Can Empirical Research Help Construct Theories to Improve Practice? Some Davidsonian Notes on the Philosophy of Educational Research

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ABSTRACT

It has been suggested that given the impossibility of constructing pedagogical theories that can predict with some reliability what will happen once some pedagogical strategy is applied, pedagogical research can only help teachers construct tacit knowledge. Accepting this argument, but relegating it to the specific domain of scientific theories that seek to answer questions of the kind "what works in pedagogy?", or causal questions, this paper explores the possibility of doing research that attemtps to construct philosophical theories that respond to questions of the kind "what are what we do and what we get in pedagogy about?", and "what is derirable or right to do in pedagogical practice?" While both types must be dealt with in pedagogical research, just like "what works?" questions, I will nevertheless conclude that research can only help construct theories that answer "what are things about?" questions. Questions about norms or ethics have to be dealt with in the same manner as causal ones: Working on particular local experiences, helping teachers to develop sophisticated capacities for reflection in support of a flexible action. Nevertheless, regardless of whether or not theories can be constructed, empirical research in close contact with pedagogical situations in the classroom is argued from a Davidsonian philosophy of language, to still be of essential value for all three types of research questions.

KEYWORDS
Pedagogical theory, pedagogical practice, pedagogical research, action-research

1. INTRODUCTION

It is commonly suggested that in the social domain, the world constituted by intentionality and meanings produced by human beings, the research that copies the methods and goals of the natural sciences — usually empirical experimental or quasi-experimental research— has had relatively very little success. Symptomatic of this lack of success would be the number of papers that address methodological issues, proportionally in respect of those that address "the real thing". The general impression is that if there were already solid research approaches in this domain, we would not be discussing so much about what the best way of doing it is. I think there is some agreement on this lack of success, at least when it comes to educational research (see for instance Kaestle, 1993; Hargreaves, 1997; Slavin, 2002; Maxwell, 2004; and Phillips, 2005). The opinions about what to do in respect of that lack of success are certainly not unified. Some propose that the way forward should be more experimental or quasi-experimental research, carried out more rigorously. (The US No Child Left Behind Act would be an example of that position.) Some others argue that new modes of research should be used, that redefine the meaning of "research success", and with that also redefine the goal of research. (Action-research would be an example of this kind of redefinition.)

But, what is the goal of research? Firstly, research is not the same as practice, or good practice. Not even applied research, such as the one most commonly seen in the domain of pedagogy, is the same as practice. Research is supposed to produce results that can remain and be preserved from one situation to the next,

from one context to the next (de Zeeuw, 1995). Now, even though these research results that remain can be of very different natures, in most cases the purpose will be to construct *theory*. Interestingly, some people, among whom are some action-research advocates, have rejected theory as an intended result of research (Elliott, 1991; and Thomas, 1997). Instead, they would suggest that it can only produce forms of tacit knowledge in the participants of the research project. This tacit knowledge would not be directly transferable to other contexts of application, or directly usable by other practitioners. The first goal of this paper is to examine some of these claims about the relation between theory and research in pedagogy in particular, in order to find the limitations and possibilities of research for constructing theory that can be useful for pedagogical practice. In order to do this I will first broaden the notion of theory, and draw a distinction between three different types of theoretical claims, all three essential for pedagogical practice but with different implications for research. The second goal of this paper is related to the distinction between philosophy and science. Science has traditionally been associated with empirical research, in close contact with the object of study. Scientific inquiry goes to the classrooms and there it tries to get an idea of what is happening. Philosophy has been associated with reading and discussing. Philosophical inquiry stays at home, or in the office, and sits on an armchair to reflect on profound issues. Of course, this description is caricaturesque; but nevertheless it is not totally inaccurate to say that the work of philosophers of education does not in general occur in contact with classrooms. The other goal, then, will be to show that empirical research, in the classroom, can serve philosophical purposes as well. My argument will be mainly philosophical, drawing strongly on the work of Quine and specially Davidson. I will argue that there is no properly drawn clear distinction between the pedagogical topics that concern scientists and philosophers, and that therefore no good philosophical reason prevents philosophy from associating with empirical research in the classrooms. Then, I will try to present some initial ideas about how that association can be fruitfully exploited.

