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Craft Working and the "Hard Problem" of Vocational Education and Training

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Abstract

Analogies are drawn between the "hard problem" of philosophy of mind consisting in the attempts to reconcile mental and physical phenomena and the similarly long-standing intractability of a core problem in vocational education and training (VET) concerning the vocational/academic divide and the inferior status of vocational studies in systems of education. Previous reconciliation strategies in relation to upgrading vocationalism have included recommendations for VET curriculum and assessment reform, changes in the nature and organisation of apprenticeships, new forms of partnerships between employers and trainers, and suggestions for alternative philosophical perspectives on the nature of work, training and education. Staying mainly within this latter philosophical domain, it is suggested here that recent works on conceptions of craft and craftworking—particularly the links between intellectual, ethical and manual activity—offer valuable insights, which can inform the perennial debate on these issues. Reflections on the central problems in consciousness studies may also help to illuminate the reimagining of the traditional dualisms of theory and practice, thinking and doing, the intellectual and the practical which are at the heart of the vocational/academic divide.

Keywords

Vocational/Academic Divide, Craft, Hard Problem of Consciousness, Vocational Philosophy

1. Introduction

The key focus of this theoretical/philosophical analysis of the "hard problem" of vocational education and training (VET)—which consists in the vocational/academic divide and the subordinate, second class status of vocational studies in education systems throughout the world—is to suggest how the problem may be

tackled by means of recent studies of craftworking combined with insights gained from developments in consciousness studies. After initially exploring some links between the hard problem of consciousness and the key problem of VET—particularly the interdependence of the physical and mental aspects of experiencing, knowing and acting in the world—the principal focus on vocational difficulties is conducted against the background of recent work on craft and craftworking. The emphasis on the importance of manual work in the research on craft is used to support the notion of embodied learning drawing on the work of Merleau-Ponty (1962) [1] and Dewey (1965, 1966) [2] [3]. In conclusion, the implications for practice are set out by bringing together the key elements of panpsychism, embodied learning and craft activity as means of enhancing VET, bridging the vocational/academic divide and raising the status of vocational studies at all levels.

2. Consciousness, Vocational Education and Hard Problems

Susan Blackmore (2011) [4] has defined the so-called "hard problem of consciousness" in terms of the question: "how can objective, physical processes in the brain give rise to subjective experience?" (p. 25). Within philosophy of mind, this "mind-body problem" goes back at least as far as Descartes and his infamous bifurcationist analysis of the mental and physical worlds which leaves unexplained exactly how they may be connected (Searle, 2004) [5] More generally it results in the long-standing problem of how to explain subjective mental phenomena such as hopes, wishes, intentions, etc.—or simply what it is like to be something (Nagel 1974) [6]—in a world which, according to science, consists only of material objects, forces and processes. A number of solutions in the form of reconciliation strategies have been proposed in relation to the hard problem including the idea that there is no serious problem since the mind and mental events are simply what the brain does (hence a form of extended materialism; see Dennett, 1991 [7]) or, alternatively, that all material objects are imbued with forms of consciousness which evolve more fully within complex systems (Chalmers, 1996) [8] On this latter model, Strawson's special version of "panpsychism" (2006) [9]—which argues for the primacy of conscious experience in our understanding of all features of the material world—provides some fascinating insights into epistemology and education.

Analogies are suggested between this problem within consciousness studies and the hard problem of vocational education and training (VET) on a number of levels. Firstly, the distinction between the mental and the physical at the heart of the consciousness debate has clear parallels in debates about the vocational/academic divide. The origins of the dichotomy and differential hierarchy in educational pursuits have been located by Schofield (1972) [10] in Ancient Greek philosophical ideas about the differences between theoretical and practical studies which—as explored in more detail below—have direct connections with the social stratification of physical and mental activities. Moreover, the various

solutions to the hard problem of vocationalism—the various vocational/academic reconciliation strategies (Silver & Brennan, 1988 [11]; Pring, 1995 [12]; Hyland, 2002, 2014a [13] [14])—involve attempts to re-interpret the mental/physical dichotomy in ways which parallel recent work on the so-called hard problem of consciousness (Chopra, *et al.*, 2015 [15]; Strawson, 2016) [16].

Against this background, it will be suggested that recent work on craft and craftworking—both empirical and theoretical (Sennett, 2009 [17]; Crawford, 2009 [18]; Marchand, 2016 [19])—can provide a valuable source of support for attempts to heal the vocational/academic divide and enhance the status of vocational pursuits. Before explaining how aspects of craftwork can offer insights which may inform a reframing of the discourse in this sphere, it would be useful to explore briefly the main features of the traditional problems.

3. Vocationalism: The Perennial Problems

The perennial problems of vocational education—stemming directly from the hard problem discussed below consisting in the subordinate and inferior status of vocational studies as against academic pursuits—has led to a wide range of difficulties and anomalies which have bedevilled progress in the field for a century or more. These have included, *inter alia*, a lack of investment in VET by employers and states, difficulties of attracting suitably qualified students on vocational programmes, and a general and universal lack of esteem for vocational qualifications compared with their academic counterparts (Keep, 2006 [20]; Lewis, 1991 [21]; Pring, 1995 [12]).

