

Three Different Conceptions of Know-How and their Relevance to Professional and Vocational Education

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This article discusses three related aspects of know-how: skill, transversal abilities and project management abilities, which are often not distinguished within either the educational or the philosophical literature. Skill or the ability to perform tasks is distinguished from possession of technique which is a necessary but not sufficient condition for possession of a skill. The exercise of skill, contrary to much opinion, usually involves character aspects of agency. Skills usually have a social dimension and are subject to normative appraisal.

Transversal abilities rely on but are not reducible to the exercise of skill, but require a further degree of attention and seriousness in their exercise. Transversal abilities can be displayed in different ways using different skills, depending on context. They include: planning, communicating, evaluating—all important features of successful professional action. Project management or the putting into effect of relatively long-term sequences of action involves the articulation of different transversal abilities. It is a form of agency which is considered to be important in some European vocational and professional education systems and usually involves a strong social dimension. The article concludes with a discussion of the educational implications of these distinctions and of their interrelationships.

INTRODUCTION

Relatively little attention has recently been paid to the social aspects of practical knowledge or know-how. Indeed, the growing literature on the relationship between *knowing how* and *knowing that* pays little attention to this relationship. Yet understanding it is very important to an adequate understanding of the various kinds of know-how and their interrelationships. The aim of this article is to map the main kinds of know-how that need to be taken account of in a vocational or professional education

curriculum, both keeping in mind important philosophical distinctions and at the same time showing how paying attention to the social aspect of knowing how helps to illuminate our understanding of the various kinds of know-how, both philosophically and professionally. It is not to claim that any given programme needs to take all the different forms of know-how into account, but is to claim that the distinctions need to be kept in mind when designing curricula. More positively, a major aim is to shift thinking away from an excessive concentration on *skill* to focus on other forms of know-how whose development is vital to any professional or vocational education worthy of the name and to articulate the main relationships between these different kinds of know-how. It is to be hoped that, by keeping these distinct forms of know-how and their relationships firmly in mind, curriculum designers will find that they have a powerful set of instruments for constructing programmes that are responsive to the richness and complexity of the modern workplace.

Know-how (KH), in contrast to *knowing that* (KT) is a relatively under-theorised epistemic concept, although the philosophical literature on the area has been growing rapidly in the last decade (e.g. Winch, 2010; Bengson and Moffett, 2012; Stanley, 2011). At the same time, the conceptualisation of know-how in Vocational Education and Training (VET) has, in the Anglophone world, undergone a kind of regimentation, often in the service of a larger normative political project of shifting the balance of power from educational institutions to labour markets (Young, 2012). This, as Young (op. cit.) and others have argued, is part of a 'neoliberal' project to extend the influence of markets on behaviour by making the development of know-how more responsive to the demands of the labour market, through emphasising the visible behavioural and performance aspect of know-how at the expense of what might not be so immediately apparent, but which is, nevertheless critical to the understanding of co-operation and autonomous action in the workplace. This project has co-opted a particular conception of know-how organised around task-types,¹ employing the terms 'skill' and 'competence' as ways of expressing this conception. Quite apart from the narrowing of our understanding of vocationally relevant know-how, this normative project opens the danger of quite serious misunderstandings of important distinctions *within* know-how considered as a broad category, of the greatest interest and relevance to professional and vocational education (PVE). However, it is also important to note that there is a strand of influential philosophical thinking about know-how, broadly speaking in the intellectualist tradition, that emphasises the allegedly non-conceptual nature of know-how, and skill in particular (Luntley, 2011).

This article has the main aim of mapping out the terrain of vocationally-relevant know-how, not just with the intention of demonstrating the inadequacies of the project described above but to enable educators and curriculum designers in PVE to have a full picture of the different kinds of know-how that one can reasonably incorporate in both initial (IPVE) and continuing (CPVE) programmes, even if they are not fully realised in all of them. Although the link between know-how and propositional knowledge is an important one for VET (Winch, 2009), it will not be explicitly dealt

with in this article, except, where relevant, in an incidental way. It should also be stressed that the distinctions made are done so for a particular purpose, to indicate the range and scope of different kinds of PVE. They are not meant to be either absolute or watertight distinctions.

Why, then, attempt to make such distinctions? There are linked philosophical and practical reasons. The principal philosophical reason is that of gaining clarity about know-how so that we can understand it better and resolve connected puzzles. One major way in which these puzzles arise is through attempts at *reduction*, either of know-how to knowing that (broadly speaking the intellectualist tradition) or of knowing that to know-how (what is sometimes known as ‘strong anti-intellectualism’ (Fantl, 2008)). Attempts at reduction usually arise through commitment to a larger metaphysical project, whether it be a form of behaviourism (and hence materialism) or a form of Cartesianism (with, however, a materialist emphasis e.g. Fodor, 2008). Since I do not have a larger metaphysical intent I will simply claim that keeping an open mind on reduction and placing clarification on the agenda as the main priority is the best way to understand know-how philosophically. Doing so involves paying close attention to important distinctions, whether or not they eventually succumb to one sort of reductionist project or another (something about which I am highly sceptical).