2. RESEARCH AND ITS ATTEMPTS TO ANSWER “WHAT WORKS?” QUESTIONS

In a very simplified way, I will take theories here to constitute systems of related general assertions that will hopefully apply not only in single cases, or in a very limited number of cases, but more generally. Most references to the word “theory” in the literature on educational research, however, give this term a particular meaning related with sets of propositions with which predictions can be produced about particular cases. Most usually, given the practical purposes surrounding the field of pedagogy, these predictions will be about the likely results of implementing some pedagogical strategy in some particular context. The ultimate goal of the type of research that seeks to construct such predictive theories, is to find a good answer to the question *what works?* Let us note that this question, taken in this predictive sense, is a *causal question*. The canonic form of the propositions that help answer “what works?” questions is “if (pedagogical strategy) ***X*** is applied, in (context) ***Z***, then it is likely that (result) ***Y*** will be produced.” As noted, ***X*** usually refers to a pedagogical strategy. ***Y*** is the description of an expected result in terms of one or more variables. ***Z*** limits the possible contexts in which the causal relation between ***X*** and ***Y*** applies, understanding context in a broad sense in which the kinds of actors is also a defining variable. An example of the above propositional form, in comparative form, is “cooperative learning (***X***) produces more acts of solidarity and respect on the part of students (***Y***), than traditional forms of teaching, if initially social relations between students were weak (***Z***)”. I think that the usefulness of theories with generalising assertions such as this one is beyond doubt, *if they can be found*. Following on the previous example, teachers and school administrators would then be able to take a rational decision about implementing cooperative learning instead of traditional teaching as the preferred pedagogical strategy, whenever they have a situation in which relations between students in a group are weak.

However, before being too happy about these kinds of theories, there are some aspects to examine. As suggested in the introductory paragraph, theories that can show to have such assertions in a justified way may be tremendously difficult to obtain. Such theories would only make sense if they can formulate

pedagogical strategies (***X***), possible results or impacts (***Y***), and contexts (***Z***), each in terms of a relatively small number of variables. If they cannot, then the object of research will not have achieved sufficient stability to be considered a scientific object (de Zeeuw, 1995). This way, in the example, does the tone of voice and general attitude of the teacher have some important effect on the way cooperative learning influences the production of acts of solidarity and respect by students? If so, then one or more variables describing tone of voice and general attitude must be part of the description of the pedagogical strategy (***X***). This means that cooperative learning with a teacher's attitude A would have to be taken in fact as a different pedagogical strategy than cooperative learning with that teacher's attitude B. Do the expectations of students and teacher about the nature of the subject being one in which there are unique answers or not, influence importantly the impact of cooperative learning on solidarity and respect? If so, then one or more variables describing thos students' and teacher's expectations must be part of the description of context (***Z***). The descriptions of ***X***, ***Y*** and ***Z*** must be as detailed as the nature of the object of study requires, but if it is too detailed then it all could become unmanageable. And of course, if there are interactions between these factors, then it gets even more complicated. There seem to be good historical reasons to think that it is in fact unmanageable. In other disciplines in the social domain, such as group dynamics, many decades of empirical research have produced enormous numbers of variables considered relevant to describe its phenomena, without the production of any scientific theory with convincing predictive power (Ponce, 2001). Additionally, in education, authors like Pring (2000) and Olson (2004) have questioned the coherence of the use of the medical analogy of the *treatment*. They have argued that what varies from one application of a pedagogical strategy to another is so great, and potentially so relevant, that it does not make sense to say that actually the same treatment has been applied.