A recent article in *The Economist* exploring the background to the McKinsey report (2014) [22] on the high rate of European youth unemployment noted the fact that many students pursuing academic courses would have preferred vocational ones but were discouraged by the "low status" and "lack of prestige" of vocational options on offer (Schumpeter, 2014) [23]. In a similar vein, a presumed "bias against vocational education" was cited in a recent piece praising the current Finnish approach to tackling youth unemployment through systematic technical education (Subrahmanyam, 2014) [24]. Of course, none of this is new, for the problems of the vocational/academic divide and the inferior status of the vocational go back at least as far as the last quarter of the 19th century when the Royal Commission on Technical Instruction was convened to make recommendations for the improvement of the English system in the light of superior European models (Musgrave, 1964) [25].

Examining the historical development of vocational studies in British schools, Coffey (1992) [26] noted that its "place and scope …has been sparse, limited in intent and fragmented" (p. 2), with an historic failure to integrate the academic and the practical, the general and the vocational. Moreover, Lewis (1991) [21] suggests that "whether in the developed or developing world… vocational education has been conceived of as being unworthy of the elite, and more suited to the oppressed or unprivileged classes" (p. 97). In a similar vein, Skilbeck *et al.*

(1994) [27] note that, in England and Wales, the "educational tradition has been inhospitable to a broad and comprehensive vocational philosophy" (p. 138), and all this in the face of a "resurgence of interest in the world's industrialised countries in the vocational dimension of education" (p. 22).

In spite of what Keep (2006) [20] has described as a "permanent revolution" (p. 47) in VET policy initiatives in recent times, the central problems are still with us and—according to recent research reports (Coughlan, 2015) [28]—the "recurrent theme" of low status and investment in vocational programmes is a global problem which defies interpretation against the background of current skills shortages and high youth unemployment around the world. Coughlan expresses the position in graphic terms:

> Everyone says it's a good thing and it's vital for the economy. But—and there is always a "but", it's still the academic pathway that has the higher status. As the saying goes, vocational education is a great thing… for other people's children. Another side of this conundrum is that there is more need for vocational education than ever before. Youth unemployment, particularly among those without training or qualifications, is a scourge in many countries. But at the same time employers are warning about skills shortages and not being able to find the right staff (ibid, p. 1).

A wide range of reasons has been offered to explain the intractability of these problems, in addition to a vast array of suggested solutions. The following (necessarily overlapping) list is representative though by no means exhaustive:

Structural—rigid curriculum divisions between vocational and academic subjects (Walsh, 1978 [29]; Silver & Brennan, 1988 [11]; Pring, 1995 [12]; Hyland, 2014a [14]); restrictive apprenticeship training models (Fuller & Unwin, 2011 [30]); centralist planning and control in England as opposed to the state partnership models on the Continent (Keep, 2006) [20].

Historical—aristocratic ethos derived from Ancient Greek ideas held by powerful interests which defined and established state education systems, and still control their direction (Castle, 1967 [31]; Schofield, 1972 [10]; Green, 1990 [32]; Corson, 1991 [33]).

Cultural—social class interests differentiating curricula in terms of intellectual and manual pursuits (Kenneth Richmond, 1945 [34]: Lewis, 1991 [21]; Hyland, 1999 [35]).

Biological—manual pursuits directly linked to evolutionary survival became less valued than intellectual/aesthetic activities far removed from everyday toil (Pinker, 1997 [36]; Hickman, 1990 [37]; Hyland, 2002 [13]).

Philosophical—deriving from the ideas of Plato and Aristotle, the intellectualist thrust (with its attendant devaluing of practical studies) of much of mainstream Western philosophy upon which modern education systems were built (Curtis & Boultwood, 1970 [38]; Wilds & Lottich, 1970 [39]; Hickman, 1990 [37]).

Reconciliation strategies designed to bridge the divide are legion and their principal prescriptions follow from which particular form of diagnosis of the problem is favoured. An interesting early example can be found in Sir John Adams' (1933) [40] *Modern Developments in Educational Practice* which insists that "all education must affect our future life either adversely or favourably, and to that extent all education is vocational, as preparing us for the vocation of life" (p. 50). A more recent example of this sort of strategy is Silver & Brennan's (1988) [11] advocacy of "liberal vocationalism" in higher education which involves the introduction of hybrid courses combining arts and science subjects, in addition to the incorporation of liberal/general educational elements in vocational programmes in fields such as engineering and business studies (not unlike the general/liberal studies introduced into British further education vocational programmes from the 1950s to the 1980s; Hyland, 1999 [35]; Simmons, 2014 [41]). Pring (1995) [12] has also suggested a number of similar remedies for bridging the gap in this domain.

In the last few decades suggested remedies for the chief ills in this sphere have come thick and fast in the form of UK government reports or think tank reviews and prescriptions and—since they have been examined at length elsewhere (Winch, 2000 [42]; Hyland & Winch, 2007 [43]; Wolf Report, 2011 [44]; Hodgson & Spours, 1997 [45]; Pilz, 2012 [46])—I will not rehearse them all again here. As mentioned at the outset, the chief concern of the present analysis—while not denying the relevance of the other characteristics of the hard problem listed above—is with the broadly philosophical aspects of the vocational/academic divide, and to this end it is suggested that recent work on craft and craftworking has much to offer in terms of both theoretical insights and suggestions for the reform of educational practice.