The practical reason for taking such distinctions seriously is easily explained. Workers need to know how to carry out a wide variety of interrelated actions in order to be effective. Enterprises and the organisations which prepare people for working life need to be clear about what type of actions they need to prepare people to carry out and what the relationships between them are. In other words, they need a conceptual map in order to plan what they are going to do. Trying, Procrustean fashion, to squeeze this variety into the restricted vessel known as ‘skills’, as happens so often in the UK, US and Australia, is unlikely to help employers and employees to be clear about how to act effectively in the workplace. In what follows some important (but non-exhaustive) distinctions between different kinds of know-how and their relationships will be explained.

I SKILL

The concept of *skill* has its primary use in the performance of relatively restricted types of tasks typically, but not exclusively, requiring hand-eye co-ordination and/or manual dexterity. Examples would be: planing a piece of wood, drawing a bow, baking a cake, writing a letter. Some skills can also be exercised without overt physical action, such as performing arithmetical calculations ‘in one’s head’. As readers will be aware however, the term ‘skill’ is also used quite promiscuously to refer to the carrying out of very broad tasks (e.g. flying a passenger plane from A to B) or activities that can only with difficulty be described as tasks (e.g. parenting). The term ‘skill’ is often employed for areas of activity which are not explicitly task-related (e.g. communication skills). The argument is that these examples of ‘conceptual inflation’, while not always resulting in overt nonsense, are in fact

examples of covert nonsense which can lead to both conceptual and practical confusion. The term 'skill' should, therefore, in professional contexts, be pruned back to something much closer to its core usage. Even within this core usage, however, 'skill' manifests great complexity and subtlety.

The exercise of skill is an example of intentional activity. An agent has the intention to carry out a task and the exercise of an appropriate skill is the means of doing it. In this sense, the exercise of a skill is the activation of an agent's disposition. Skills are also normatively bound, both constitutively and evaluatively. Only certain kinds of agency will count as the exercise of a specific skill (planing wood cannot be done by using a hammer) and, typically, there are criteria for *how well* the skill is exercised and for the use of a complex evaluative vocabulary, both positive and negative, to convey such appraisals (she danced gracefully; he diced the onions efficiently). While the intentional nature of skill performance is relatively easy to grasp, the normative nature of skills, particularly in terms of evaluation, is complex. It is worth pointing out, however, that the exercise of skill is an example of *agency*. Although manifested in action, it is always more than merely the manifestation of *behaviour* and purely behavioural measures of skill are in danger of missing out this intentional element (Taylor, 1968).

One further, and vitally important point about the normative aspect of skill attribution needs making. It also applies to the other forms of knowing how that we will go on to consider. Central to the exercise of know-how by humans is that an exercise, or potential exercise, of know-how is appraisable, either as a correct or incorrect example of a type of know-how or through the evaluative vocabulary mentioned above. In other words, although exercise of know-how does not necessarily involve the use of language, understanding know-how, both by the agent and by observers, does. Know-how is a *conception-dependent* concept and types of know-how only exist to the extent that they are understood as such (Searle, 1995; McNaughton, 1988), and fall under concepts understood by those participating in the form of life in which the relevant kind of know-how is exercised and hence are part of the language used by those participants. If one takes the view that an *ab initio* private language is not intelligible, then human kind know-how is only intelligible within a social environment mediated by a public language. This is not, of course, to deny that know-how and appraisal of know-how may not be undertaken by solitaries; rather that such activity can be conducted *ab initio* outside a social medium (Winch, 1998; Verheggen, 1995; Malcolm, 1990).²

Describing Skills

The exercise of a skill usually involves the exercise of a *technique* or way of achieving the end to which the skill is directed. According to some intellectualists a key feature of know-how is that it consists in the exercise of a technique or way of carrying out the relevant activity (cf. Stanley and Williamson, 2001). It is not an exaggeration to claim that much of the debate about the coherence of the intellectualist position has centred on an interpretation of the sense in which 'knowing that w is a way to F' can be

coherently described as ‘know how to F’.³ Confusingly, the technique is also often referred to as a ‘skill’, leading to the conflation of skill with technique. In order to carry out a task T, one usually needs to employ a way *w* of doing so. It does not follow, however, that knowing that *w* is a way to perform T constitutes a person’s skill. First, because someone may be able to describe *w* without being able to perform it. This reflects an ambiguity in English in the sense of ‘know how’. ‘I know how to plane a plank of wood so that it is even’ can mean *either* I can in fact do so, *or* I can describe how it is done (or both). Context usually ensures that English speakers do not confuse the two senses of ‘know how’ but other languages make the distinction explicit (German: *können/wissen wie*; French: *savoir faire/savoir comment faire*—cf. Rumfitt, 2003). However, the English elision of the two senses means that it is easier in philosophical discussions to conflate the two when no particular context is in mind. Bengson and Moffett (2007) present arguments from an intellectualist perspective to suggest that there is no equivocation between the two senses (for a critique of this view see Winch, 2010, pp. 29–35). They in turn characterise know-how as ‘reasonable conceptual mastery’ of the relevant tasks (op. cit., p. 33).