In the light of this situation, some authors have proposed and used radically different research approaches, among which *Action-Research* (AR) and *reflective practice* are possibly the best-known ones (Carr and Kemmis, 1986; Elliott, 1991 and 1994; Carr, 1993; Calhoun, 1994; and Schön, 1983). In its most radical versions, AR proponents would argue that pedagogical theories cannot be constructed beyond a very basic and trivial level. For this reason, the proposed kind of knowledge produced by means of research is not of a theoretical nature, and instead is one which allows people to act in a more competent way, but not easily put down in propositions nor directly transferable to new contexts or situations. It is a tacit knowledge, embedded in praxis, and tied to the context in which the research project took place (Elliott, 1991; and Carr, 1993). Despite this, renouncing pedagogical theories does not mean that nothing can be transferred at all. As Pring rightly notes, "no one situation is unique in every respect and therefore the action research in one classroom or school can *illuminate* or be suggestive of practice elsewhere. There can be, amongst networks of teachers, the development of a body of knowledge of 'what works' or of how values might be translated into practice —or come to be transformed by practice. But there is a sense in which such professional knowledge has constantly to be tested out, reflected upon, adapted to new situations" (Pring, 2000, p.131). It has to be said that it is not always the case that the use of AR in pedagogy corresponds to the commitment to the principles presented above. For instance, in some cases AR is used only in a first stage of the development of a research project, in an exploratory way, only to help define the actual treatment that will later be tested under "more rigorous" conditions. The more radical approach to AR depicted above, instead, would take it that in pedagogy there should always be an exploratory attitude; and that there will never come a time when we can move on to the next, experimental stage.

From the discussion above it should be clear that the fact that predictive theories attempting to produce causal propositions may be too difficult to obtain does not mean that causal questions should be ignored altogether. They are still essential questions for pedagogical practice; it is just that we may have to renounce having sound theories about them.

3. OTHER QUESTIONS THAT PEDAGOGICAL THEORIES OUGHT TO ADDRESS

The previous section has provided a brief account of some aspects under discussion in the literature, about the possible limitations of research for answering "what works?" questions. In this section I will now explore other questions that pedagogical theories can seek to answer. Let us start by noticing that even if causal assertions of the type "if ***X*** is implemented in ***Z***, then it is likely that ***Y*** will occur" can warrantedly be constructed, stepping into action and going on to implement ***X*** in context ***Z*** would be justified only if at least two additional conditions are met: (1) That what is correct, what ought to be done, is to attempt to obtain ***Y***; and (2) that ***X***, ***Y*** and ***Z*** are all three clearly and unequivocally understood. That is, the path that leads from a pedagogical predictive theory that produces causal assertions, to pedagogical practice, has to go through these two assumptions that *what* ***X***, ***Y*** *and* ***Z*** *consist in*, and the *desirability of* ***Y***, are already known. Let me call the first of these, the *analytic assumption*, and the second, the *ethical assumption*, or the *normative assumption*. It is common to think that the inquiry into the questions related to these two assumptions is the job of philosophers of education. Scientific inquiry would instead be concerned with questions of *what works?*

Causal questions are not independent from analytic and normative questions, although their relations may appear in ways that are not unique. Scientific research aimed at answering causal questions will necessarily have an analytic conceptualisation of the variables involved, and a normative justification; that is, it will assume some philosophical theories as true. The problem is whether these philosophical theories are correct, and whether they have been made explicit. But I take it that philosophical theories should not be seen as underlying scientific work, as if there were some hierarchy of some logical or metaphysical nature between them. As I will argue in the next section, the relation in the other direction also applies: philosophical theories also assume and depend on scientific theories to make sense. These assertions concerning the relations between causal, analytic, and normative theories and questions, have important implications for the possible ways in which pedagogical theories can be constructed.

4. THE ABSTRACT IS CONCRETE, AND VICE VERSA: HOW CAN PEDAGOGICAL THEORY AND KNOWLEDGE BE CONSTRUCTED?

Now, if causal questions may be too difficult to answer by means of the construction of pedagogical theories, what happens with analytic and normative questions in that respect? Can philosophical theories be constructed that can give proper answers to those kinds of questions?

A first aspect to consider is the sort of activities that constitute research. As already remarked, it is commonly thought that whereas scientific research involves observation of real pedagogical situations, philosophical inquiry does not. Is this a purely practical difference, or an essential one between two radically different types of knowledge that necessarily have to be arrived at by different means? Based on the work of Donald Davidson, mainly, I will argue in what follows (1) that in principle, there is no essential epistemological difference between the types of knowledge purported by causal, analytic and normative propositions; and (2) that methodologically speaking, both the empirical methods of classroom observation and the analytic methods of critique have something to contribute to each one of the three kinds of questions described above.