4. Craft and Education

According to Marchand (2016) [19], craft is said to belong to a "polythetic category" of concepts which are messy and "not absolutely fixed"; such a category "is one in which any of its members possess some, but not necessarily all, the properties attributed to that category" (pp. 3, 8). This description seems to owe a great deal (though unacknowledged) to Wittgenstein's (1974 edn) [47] notion of "family resemblances" which explains how omnibus conceptions ("games" is Wittgenstein's famous example) may belong to a common group—not by virtue of any common characteristic—but by features which "overlap and criss-cross" as with "various resemblances between members of the same family" (p. 32). Thus, one type of craft may involve meticulous planning and systematic execution, another spontaneous creation, another novel use of materials, and yet another theoretical inventiveness and imagination. Noting the fact that "craft, crafting and crafted are commonly employed to describe or praise ideas well-conceived, activities well-executed, or things well made", Marchand moves from denotation to connotation in the ironical observation that contemporary

usages of craft (typically employed by advertisers) tend to "rouse longing for an alternative, idealised way of living and working—one that is ethical, guided by high standards of quality, and characterised by direct, unmediated connections between mind, body, materials, and the environment" (p. 3).

Broadly similar accounts are offered by Sennett (2009) [17] who suggests that "all craftsmanship is founded on a high degree of skill" typically involving "about ten thousand hours of experience", and that craftspeople "are dedicated to good work for its own sake" (p. 20). Such work is inextricably linked to codes of ethics. As Sennett explains:

> Craftsmen take pride in skills that mature. This is why simple imitation is not a sustaining satisfaction: the skill has to evolve. The slowness of craft time serves as a source of satisfaction; practice beds in, making the skill one's own. Slow craft time enables the work of reflection and imagination—which the push for quick results cannot. Mature means long; one takes lasting ownership of the skill (ibid., p. 295).

Crawford (2009) [18] also makes much of the idea of craftworking as "being good at something specific… dwelling on a task for a long time and going deeply into it, because you want to get it right" (p. 20). Moreover, both these accounts refer in different ways to the hard problem in this sphere which—in Sennett's description of the "troubled craftsman"—regrets the fact that:

> History has drawn fault lines dividing practice and theory, technique and expression, craftsman and artist, maker and user; modern society suffers from this historical inheritance. But the past life of craft and craftsmen also suggests ways of using tools, organizing bodily movements., thinking about materials that remain alternative, viable proposals about how to conduct life with skill (2009, p. 11).

Crawford (2009) [18] is concerned to emphasize the "cognitive demands of manual work" and, within the context of craftwork, explains that:

> Skilled manual labour entails a systematic encounter with the material world, precisely the kind of encounter that gives rise to natural science. From its earliest practice, craft knowledge has entailed knowledge of the "ways" of materials—that is, knowledge of their nature, acquired through disciplined perception. At the beginning of the Western tradition, *sophia* (wisdom) meant "skill" for Homer: the technical skill of a carpenter, for example (p. 21).

References to the role of knowledge, skill, the mental and the manual in these accounts of craftworking raise issues about the historical epistemological legacy stemming from the Ancient Greek hierarchical divisions between theoretical and practical knowledge (paralleling and supporting the vocational/academic divide to this day) by which craft was distinguished from both science and art and defined as inferior to such pursuits. Schofield (1972) [10] locates the original

source of these divisions in the emergence of the idea of a liberal education in Ancient Greece. This form of education came to be associated with "freeing the mind from error" in Plato's distinction between "genuine" knowledge (based on the rational reflection of logic and mathematics) and mere "opinion", that is, applied knowledge used for specific purposes (pp. 151-152). The former conception, disinterested and objective knowledge, came to be thought of as superior and intrinsically valuable, whereas the latter, instrumental or applied knowledge, came to be associated with more practical and less valued vocational pursuits (Lewis, 1991) [21].

Moreover, such hierarchical divisions were from the outset inextricably linked to social class stratification and an axiology of relative values about educational activities. In the *Republic*, the relative value accorded to the "Forms" of knowledge by Plato are fully realised in the various kinds of education provided for rulers, guardians and workers in the ideal state (in addition to the distinctions between "banausic" knowledge, suited to slaves, and knowledge worthy of free citizens). The "foundation myth" of the ideal state suggests that God "added gold to the composition of those of you who are qualified to be rulers… he put silver in the auxiliaries, and iron and bronze in the farmers and the rest" (1965 edn, p. 160) [48]. Similarly, in *The Politics* Aristotle (1962 edn) [49] offers an account of rival educational aims and purposes—essentially valuing disinterested theory above applied practice—which is uncannily similar to the vocational/academic (technical/liberal) discourse which has characterised educational debates since the establishment of state schooling in Britain in the 19th century.

Once such hierarchical and normative distinctions had been made by thinkers it was almost inevitable that they should come to be connected—through formal systems of education—to social stratification and political power. As Schofield (1972) [10] explains:

> The passing of time merely emphasised the distinctions which Plato made. Studies which were valuable in themselves, especially the Classics, became associated with the privileged class or elite in society. They were directly related to the concept of a courtier, a gentleman, a man of affairs, and later the public schools. Liberal education always carried with it a suggestion of privilege and privileged position, of not needing to work for one's living (pp. 151-152).