Turning back to skill, conceptual conflation encourages the idea that ‘skill’ as *agent property* and as *technique* are the same. ‘Skill’ as agent property carries the sense that a skill is something that is an attribute of an agent, which he may exercise in various ways. It is likely to involve mastery of a technique. A ‘technique’ on the other hand is a way of acting which may be incorporated into the know-how of different people. This conflation has, in turn, two undesirable consequences. First, it makes it easier philosophically to identify the two reductively by assimilating know-how in the practical sense to know-how in the descriptive sense, so that to say that someone knows how to do something is to say no more than that they possess a technique (Stanley and Williamson, 2001; Stanley, 2011), and second because it encourages educators to assimilate skill as agent property to nothing more than the agent’s possession of a technique. We should resist this for two reasons. First, it may be possible to practise a technique which is partially constitutive of an agent’s know-how and still not be able to perform the tasks which involve the technique, because the agent cannot perform the technique in circumstances relevant to carrying out the task. Someone may, for example, have mastered the technique of laying bricks but cannot do so in relevant circumstances (e.g. a construction site) because he lacks the experience or character to cope with heights, weather and the exigencies of time and cost. This brings us to the second point; skill as agent property involves a person’s character, which affects the way that they perform a task; their diligence, persistence, attention to detail for example are all elements of their skill and cannot be reduced to their possession of a technique.

This brings us to the distinction between ‘skill’ and the adverb ‘skilfully’. The relationship is a complex one, easy to misunderstand. First, a skill can be exercised in a non-skilful way. This can mean either of two things. First that the skill is exercised (the technique applied) to a threshold level that

satisfies the description of the task-type to be accomplished, without justifying the application of any positive evaluative vocabulary. Second, it can mean that the task is of such a basic order that evaluative vocabulary is simply not applicable. To say that a task has been performed skilfully is to say that the appropriate positive evaluative vocabulary is applicable to the performance. In this sense ‘skilfully’ is a thin placeholder term substituting for thicker positive evaluative vocabulary: gracefully, accurately, speedily, considerately etc. This use of ‘skilfully’ also brings out the teleological aspect of talk about skill. It indicates the extent to which the end to which the task-type is directed has been successfully accomplished and partly indicates *how* it has been successfully accomplished.

The Tacit Dimension of Skill

Although skill almost invariably involves the practice of a technique, and techniques can very often be described, the exercise of a technique can never be adequately captured in a description. There are a number of reasons: first, a description will be incomplete—it can do no more than sketch a procedure. Second, *demonstrating* the technique does overcome this problem, but even this, often highly instructive as it is, cannot substitute for the tacit elements involved in, for example, actually feeling the firmness of the tightening screw, the sensation of losing control in a bend or the growing confidence in controlling one’s breathing and, more generally, the extended kinaesthetic awareness of handling an implement (Polanyi, 1958). Mastery of a technique thus has an irreducibly tacit element. There is nothing mystical about this. Polanyi’s phrase ‘we know more than we can tell’ (1967, p. 4) makes sense to the extent that it means that our know-how is usually not exhausted by any description of our actions (Hutchinson and Read, 2011). Does this compromise the claim that know-how is language dependent? No, when all one can say when description is exhausted, is that one does it ‘like this’ accompanied by action, we should remember that ‘like this’ an ostensive expression, occupies a conceptual space which is partially constituted by talk about the skill, including descriptions of it. To say that, in these circumstances, there is a non-conceptual element to one’s know-how is misleading if one means that this element of action is divorced from conceptual understanding (Luntley, *op. cit.*, p. 12). The situation is very similar to the case of ostensive definition described by Wittgenstein (cf. Wittgenstein, 1953, para 29).⁴

Third, techniques are mostly exercised, especially when they are no longer being practised in a preparatory way, in operational conditions such as those on a construction site described above. In this sense, it is no exaggeration to say that although exercising technique *T* is often a necessary condition of *knowing how to F*, where *F* is a type of task, it is very often not sufficient since *T*, mastered in certain favourable conditions, cannot be practised in a wide range of operational conditions, let alone practised with expertise. English usage does not suggest a firm distinction between practising a technique and knowing how to do something but there does seem to be an important conceptual distinction between the two, in the

sense that it is possible to be able to practice a technique for the accomplishment of *F* but not to know how to *F* in a range of contextually relevant conditions in which the accomplishment of *F* is called for (cf. Stanley and Williamson, *ibid.*).