My argument is based on Quine's well-known rejection of the analytic-synthetic distinction, as well as on Davidson's ideas about the holistic nature of meaning, knowledge and interpretation. According to the Kantian idea, analytic sentences would be true solely by virtue of the meaning of the words that constitute the sentences, independently of "the way the world is". A candidate for an analytic sentence would be "all triangles have three sides and three angles". Supposedly, it is in the definition of "triangle", having three sides and three angles. On the contrary, the truth value of synthetic sentences would not only depend on the meanings involved in them, but also on the way the world is. A candidate for a synthetic sentence would be "currently, Haiti is the poorest of all Latin-American countries". Whether this sentence is true or

not would depend on whether in the world, there is a country called Haiti, and it together with other countries conforms Latin-American, and among them it actually is the poorest one. The analytic-synthetic distinction would justify in a very natural way the separation between on the one hand the activities of educational scientists, doing fieldwork and observing the way the pedagogical world is; and on the other hand the activities of philosophers of education, reflecting in their offices about the meanings and ehtics of pedagogy. Logical analysis would be the tool used by the latter, and philosophy would be analytic philosophy. If this is true and philosophers deal with issues that do not depend on the way the world is, then there is no need for them to "go and see" what happens in the classrooms. For Quine, nevertheless, a proper distinction cannot be drawn between analytic and synthetic sentences. For him, all sentences have a connection with the world —an *empirical content*— and therefore empirical observation could in principle have a logical impact on any of the sentences we presently hold true (our present beliefs) (Quine, 1953). This would even apply to our belief that all triangles have three sides and three angles! However, for him the connections between the world and our beliefs are never logically compelling, and there would always be multiple possibilities of adjusting our system of beliefs in order to accommodate for an unexpected (empirical) observation. In terms of pedagogical research, this would mean that there is no essential philosophical justification for the fact that philosophers have hardly anything to do with empirical research.

Even though Davidson's ideas are derived from Quine's, they are much more radical in giving a much more holistic view of meaning, knowledge and interpretation. Let us notice that by arguing that all sentences have an empirical content, Quine presupposed the existence of a *logical* relation between the world outside us, and our ideas. The world is still a logical judge of our ideas' truth value, even if it cannot judge them with the precision required to always allow for only one possibility. For Quine, in other words, we still have to accommodate our ideas to the way the world is, even if there are always various possible ways of accommodating them. Quine's point was only that that relation could in principle affect any one of our ideas. Davidson's revision of Quine will show that the relation between the world and our ideas cannot be logical, and instead must be causal. That is, the world does not confirm or refute in itself any proposition. It does not have any logical properties and therefore simply cannot take any judging role, or compel us logically to keep or change our ideas, neither one by one nor collectively in a system (Davidson, 1984 and 1990). Sellars, some years before, had also argued that it is not possible to have logical relations between *non-ideas* —events in the world, sensory stimuli, etc.— and ideas, concluding that the relation between the world and our ideas is causal (Sellars, 1956). And causal relations do not have any logical force. Our contact with the world *causes* that we have certain ideas, that we hold certain propositions as true, but it does not *confirm* nor *refute* any of them. Rather, we would say that some of the ideas that the world causes in us seem to be so reliable, that we do not doubt them at all. This may be the case of those that appear in situations in which we say that we are doing some empirical observation.

Coming back to the original discussion, I have argued that if Quine's and Davidson's ideas are right, then the difference between the philosophical and the scientific activities cannot come from a difference of essence between kinds of truths, or between kinds of sentences. There is still the methodological question of whether classroom intervention and observation can be useful for inquiry that addresses normative and/or analytic questions[1]. Usefulness here would mean something like "capable of triggering (causing) in us ideas that are likely to be both right and relevant for the research purposes". The question can now be formulated in a clearer manner: To what extent can being in direct contact with pedagogical experiences be a (causal) source of good ideas in the domains of the normative and the analytic? This question is a tricky one. Exploring answers to it could take us as far as the discussion of issues like whether good quality coffee in our offices could stimulate better thinking in philosophers of education. However legitimate, it is doubtful that questions of this sort will get us anywhere; and they are not certainly what I want to talk about in this paper. I would rather want to examine the possibilities that appear around the sentences that result out of direct empirical observation in classrooms. To that, I now turn.