The linking of such ideals to classical studies and the public school/university elite in 19th century Britain (which produced the politically powerful who were to define mass compulsory schooling after 1870) served to bring about a class-dominated, bifurcated curriculum—in which vocational studies were always subordinate to academic pursuits—which bedevils British education to this day. Educational debate at the time was distorted by such irrational prejudice which, as Skilbeck, *et al.* (1994) [27] put it, was "compounded by anti-democratic sentiments and arcadian ideals" (p. 160) which, throughout the 20th century, were to stand in the way of the development of a national, unified system of

education in which vocational studies and the preparation for working life had its rightful and proper place.

What seems to underpin the hierarchical divisions in this sphere is not so much the *nature* of knowledge in terms of arts, sciences, or disciplines but whether it is described and viewed as intellectual or theoretical as opposed to being applied or productive. Now, although such epistemological distinctions are challenged by critics who seek to break down the general/vocational studies dichotomy, there can be little doubt that their centrality in Ancient Greek philosophy had played a major part in reinforcing such dualisms in educational systems. In Plato's scheme of education outlined in the *Republic*, "dialectic" (philosophy) is the "crown of the educational process" (Nettleship, 1935: p. 133 [50]) since it leads us to a knowledge of the "Forms" which represent the one source of unchanging, eternal truths. Similarly, for Aristotle, practical knowledge was inferior to theoretical knowledge because it involved "choice among relative goods" whereas theoretical knowledge was linked to "certainty" (Hickman, 1990: pp. 107-108 [37]); productive knowledge was even more inferior because it was linked to the "making of things out of contingent matter" (ibid., p. 108).

Contemporary conceptions of craftwork seek to challenge such dualistic thinking—and their philosophical underpinnings—in a number of ways.

4.1. Problem Solving

Marchand (2016) [19] argues that solving problems of various kinds is at the heart of craftwork, and its central place is illustrated by reference to a wide range of accounts of the multifarious and ingenious ways in which problems are conceived and solved in different craft domains. Solving problems in the production of digital videography—explains Durgerian (2016) [51] for example—involves technical knowledge of recent innovations in the field, in addition to having a grasp and feel for the history of film making and a heightened sensitivity to diverse audiences. Often solutions to problems in the field call for "stargazing breaks" which allow "unconscious processes to work" on non-linear difficulties (p. 94). The field of bike mechanics, on the other hand, is described by Martin (2016) [52] as

> An interesting case for the craft paradigm because the problems that the bike mechanic works with are not result of his or her own processes going awry; rather, problems are the starting point from which the mechanic approaches the craft (p. 73).

Martin provides a fascinating account of how workers go about repairing the many faults that can befall cycles and how—in the workshop—there can be "severe limitations of language as a basis for problem solving" (p. 83). In the context of the "social habit of work in the mechanics' workshop" a form of "group problem solving" emerges in which communication about faults and problems is conveyed through diagrams, direct interaction with tools and bike components and, at times, "fruitful misunderstandings" (pp. 80, 84). Similar non-standard

and imaginative aspects of craft problem solving are described by Gates (2016) [53] in his explanation of how the modification of tools is a constant response to difficulties in making furniture, and Bunn's (2016) [54] account of how the many forms of basketwork sometimes appear to offer "solutions to problems not asked" in the moment-by-moment pragmatic responses to the tools and materials used by craftspeople (pp. 133ff).

This apparently ad hoc and context-independent aspect of craftwork—which Crawford (2009) [18] suggests gives a "cognitive richness" to skilled physical work (p. 21ff)—arises from the need to constantly adapt tools and materials (and our own bodily functions) to the ever-changing demands and requirements of making, altering and repairing objects. It is also connected with what Pye (1968) [55] has called the "workmanship of risk" (p. 5) which is inherent in processes which often (as in designing, manufacturing and repairing) involve techniques and skills which are adaptive and emergent as the craftsperson responds to problems encountered. Sennett's (2009) [17] historical account of the craft "workshop" (pp. 55ff) from the medieval guilds to the industrial revolution provides a graphic illustration of how uncertainty and risk have shaped the development of work in a wide range of craft fields.

4.2. Intellectual vs Manual Work

Crawford's (2009) [18] fond and careful description of his own journey from PhD and think tank to motorcycle repair shop was partly an attempt to escape the uniformity of a de-skilled post-Fordist society which had led to the "degradation of blue-collar work" (p. 38). His response to this—described as an attempt to show how "manual work is more engaging intellectually" than "knowledge work" (p. 5)—takes the form of a critique of the divisions between intellectual and manual work against the background of the way Taylorist scientific management and automation has degraded the nature of so much productive work. A strand of this thesis takes the form of the attempt to challenge the assumptions that "all blue-collar work is as mindless as assembly line work and… that white-collar work is still recognisably mental in character" (p. 31). Crawford questions relentlessly the standard educational distinctions between propositional/theoretical and practical/operational knowledge and—by examples drawn from the activity of chess players, firefighters and electricians—demonstrates the importance of tacit, personal and intuitive knowledge in all human activity so that "thinking and doing" are inseparable not distinct processes (ibid., pp. 161ff).