Finally, in relation to the last point, practising a technique, particularly when such practice is skilful and justifies the application of ‘intelligence epithets’ (Ryle, 1949, chapter 2) also involves the exercise of judgment. Very often, judgment involves not just whether or not to exercise a technique but the ‘fine tuning’ of the technique to particular circumstances which may take account of the factors involved in operational conditions. Such judgments, although not always strictly speaking episodic in nature (they may be invoked *post hoc* to justify an action) are very often episodic in that they involve, for example the weighing up of alternative courses of action and the decision to opt for one rather than another. In the first two cases where we say that the exercise of technique does not exhaust what we mean by possessing a skill, we are drawing attention to the subtlety involved in mastery of the technique which cannot be captured by mere description of the technique. In the last two cases, we are drawing attention to distinctions between mastering *T* where *T* is necessary for knowing how to *F* and actually knowing how to *F*. In this latter case, knowing how to *F* may involve personal qualities of character and judgement which the practice of a technique by itself may not.

Transferability

It is sometimes said that a skill is ‘transferable’. This has to mean more than merely that a skill exercised in situation *S* can also be exercised in situation *T* of exactly the same kind. An ability that is only exercised once is only doubtfully a skill. At a minimum one would expect repetitions of the practice of a technique in a range of *similar* situations. Exercising a skill (and other forms of know-how) is part of a practice in which more than one person takes part. Although there may be solitary practices that are derivative of social ones, there cannot be an *ab initio* solitary practice in this sense. Taking part in a practice also involves being involved in recurrent activity bound by common purposes. Someone who successfully accomplishes an activity through deception or fluke may be said to be *conforming* to the rules of the practice but not *following* the rules of the practice which are socially constituted (Wittgenstein, *op. cit.*, para 199 ff.). One may not necessarily expect repetitions in an indefinite range of different and especially more demanding conditions. However, it is often the case that the same technique may be required in different *projects*. For example, techniques practised by carpenters in furniture making may also be applicable in the construction industry. However, it is usually the case that such transferability presupposes *adaptability* to the new operational conditions of the different project. The mere possession of a potentially transferable skill cannot imply that the skill (as a personal attribute) is actually transferable. Transferability in this sense should be contrasted with *transversal-*

ity; a property, properly speaking, not of skills but of a different type of know-how (see next section).

II ADVERBIAL VERBS

Not all know-how should be conceptualised as *skill*. Skills, as we have seen, consist largely in the carrying out of types of task, often in a range of different conditions. They do not consist merely in the mastery of technique. However there is a range of actions and abilities which cannot be identified with types of task but which are, nevertheless, also connected with goals and circumscribed by norms. Examples include: obeying, hurrying, attending, co-operating. . . . They are connected with the ways in which certain actions are carried out and some of them are associated with *thinking* in a broad sense of that term (Ryle, 1979). Their criteria of identity are more diffuse than those for skills, and although it is probably an exaggeration to call them family resemblance concepts, they do come in many different instantiations in a range of different contexts, which, at their extremes, may be very different. Thus, as is the case with family resemblance concepts, there is a range of criteria of necessity and sufficiency for identity which shifts as one moves from context to context (Beardmore, 1992). For example, *planning* in one context, such as architecture, may involve the drawing up of diagrams as a requirement, whereas this need not be the case with cooking. Indeed, in the latter case it may in some circumstances be careful and systematic cooking itself that is *sufficient* to characterise it as planned. It is not so clear however, that there is not some common thread that runs through the range of such concepts of second-order abilities. Some of these are of particular importance for our understanding of know-how in general and of PVE in particular. These are associated with longer-term episodes of agency than those that are usually associated with the tasks usually related to skills.

For lack of a better term I will call these *projects*, or activities that demand intentional action over an extended period of time, involving the carrying out of articulated sequences of tasks in the pursuit of a larger goal such as the production of an artefact or service. Key forms of know-how here are: *planning*, *controlling*, *co-ordinating*, *communicating* and *evaluating*. These and their relationships will be discussed in more detail below. It can be seen that these fall into Ryle's category of 'adverbial verbs' by virtue of the fact that they are not associated with any particular type of task or skill and therefore to designate them as 'planning skills' or 'communication skills' is misleading, although they may make use of such skills. The reason is not only that they may be manifested in different ways through the performance of different kinds of task, but also that a particular form of their manifestation is not sufficient to guarantee that they are actually exercised. To take an example, *communicating* may be carried out in various ways through speech, writing, signalling etc. and different forms of communication may be appropriate to different contexts. However, although it may be necessary to adopt one of these methods of communi-

cating in order to communicate, doing so does not guarantee that one does, in fact, communicate. This is not merely because one may not succeed in getting oneself understood, but also because one may fail to say anything coherent (that *could* be understood see the example in Hertzberg, 2012). Crucially, it is the *manner* in which one acts which determines whether or not an act of communication takes place. Exercising appropriate ‘communication skills’ will not be enough.

