.

- The teaching methods are based on learning by doing. The project method is the contribution of pragmatism to modern education.
- Pragmatism encourages a democratic way of learning through purposeful and cooperative projects and activities.
- Utility in the educative process is the first criterion. The school is expected to provide learning and experiences that are useful.
- Education is not bound to tradition. Pragmatic philosophers advise us to test everything through our own experience.
- The teacher has to play a very challenging role in the educative process under pragmatism and he [or she] has to be very alert and watchful ...

Pragmatism puts the emphasis on the free flow of ideas, the spirit of inquiry and discussion. It promotes individual freedom of thought and experimentation. Pragmatism emphasizes flexibility, utility and adjustment in all fields of human activity, promoting the continuous development of individuals and society.