Sennett (2009) [17] offers similar observations in his description of "operational intelligence" (pp. 280ff), and Marchand, in a recent dialogue with Nigel Warburton for the *Big Ideas in Social Science* collection of readings (Edmonds & Warburton, 2016 [56]), defines his role as a craft worker, researcher and writer in terms of addressing the misguided and harmful distinction (attributed here to Da Vinci) between manual labour and intellectual work reflected in the division

made between "craftwork" and "fine art". Criticising an education system in which "working with the hands is perceived as a fallback position—a second choice", he defines his mission in terms of "challenging the mind-body dichotomy" and explains that his

> Research aims to explore and expose the complexity of knowledge that is actually involved in handwork, and thereby raise its status in the eyes of educationalists, the government, and the general public (Marchand in Edmonds & Warburton, 2016, p. 124 [56].

This holistic view of knowledge—which is very similar to Dewey's (1966) [3] instrumentalist conception employed in his attempts to break down the "antithesis of vocational and cultural education" based on the false oppositions of "labour and leisure, theory and practice, body and mind" (p. 306)—is well illustrated in the collection of accounts of craftworkers edited by Marchand (2016) [19] in which practitioners operating in diverse fields describe their activities.

Describing the relationship between designer, artist and gaffer (the glassblower) in glass production, for instance, O'Connor and Peck (both glassblowers at New York Glass) explain how contemporary craftworkers in the field now take on multiple roles in imagining and designing "protoptypes" of objects (ibid.: pp. 33-49). Craftwork is thus foregrounded as being essentially a "process… anchored in the gaffer's tacit knowledge of the craft, the organisation of labour, and the product end-goal". The process from imagination and prototype design to final production is complex, drawing on many forms of knowledge and experience, and one in which "discovery and the generation of new problems can be part of the problem solving process in prototyping" (p. 48). Similarly, Gowlland's (2016) [57] account of the work of ceramics manufacturing in Yingge, Taiwan (ibid.: pp. 183-196), explains how "embodied problem solving" serves, in practice, to break down the "distinction between design and workmanship" since the "intellectual" and the "pragmatic" aspects of ceramics production are realised at all stages of the process. The experience led Gowlland to conclude that:

> It is striking that the discourse in Yingge resembles so closely the distinctions made in Europe and North America concerning the dichotomy between the work of the mind and that of the hands. It is important for scholars (and artisans) to deconstruct such discourses to reveal the relations of power revealed within (p. 195).

4.3. Social Ethics

The moral dimension of vocationalism—though marginalised and neglected in the research literature—has received increasing attention in recent years (Pring, 1995 [12]; Winch, 2000 [42]; Hyland, 1999 [35], 2014b [58]) and takes pride of place in the discussion of craftwork. When Crawford (2009) [18] makes the claim that "as workers and consumers, technical education seems to contribute

to moral education" (p. 60) he is referring to the ways in which developing an understanding of the design and manufacture of material objects helps to generate an autonomous agency which is vital in making decisions and judgements in an increasingly complex technological world. The other side of this is that craftsmanship may serve to foster both individual ethical values (linked to standards and the pride which goes with good work) and a social ethics which arises from the need to learn from and co-operate with others in serving a wider community (Sennett, 2009).

Marchand (2016) [19] makes much of what he calls the "social politics" of craftwork which are said to "accompany the pursuit of alternative ways of working and living, typically in opposition or resistance to alienating technologies, neoliberalism, globalisation and consumer capitalism" (p. 10). Overt political radicalism does not seem to play a major role in the accounts of craftwork selected by Marchand though the second half of his recent collection concerned with social, economic and philosophical factors does highlight interesting evidence about internal power relations, social values, and the way craftworkers respond to external pressures and forces. The overriding theme in all the accounts is that craftwork is a socially collaborative process shot through with the collective values of constantly evolving forms of working life in response to changing political and economic conditions.

Collard's work with Agotime weavers in Ghana, for instance, led her to conclude that:

> The ability to produce high-quality cloths was therefore closely related to the strength and successful management of the numerous social ties between weavers, customers, patrons, and traders. The crafted product thus became a material manifestation of sociality; a sedimentation of the relationships that went into its making (in Marchand, 2016 [19], p. 153).

Similar stories of craft collaboration are told in relation to horse training (by Crowder, pp. 51-69) [19], dressmaking (by Prentice, pp. 168-181) [19], and wood sculpture (by Martin, pp. 197-213) [52]. Indeed, this social dimension of craftwork—linked to values and relationships—is so prominent that, in the Afterword to the Marchand (2016) [19] collection, Ferris suggests that the notion of "craft as problem solving" has the potential to promote

> More subtle human sympathies of relational interdependence, empathy, equanimity, humility, and a certain generosity of spirit. These lend the craft encounter a decidedly moral dimension. Taken into the social domain, they point to an inherent "civility" embodied in craftwork, to the sense of it having affects than can empower us to make a better world (ibid., p. 260).

This conception has resonances with Dewey's (1966) [3] idealist description of vocational work as "any form of continuous activity which renders service to others and engages personal powers on behalf of the accomplishment of results" (p. 139), and connects with Sennett's (2009) [17] radical notion that "good

craftsmanship implies socialism". He explains this remarkable conclusion by suggesting that:

> Dewey was a socialist in just the way that John Ruskin and William Morris were: all three urged workers to assess the quality of their work in terms of shared experiment, collective trial and error… The workings of a modern Japanese auto plant or a Linux chat room might have expanded their sympathy for collaboration of others sorts, but still, all three disputed the pursuit of quality simply as a means to profit (p. 288).