It is the fact that one exercises one’s skills in writing, for example, not just to articulate grammatical and meaningful sentences, but so that one has something to say which is understood by someone else in a particular context (Rhees, 1998, chapter 10). One way of putting this is that the act of communicating, which may well consist of *skilled* performances of articulation or writing, may not be sufficiently thoughtful or coherent to constitute an act of communication (something that could be understood in appropriate circumstances). In such circumstances we might say that someone was not communicating, but ‘going through the motions’ of doing so—that is, successfully performing tasks that were partially criterial for an action of this type, but failing to do so in such a way that the second-order act (of communicating, for example) *was* actually performed.

Thus, not only is the manifestation of one of these abilities *polymorphous* (it can take different forms), but it cannot be identified with any sufficient set of such forms, but needs to be manifested in a manner which actually realises the intended purpose, for example a piece of writing that really does communicate something meaningful or coherent, at least to some extent.⁵ This does not mean that there needs to be a mental accompaniment or precursor, it can mean that the ability is exercised with sufficient care and attention to characterise it as communication, rather than merely going through the motions of communicating. At first sight this looks like the distinction made above between mastery of a technique and knowing how to do something that involves using the technique. These former kinds of ability do indeed involve the notion of a threshold level of performance below which, for example a piece of writing is not even a grammatical or meaningful sequence, but the latter involve something more, namely the realisation of the purpose of communicating what it is intended. The ability to communicate is evidently not the mastery of one set of skills, as there are different ways of communicating. Neither though is it merely the mastery of different sets of skills. An illiterate may be very effective at oral communication, but he cannot communicate if he does not have something meaningful to say, in a manner which is capable of being recognised as such by an audience in an appropriate context.

But his ability to communicate effectively also depends on being able to say something meaningful in a wide range of situations, very often to different audiences. With a polymorphous activity, the successful accomplishment of the objective is much more related to the context in which the activity is carried out than is the exercise of a skill and its success is even more dependent on the ability of the agent to respond to the exigencies of context. The same type of activity (e.g. planning, co-ordinating) can be manifested in the exercise of different sets of skills, depending on context.

A skill, on the other hand, really does need to be the accomplishment of the same type of task in different circumstances, albeit attuned to contextual exigencies. As we saw, it is doubtful whether the exercise of a technique in a limited range of circumstances would be sufficient to characterise someone as skilled in the relevant task-type. The bare use of technique to a threshold level does not count as know-how, even though one could, at a stretch, describe it as a skill in the sense of nothing more than the manifestation of technique. Here it very similar to enactive know-how in the sense of giving an account of what is involved in the know-how rather than the know-how itself (Rumfitt, *op. cit.*). In the case of a polymorphous activity, there is no reason to suppose that it is, in every case, the accomplishment of the same type of task that is in question, but the accomplishment of *different* types of tasks in a wide variety of different contexts. It is evident that some at least of these abilities not only presuppose the existence of a social context for their learning and exercise, but that it also makes no sense to think of them as solitary activities: communicating and co-ordinating are obvious examples, but many forms of planning and evaluation have an essential social dimension. Furthermore, the accomplishment of such tasks must be effective beyond the threshold performance of the presupposed skills. Just as the evaluative vocabulary of ‘intelligence epithets’ is often ascribed adverbially (*A delivered the speech clearly and concisely*), so exercise of an ‘adverbial verb’ is built into the performance of tasks in the service of a larger purpose than the accomplishment of the task to which the skill is directed, and it is built into it in such a way that it has to be of a certain quality in order to count as that kind of ability. This means that it must be carried out with a degree of care and attention that transcend the performance of the tasks which are means to the end. There can be acts which look like planning, communicating and so on, which *appear* to be manifestations of a polymorphous ability, but which are not actually acts of planning or communicating because they do not succeed in accomplishing more than the underlying tasks on which the ability, in that particular context, depends.

An activity like *planning* which is manifestly associated, in different situations, with *different* types of task like drawing, discussing, soliloquising, writing notes and so on, is an example. And even though in many situations planning almost requires such acts in order to *be* planning, the performance of such acts, without the care and attention that goes into the accomplishment of the purpose, will fail to be planning and will only succeed in being the outward manifestation of that ability through the performance of such tasks as drawing, soliloquising etc.—these could be called ‘planning skills’ exercised to no more than a threshold level. The case of planning is further complicated by its ‘forward reaching’ quality, which means that planning can only be judged to be such either if it continues to be manifested in the set of activities that constitute *realisation of the plan* or, more rarely, if one can reasonably infer that the agent would realise the plan if he had been allowed to. And here the inference often depends on what we know of the agent’s *prior* ability to realise a plan in other circumstances. Sometimes, as in the example of some kinds of cooking (see above) it also

make sense to say that the planning is immanent in the realisation of a project (see also Weil, 1955b, p. 89) or through explorations with the material, or sometimes as accompaniments of an activity in a social context through, for example, a conversation about the topic.