We are reminded here of one of the more politically engaged decorator in Tressell's novel *The Ragged Trousered Philanthropists* (1993 edn) [59] who, when forced along with his fellow workers to cut corners in order to maximise profits for their employer, found that he:

> Could not scamp the work to the extent that he was ordered to; and so, almost by stealth, he was in the habit of doing it—not properly but as well as he dared. He even went to the length of occasionally buying a few sheets of glass paper with his own money (p. 162).

5. Handwork, Learning and Education

As indicated earlier, various forms of working with the hands are at the core of the theory and practice of craftwork. Dewey's "theory of occupations" (DeFalco, 2010) [60] places various forms of craft and handwork activities—wood and metalwork, designing, making and using tools—at the centre of a project designed to break down the antagonisms between liberal and vocational pursuits. The overriding importance of the hand in human development generally is now widely acknowledged and has broad implications for all forms of learning. Noting Kant's famous remarks that the "hand is the window on to the mind", Sennett (2009) [17] devotes a whole chapter in his study of craftsmanship to the role of the "intelligent hand" (p. 149ff) in human evolution in general and human achievement in the arts, humanities and sciences in particular. The extraordinary versatility and flexibility of the hand—in terms of prehension, sensitivity of touch, opposable thumb dexterity, hand-wrist forearm capability and hand/eye co-ordination—is described in painstaking detail and demonstrated to be a primary component in human achievement and progress. Sennett concludes that "the unity of head and hand… shaped the ideals of the eighteenth century Enlightenment: it grounded Ruskin's nineteenth century defence of manual labour" (ibid., p. 178).

Crawford (2009) [18] similarly asserts the importance of manual work in that it "entails a systematic encounter with the material world" (p. 21) which is at the heart of the search for knowledge in all its forms. Recent work by Leader (2016) [61] on the role of the human hand throughout history serves to supplement and consolidate the foregrounding of handcraft in learning and education. Our hands, observes Leader, "serve us" in countless ways:

> They are the instruments of executive action, our tools. They allow us to manipulate the world so that our wishes can be fulfilled. We show our hands to vote, to seal an agreement, to confirm a union, to such an extent that the hand is often used to stand for the human agent that bears it (Kindle edn., loc. 55).

Leader takes us on a fascinating kaleidoscopic tour of a broad sweep of history and culture to show the importance of the hand in shaping the human story which includes recent changes in the use of of our hands in response to digital technology and the communications revolution.

Given the importance of working with the hands, we may ask why handwork and related manual skills seem to have so little prominence in contemporary education systems. Indeed, as Crawford (2009) [18] wryly observes:

> Given the intrinsic richness of manual work—cognitively, socially, and in its broader psychic appeal—the question becomes why it has suffered such a devaluation as a component of education (p. 27).

The general answer to this question can, of course, be found in the standard explanations for the vocational/academic divide and inferior status of vocational pursuits examined above. However, there are more particular factors at work here as well, and these may be located in another general divide in education: that between mind and body or, using old-fashioned curriculum terminology, divisions between the cognitive, affective and psychomotor domains of education.

Although curriculum planners and designers have had access to the detailed descriptions of the cognitive, affective and psychomotor components of learning since they were analysed systematically in the construction of taxonomies of educational objectives by Bloom, *et al.* (1956) [62] and Krathwohl, *et al.* (1964) [63], mainstream educational textbooks—having mentioned the affective and psychomotor domains—tend to quickly forget them in their concentration on purely cognitive aims (Weare, 2004 [64]; Hyland, 2011 [65]). This oversight has generated a cognitive/affective divide as wide as the vocational/academic divisions and led to an overly intellectualist conception of the educational task which marginalises values and emotions in teaching and learning (Hyland, 2014b) [58]. Moreover, the neglect of the psychomotor domain—the importance of the body and physical operations in the learning process has reinforced such false dualisms and perpetuated the undervaluation of handwork and the practical nature of vocational studies.

Recent work within philosophy of education—drawing mainly on the writings of Merleau-Ponty (1962) [1]—has attempted to bring the "embodied subject" back into educational discourse as a way of remedying the undermining of the physical in the learning/teaching encounter. O'Loughlin (1995) [66], for example, asserts that:

> It seems to me that bringing bodies back into the picture has been crucial

> for education. As teachers, educational theorists and the like, we need to direct our attention to the realities of bodies in discursively constituted settings. Western philosophy can be seen as the history of successive periods of Western humanity's cultivation of its own "mind".

In attempts to embody the cultivation of mind, similar arguments have been proposed in terms of the role of bodies in relation to language learning (Okui, 2013) [67], and all this serves to underscore the arguments of Crawford and Sennett noted above that it is largely through our physical acting on the world that we may develop knowledge, understanding and skill. Connecting such themes with the moral dimension of craft and vocationalism noted earlier, Kotzee (2016) [68] makes the interesting observation that "there is a rich seam of thought connecting what it is to be moral to skilled practical action". He goes on:

> Thus, Aristotle draws many analogies between virtuous action in the moral sphere and practical expertise or *techne*; the competent moral actor and especially the good citizen or politician is like an expert craftsman in the moral domain (p. 225).