Another respect in which polymorphous action differs from skill is its sensitivity to context. A skill is associated with a task-type and the task may or may not be accomplished. Context will very often affect whether or not the skill can be practiced. As we saw, it is possible to be able to practice a skill in a particular context without knowing how to accomplish the tasks for which practice of the skill is a necessary condition in a range of more demanding situations. With a polymorphous activity, the accomplishment of the objective is even more related to the context in which the activity is carried out and its success is largely dependent on the ability of the agent to respond to the exigencies of context by exercising different skills in different contexts in order to accomplish the objective. Polymorphous abilities are *second-order abilities* which are manifested in first-order activities such as the performance of tasks, possibly articulated sequences of tasks, and are partly manifested in the manner in which these articulated sequences of first-order tasks are performed. The context in which they are exercised is important, not just for their identification (which may be manifested in different task-types in different contexts), but also in respect of the evaluations that are possible for them. It thus seems to be a consequence that the individuation of these second-order abilities is more complex than the case with skills. Skills can be individuated by the task-type to which they apply and contextual variation can sometimes blur the boundaries of one task-type and another. In the case of second-order abilities, however, variation is much wider and thus so is individuation.

Like first-order abilities, polymorphous abilities are apt for the use of evaluative vocabulary to describe the success or lack of it with which they are carried out. Given that such activities as *planning* or *evaluating* may look very different according to the different contexts in which they are done (contrast planning the building of a house with planning a lesson—not to mention the multifarious ways in which either of these types of activities can be carried out), we can expect the evaluative vocabulary that is deployed in the assessment of second-order abilities of this kind to vary considerably across these contexts as well. This point actually leads to a puzzle about them. Although such abilities are often called *transversal* or *extra-functional* (Hanf, 2011, p. 57), indicating that they occur across a range of different spheres of human activity, it does not follow that they are *transferable* abilities even in the limited sense that we saw that skills are. Because of their context dependency, their criteria of identity shift considerably and it follows that manifestation of the ability in context *A*, which is sufficiently accounted for by characteristics *a*, *b* and *c* will not necessarily be the same as its manifestation in context *B*, where characteristics *c*, *d* and *e* may be sufficient. This contrasts with the relatively stable criteria of identity of a skill across different contexts. The skill, largely but not completely identified with mastery of a technique for the performance of a task-type in relevant conditions, can be identified through the type of task,

in whatever context it occurs. We cannot, therefore, make any assumptions that the ability of someone to plan, co-ordinate or assess manifested in one sphere of activity will be manifested in another, let alone in the same way. Nevertheless, there is a sense in which we *do* expect this kind of transfer and it is, to some extent, reasonable to do so. The sense in which this is the case will be returned in the final section of this article.

Second-order Abilities and Thinking

There is a current of philosophical reflection that makes a strong association between second-order abilities and *thinking* (e.g. Ryle, 1979). When Wittgenstein (1967) calls thinking a *ramified concept* ('A concept that comprises many manifestations of life. The *phenomena* of thinking are widely scattered': Wittgenstein, 1967, para 110) he has at least partly in mind the ways in which context and type of activity affect its manifestation. But in what sense does it make sense to say that second-order abilities are closely related to thinking? To understand this, it is helpful to go back to the earlier discussion of the relationship between the practice of a skill and the use of evaluative terms to appraise it. When know-how manifested through skill is praised, the *manner* in which the action is carried out is being assessed and very often this will include for example, consideration of the degree of *attention* and *care* with which it is done, as well as consideration of whether or not action was preceded by judgement or reasoning.

While this is true of first-order ability, it is even more true of some second-order abilities, whose more nebulous nature means that their very *identification* requires that they display some of the attributes of thinking. While it is possible to perform the types of first-order activity associated with, say controlling or co-ordinating without actually controlling or co-ordinating, it is not possible to actually control or co-ordinate without manifesting certain qualities in the articulated sequence of first-order activities that, in the appropriate context, constitute controlling or co-ordination. These are the kinds of activities which, if they are to be distinguished from their facsimiles, have to be done in a certain manner, that is, with care, attention and judgement. These attributes of manner are not optional extras, but intrinsic features of the second-order activity and we associate them with thoughtfulness in action and thinking, even if the thinking in question is not necessarily episodic or semi-episodic ratiocinative soliloquising conducted with care and attention. Thus, although thinking is quite properly associated with many first-order abilities, it is *immanent* in any second-order activity of the kind associated with the bringing into effect of an intended sequence of actions that results in the creation of an artefact or a service, even though it may well look different in different contexts.

III PROJECT MANAGEMENT

We have discussed abilities exercised in activities related largely to the accomplishment of relative restricted types of tasks such as *skills*. It is not

so nearly true, however, of the kinds of abilities designated by adverbial verbs. For this discussion I will concentrate on those that are central to vocational and professional activity, namely: planning, co-ordinating, controlling, communicating and evaluating. They may, to some extent, be employed in the exercise of skill and related forms of know-how associated with the accomplishment of tasks, but are arguably more at home on a broader canvass where an agent's intentional rationality is employed in the forming and putting into effect of a project that extends over time and involves the articulation of a series of interconnected activities oriented towards the production of a complex good or service.

This family of second-order activities is clearly a close one, and the boundaries between them are not always obvious when they are expected to be exercised jointly, as is the case in many professional and vocational activities. However the distinctions that they express matter. Furthermore, their specification relative to different occupations is important and in some cases their exercise is more dependent on social considerations than is the case for others. It is worth pointing out, however, that German VET regulations specify the acquisition of social competences as part of a form of occupational capacity, emphasising the importance of social interaction in the successful pursuit of a recognised occupation. The close links between them are recognised in, for example, German VET specifications (for Germany see KMK, 2011, particularly pp. 14–17).

While there is no obvious conceptual cut-off point between a task and a project we can specify the attributes of: *complexity*, *length*, *difficulty* and *manifest intentionality* in drawing the contrast between the two. *Manifest intentionality* is a key attribute.⁶ It signifies the fact that the forming and execution of a plan, is a key feature of projects, while not of tasks, where execution alone is the imperative. In the case of a skill, a task is set and one's intentional rationality can then be directed towards its accomplishment. In the case of task-types that have been repeatedly accomplished by an agent or which are very simple, the intentional rationality (in the sense of forward planning) involved may be minimal, although situational judgment may be called for. A project, on the other hand, is typically a form of agency whose contextual features require some originality in devising a strategy and procedures for its accomplishment. Thus the contrast would arise, for example between the following: building a house rather than a wall; a plumbing system rather than a stretch of piping; writing a book rather than a short stretch of prose; successful healing of a patient rather than the dressing of a wound; a year of farming rather than the planting of turnips.

The process of devising and putting into effect of a project I will call *project management*. Much paid work does not involve project management. Work that involves the decomposition of tasks into such tiny and specialised sub-segments that they can virtually be done by an automaton, clearly does not involve project management, or even much in the way of the exercise of skill. However, the *division of labour*, or the practice that has existed since time immemorial, of allocating different spheres of activity to different individuals or groups, is perfectly compatible with the

pursuit of project management. The division of labour is recognised, for example, in the division of different types of economic activity into *sectors* and the division of types of work into *occupations*.⁷ Within a given division of labour it is possible to devise occupations whose main aim is the creation of goods and services characteristic of the segment of human endeavour which the occupation is designed for or has evolved to address. Such creation may, and frequently does have the characteristics of project management.

It involves what commentators like Marx and Kerschensteiner have claimed is *the* characteristic feature of human action: the forming and putting into effect of a plan. This is not to be reduced to separate activities of *planning* and *execution*, although there are no doubt various more or less definite sequences of activity involved in project management. Project management is not the mere ordering of a set of tasks, but the articulation of an extended form of agency which involves thought in the broadest sense. To be more specific, although planning and execution are key features of project management, it is erroneous to think that this is all that there is to it. Planning, to take the most obvious example, may involve prior activity such as constructing a blueprint, but it need not. As already noted, it may to a greater or lesser extent be immanent in the carrying out of the project. It may also involve complex forms of social interaction that occur both prior to and during the carrying out of the project.⁸

However, there is much more to it than that. *Controlling* the execution of a project for example, involves monitoring and attending to processes as well as the accomplishment of specific physical and mental tasks. It is controlling, rather than merely performing that marks out activity performed within the context of a recognisable project rather than as part of a fragmented labour process managed by someone else.⁹ As such it involves thought as part of its very nature. *Communicating* and *co-ordinating* are likewise very often features of both planning and execution and are often a component of controlling. Communicating is obviously an integral part of the social aspect of project management and is key to the success of most types. It takes place through different media, with other individuals with different knowledge and status and can often be very demanding, not only requiring clarity, but also tact and understanding. Successful communication is also very often the means by which successful co-ordination takes place, that is, the joining together of different components in a project so that the whole is successfully carried out.

Just as second-order know-how necessarily involves thought and attention, so also does project management, not only by subsuming the intellectual activities involved in second-order know-how, but also through the articulation of a complex and extended form of agency. As noted earlier, this does not entail that intellectual and non-intellectual activities are always articulated in sequences of the former (typically embodied in planning of some kind) followed by the latter, but they may occur in a more integrated way such that the intellectual work required for the enactment of the project is immanent in many of the activities directly needed to bring it about. Project management does not, therefore, require a strict division

between intellectual and manual labour, although it is necessarily itself an intellectual form of agency.

Self-management is a necessary part of project management. In forming and carrying through a project an agent manages him- or herself as an agent in its enactment. In doing so, and in encountering obstacles and problems along the way, he learns about his own capacities and their limits and, in doing so can learn how to push those limits back. In an important sense therefore, agents engaged in project management learn about themselves and, in doing so, acquire attributes which, although not strictly transferable, allow them to act confidently in situations which are, to varying degrees, cognate with those that they have already encountered. Specifically, the confidence to approach a project in the expectation of a successful resolution, gained through the experience of success in exercising skills, planning, overcoming difficulties and solving problems, often in concert with other people, develops attributes of character that are a personal resource other contexts. There is ample evidence that forms of apprenticeship that involve extensive project management lead to occupational and even sectoral mobility.¹⁰ It should not be forgotten, however, that such qualities can also be developed *within* one's chosen occupation, allowing one to rise within it to positions of greater autonomy and responsibility, as with the German *Meister* qualification.