Our physical actions in the world are indispensable to learning and the development of knowledge, understanding and capability in all domains. Indeed, according the Bohr's philosophy-physics—described as "agential realism" by Barad (2011) [69]—it is not meaningful to claim knowledge of anything until we have physically arranged, observed and measured some aspect of it. As she expresses this interpretation of Bohr's position:

> The causal relationship between the apparatuses of bodily production and the phenomena produced is one of agential intra-action… For example, the notion of position cannot be presumed to be a well-defined abstract object… position only has meaning when an apparatus with an appropriate set of fixed parts is used (Kindle edn., loc. 2781).

Such a conception may be used to justify Crawford's (2009) [18] idea of manual work which involves the "learning of aesthetic, mathematical and physical principles through the manipulation of material things" (p. 31), and has echoes in Marchand's (2016) [19] interpretation of craftworking as one which

> Counters the classical emphasis on internal "mind" operations and challenges the separation drawn between the mental arithmetic and the physical doing, by making the sensing, feeling, acting, and socialised body the locus of its enquiry (p. 12).

6. Mental, Physical and the Resolution of Hard Problems

Recent work on the hard problem of consciousness drawing on neuroscience and quantum theory (Chopra, *et al.*, 2015) [15] has resulted in a perspective in which

> Consciousness and matter are not fundamentally distinct but rather are two

> complementary aspects of one reality, embracing the micro and macro worlds (Kindle edition, loc. 119)

Strawson's (2016) [16] conception of "panpsychism" in relation to the same problems goes even further by considering seriously the notion that "consciousness is itself a form of physical stuff". The argument is continued

> This point, which is at first extremely startling, was well put by Bertrand Russell in the 1950s in his essay "Mind and Matter": "We know nothing about the intrinsic quality of physical events," he wrote, "except when these are mental events that we directly experience." In having conscious experience, he claims, we learn something about the intrinsic nature of physical stuff, for conscious experience is itself a form of physical stuff (p. 1).

This conception of reality relates directly to the points about handwork and the holistic and interconnected nature of knowing, thinking and doing outlined earlier in the context of Merleau-Ponty's [1] notion of the "embodied subject". Just as our understanding of the physical world cannot be separated from our subjective conscious experience through bodily sense perception, so the the cognitive/affective/psychomotor elements in all forms of learning need to be given due emphasis. Thus, acting in and on the world brings about knowledge and understanding and the sharp divisions between knowing how and knowing that become as redundant as the other dualisms discussed above.

Moreover, the entanglement of mind and matter noted in Barad's [69] interpretation of Bohr noted earlier serves—along with the collapsing of the mental and physical in suggested solutions to the hard problem of consciousness—to offer insights into the false dualisms which support the hard problem of vocationalism. Knowledge, understanding, skill and capability are developed by embodied subjects in their actions and operations in the world. At this level there can be no privileging of theory over practice, mind over body, the intellect over the emotions; all are equally necessary to learning, development and performance. The perspectives on craftworking outlined above encapsulate all these elements for they point to a domain of activity which is, as Marchand (2016) [19] puts it, "one that is ethical, guided by high standards of quality, and characterised by direct, unmediated connections between mind, body, materials, and the environment" (p. 3).

7. Conclusion: Embodied Learning and Vocational Curriculum Practice

Such a perspective which foregrounds the crucial role of craft and handwork in learning can provide a solid philosophical foundation for a re-imagining and re-framing of the roles of the mental and the physical, the theoretical and the practical in educational activity and, thus, help to pave the way for a long overdue resolution of the hard problem of VET and the potential dissolution of the vocational/academic divide. However, the segmentation of vocational and

academic learning is deeply entrenched in educational systems from school to university (Webb, *et al.*, 2017) [70] and the source of inequality of esteem—or as Billett (2014) [71] puts it "the societal standing of occupations and the means of their preparation"—has historically been in the hands of "privileged others" (p. 3). In order to challenge this entrenched privilege there is a need to explain how the suggested philosophical realignment of vocational/academic studies might be translated into policy and practice.

Drawing on the ideas of Crawford [18], Sennett [17] and Merleau-Ponty [1] outlined above, it is suggested that a Deweyan conception of "embodied learning" may be useful in translating this philosophical perspective into practical curriculum proposals. Baldwin (2004) [72] explains how, in his later writings, Merleau-Ponty came to see the "body, as a 'chiasm' or crossing-over (the term comes from the Greek letter chi) which combines subjective experience and objective existence" (p. 130), and it is this notion of the importance of bodily experience which is found in Dewey's philosophy of vocational education. As Gibson (2016) [73] suggests, both Dewey and Merleau-Ponty viewed understanding, experience and the self in terms of "activity which comes to know itself through its actions in the world" (p. 121). This notion of the development of knowledge and understanding—described as "anti-intellectualism" on the part of Dewey—is explained by Quinton (1977) [74] in the suggestion that:

> The subject or possessor of knowledge or warranted belief is not, in the manner of intellectualism, a pure mind or consciousness, a Cartesian *res cogitans*. It is, in Dewey's view, an intelligent organism, an embodied thing, animated by primarily bodily purposes, and forming its beliefs about the world around it through bodily, physical interaction with it. Manipulation is at least as crucial to the formation of rational beliefs as more or less detached inspection (p. 4).

However, although Dewey's instrumentalist notion of vocational education through "occupations"—with an occupation understood as any "mode of activity …which reproduces or runs parallel to some form of work carried on in social life" (1965, p. 132) [2] fits well with the ideas of craft and manual work discussed earlier, such activity would need to take account of contemporary developments in leisure, work and society.

Recent work in philosophy of education on technology education has referred to a "transformative epistemology" in which technology is viewed as "an extension of human capability" through the manipulation of technical artefacts which ultimately "rests upon the social interactions that arise through engagement with the process of their development" (Morrison-Love, 2017, p. 29) [75]. This echoes the more practical, operational perspectives offered by Marchand and Crawford referred to earlier concerning the importance of the physical—especially manual handwork—in coming to know the world. Both Sennett and Leader emphasise the importance of the intelligent hand in human evolution and progress, and Leader (2016) [61] in particular investigates the changing use of hands in the

digital age of the internet, smartphone and personal computer. He relates fascinating anecdotes about the impact of the newly acquired requisite hand movements of scrolling, pinch-to-zoom, and multitouch gestures (which the Apple corporation tried but failed to patent since patents already existed!), along with the attendant "massive increases in computer-and phone-related hand problems, as the hand and wrist are being used for new movements that nothing has prepared them for" (2016, Kindle edn., loc.31) [61]. Against such physical teething problems must be placed the incredible increase in physical dexterity displayed in particular by young people—riding bicycles or carrying loads with one hand whilst texting effortlessly with the other—which are seemingly acquired with very little practice or formal tuition. Motivation for learning is, of course, crucial here and this is supplied by the increasing need to gain access to social media and video games, a need which now appears to be as basic as food, water and security.

Strawson's panpsychism is founded on a monistic thesis that there is only one sort of "stuff", *i.e.* physical stuff, in the universe, and this incorporates an emergent experiential or mental element (hence his claim to be a "real physicalist" in accounting for subjective consciousness). The claim is that "consciousness is itself a form of physical stuff" (2016, p. 1) [16] and is out there in the world. If we add to this the related argument proposed by Clark & Chalmers (1998) [76] about the "extended mind"—the notion that human cognition does not end with the brain/body but is connected with its environment through an "active externalism" (p. 18) linking us to data and algorithmic sources located in devices of all kinds (digital resources, tools of all kinds, and the internet)—then we can interpret social media in terms of an extremely powerful instance of this cognitive extension. Moreover, embodied learning takes on a crucial role in this story since we can only gain access to the extended mind located in smartphones and computers through particular physical operations in which minds and hands are inextricably conjoined (these links are explored by Bostrom, 2016 [77], in his hypotheses about the evolution of "superintelligence"). The notion that the world is at our fingertips should remind us that fingertips are connected to hands manipulated by bodies and minds.

Given all this, it is natural that educators in general—and vocational educators in particular—would take an active interest in exploiting the learning potential of social media. Most of the studies in this field have examined ways in which social media can facilitate learning (Callaghan & Bower, 2012) [78], or how, in vocational contexts, the development of social media skills can help students to select, interpret and manage data of all kinds (Valentin, *et al.*, 2015) [79] However, given the vast range of content incorporated in diverse fields, there is also enormous scope for accessing and utilising data on craft and handworking of the kinds recommended by Marchand (2016) [19] in his project of transforming 'the widespread undervaluation of manual work into recognition and appreciation for the creative intelligence and ingenuity involved in craft (p. 27). Leaving aside the superficial and fashionable marketing gimmicks for craft coffee, craft beer,

and the like, the coverage of worthwhile crafts and craftlike activities—such as interior decorating, repairing and renovating, gardening, cooking, painting, pottery, videography, game construction, playing musical instruments, and so on - on television and sites such as Youtube has never been so wide or easily accessible. Utilisation of such material—in either formal curriculum modules such as Art, Design and Technology or, ideally, as a free-standing dimension of all subjects—offers unlimited potential for realising Crawford's (2009) [18] recommended ideal of a vocational education which involves the "learning of aesthetic, mathematical and physical principles through the manipulation of material things" (p. 31).

Historically entrenched privilege and innate educational conservatism have militated against the achievement of such an ideal in the past, but attempts to enhance the status of VET for the majority of the generally underachieving and most disadvantaged students who predominate on vocational courses are still high on agenda of educators and policy makers (Avis & Orr, 2016 [80]; House of Commons Education Committee, 2014 [81]). The recent report on the transition from school to work by the *House of Lords Select Committee on Social Mobility* (2016) [82] decried the "unspoken snobbery in favour of academic qualifications rather than vocational qualifications" (p. 49), and made a raft of worthy recommendations for the improvement of this state of affairs. However, like countless similar proposals by educators and policymakers since the establishment of compulsory education in Britain in 1870, such recommendations are likely to remain at the level of pious and hopeful rhetoric until there are radical cultural and attitudinal shifts in educational philosophy and practice of the sort espoused by the writers on craft and manual work outlined above.

This paper has addressed the hard problem of the vocational/academic divide and suggested solutions by means of enhancing vocationalism through insights gained from consciousness studies, craftwork research and practice, and the sort of embodied learning foregrounded in the work of Merleau-Ponty [1] and Dewey [2] [3]. However, a limitation of philosophical/theoretical proposals for educational reform is that they need at some point to be connected with practical curriculum developments if they are to be incorporated into teaching and learning in schools and colleges. In particular, it will be important to link the proposals above with recent research on vocational knowledge and expertise (Mulder, 2017 [83]; Addis & Winch, 2017 [84]) so as to inform policy-makers concerned with future curriculum development in this crucially important field of educational endeavour.

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