To summarise, the ability to manage a project, necessarily built on second-order abilities involving forms of independent action, is crucial to the development of personal characteristics that have an important role to play, not just at work but in other areas of life where self-knowledge, persistence, confidence and cooperativeness are valuable attributes. This points to the way in which project management, developed in work contexts, where coping with the exigencies of non-simulated environments is paramount, has profound educational benefits for individuals *as persons* as well as for their capacities as workers.

What is the relationship between *skill*, *transversal ability* and *project management ability*? I suggest that it is a kind of nesting relationship. There will be no project management ability without some transversal ability, even though different projects may require different mixes of transversal ability. Similarly, one cannot exercise an ability like the ability to plan or to co-ordinate without exercising some skills, even though these may vary widely from activity to activity or even from person to person. Finally, it is doubtful whether one could be skilled at anything without possession of an appropriate technique, although as we have seen, possession of a technique is very often not sufficient for ascription of a skill. There thus appears to be a hierarchical relationship between skill (and its technique component), transversal ability and project management ability. This is not just an abstract conceptual point, but has significant practical implications, particularly for the design of professional curricula. If, for example one cannot manage a project without possession of the appropriate transversal abilities and skills, then a curriculum that ignores this relationship and fails to provide appropriate forms of ascent from one kind of know-how to the next is likely to end in disaster (see Winch, 2013 for more on this).

IV CODA: TOWARDS OCCUPATIONAL CAPACITY

As noted in Section III, the ability to manage a project successfully is, in many countries, not just a precondition of becoming a practitioner of that occupation but potentially of others as well. However, whatever occupation one settles on, *occupational capacity* is important and presupposes the abilities discussed in the previous sections. This is particularly the case in those societies which have well-developed and formally defined conceptions of an occupation such as the German *Beruf*, which entail a wide ranging, interlocking sphere of activity as well as an established place in the social order for individuals who acquire occupational capacity (*berufliche Handlungsfähigkeit*) and practice it.¹¹

What does a fully-formed occupational capacity look like? Self-evidently it encompasses the varieties of professional know-how already described, in particular the ability to manage a project in the sense described in the previous section, but there are other important attributes. These include systematic knowledge, the ability to keep abreast of changes in the occupation and the environment in which it is practised and an appreciation of the standards of excellence that apply to the goods and services produced as well as to the way in which these standards are understood in the wider society (see MacIntyre, 1981; for a sympathetic critique, see Hager, 2011).

This is not the place to present a full account of occupational capacity but I have, within this article, described the kinds of agency which are essential to its successful development.

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NOTES

1. When one ascribes skill to an individual it relates to more than one (token) task, but to a range of tokens and potential tokens which have much in common. How clear the boundaries are between one type of task and another is sometimes unclear, hence problems with 'transfer'.
2. 'Animals know how to do many things and they do not possess language.' True, but this is no objection to the claims made above. Some attributions of know-how to animals are figurative and some are legitimate extensions of our concept of know-how to the animal world, including recognition of primitive normative and evaluative behaviour (see Baker and Hacker, 1984, pp. 254–255).
3. Stanley and Williamson's preferred construal of know-how constructions is: roughly that to say that *A knows how to F* is to say that *A knows that w is contextually appropriate way to F in a practical mode of presentation, where 'w is a contextually appropriate way to F' is a Russellian proposition* (op. cit., pp. 426–427).
4. I owe this observation to Alan Cribb.
5. An apparent counterexample would be *trying* to do something and not succeeding in doing it. *Trying* has the transversal properties described above and yet one can try and fail. However, one

- can only be said to be trying if one does actually make a serious effort to do something, whether or not one fails. One can 'go through the motions' of trying without actually doing so. Thus even in such a case, there is a 'success criterion' for correct attribution.
6. See Marx's statement: 'We pre-suppose labour in a form that stamps it as exclusively human. A spider conducts operations that resemble those of a weaver, and a bee puts to shame many an architect in the construction of her cells. But what distinguishes the worst architect from the best of bees is this, that the architect raises his structure in imagination before he erects it in reality' (Marx, 1970a [1887]). There are problems connected with the apparently asocial nature of this definition, which plays down the social aspect of creative and imaginative endeavour.
 7. It is an oversimplification to describe occupations as subdivisions of sectors, as many of them cut across different sectors, see ILO (2012) classifications.
 8. For a striking example related to construction, which stands in contrast to Marx's example, see Weil, 1955a, pp. 133–4.
 9. See for example, Smith, 1981 [1776], pp. 785–786, for an account of the likely effects of extreme forms of the fragmentation of the labour process.
 10. Wolf, 2011, e.g. pp. 33–4.
 11. Greinert, 2007; Hanf, 2011.

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