Arguably one of the consequences of meaning holism as proposed by Davidson, is that understanding the meaning of any one sentence implies knowing how to use it (Mejía, 2001). *Knowing how to use a sentence S* implies in turn identifying some of S's logical implications in connection with new sentences and ideas. If one rejects the analytic-synthetic distinction, then the connections that one needs to make in order to understand sentence S cannot be specified in advance[2]. In terms of research, understanding the meaning of some philosophical abstraction would imply, among other things, to identify some of its implications in concrete pedagogical situations. Let me illustrate this point with an example: Let us take a teacher who has read about some (philosophical) position about what critical thinking is about, and about its worth. If she understands it, then she must *be able* to establish some possible connections and with these imagine some possible implications of that position, in concrete classroom situations: She must be able to identify some students' actions as manifestations of critical thinking or of its opposite; she must be able to formulate reasonable hypothesis about which of her actions and strategies might be fostering critical thinking; and she must be able to identify other educational values or goals that in some situations may be in conflict with that of promoting critical thinking. This Davidsonian holism of meaning suggests, moreover, that to say that the teacher from the example understands the position on critical thinking that she read about, means that she does not need to make any specific particular connection. It is only necessary that she makes many reasonable connections (out of which implications are derived). Some of these connections will be very basic and almost trivial; but then we would say that the richer the set of connections she establishes, the deeper the understanding she has achieved of the position on critical thinking in question. Of course, what connections one will establish will depend on one's previous knowledge. Let me call the previous knowledge that one can use for interpretation, one's *knowledge resources*.

Any of these connections or derived implications is impugnable; or even the whole set of them. In the example, that also amounts to our determination of that teacher's level of understanding of the position on critical thinking. But, interestingly, at the same time those connections will be of use for the teacher herself to evaluate that very position. For instance, by establishing connections with other ideas that she holds true (other beliefs she has), she might identify contradictions. In the light of them, she would have to make adjustments somewhere: She may drop the new ideas altogether, modify them, drop some of her previous ideas, modify them, or have some combination of these possibilities. Now, as argued elsewhere, in interpreting someone else's ideas one does not normally use all of one's knowledge resources; that is, many of the connections that one would be able to establish, are not effectively established (Mejía, 2001). However if the teacher from the example starts observing her classroom situations with an eye set on those elements that relate to critical thinking according both to the new position she read about, and to her previous ideas on the subject, then she will be in a better position to start using more of her knowledge resources to establish new connections. Many of these connections will have been causally and directly triggered by what occurs in the classroom. For instance, situations may happen in the classroom in which she may identify some students' actions as manifestations of critical thinking according to her previous ideas, but not according to the new position. She might also encounter situations in which, according to her previous ideas, the promotion of critical thinking must be set aside to leave room for other educational goals, but not according to the new position. In all these cases she will have to take decisions about what to do with these contradictions, and advance her knowledge. These reflections, that in this example are about analytic and normative questions and therefore are of a philosophical nature, will have been triggered by empirical observation. By means of this close contact with actual pedagogical situations, the teacher has put herself in a position in which she can better use more of her knowledge resources to make new connections and advance her knowledge. The complexity of pedagogical situations will have helped her do so.

This process of assessing, refining, modifying, etc., pedagogical philosophical theories by means of a reflective action in close contact with pedagogical practice can be seen as an example of the hermeneutic circle. It is a process of going from the abstract to the concrete, and from the concrete to the abstract. What

I have tried to show is that it can occur for all three types of research questions: causal, analytic, and normative; and that it can be helped if it is carried out together with classroom interventions and empirical observations.

5. THE USE OF PEDAGOGICAL THEORY TO IMPROVE PEDAGOGICAL PRACTICE

As already mentioned in section 2, if we give up the idea that causal questions can be properly addressed by means of predictive theories that can be applied in a large number of contexts, then we may have to conform with the kind of knowledge produced by approaches such as action research: knowledge that can be used by teachers and researchers in new pedagogical situations (different from those the research has taken place in), but only in a very cautious way and from an emotional state of uncertainty. In this position, pedagogical strategies and methodologies developed by them and others should not be taken as processes of predictable consequences, but as *referents for possible action*; that is, as sources of ideas about possible strategies there are and about possible purposes that they might serve, but always in an alert state of mind. To summarise, research can produce some knowledge about what might work; but this knowledge does not constitute theory, is to a great extent tacit, and is of an uncertain nature.

Now, what is the case for analytic and normative questions? It is possibly analytic questions which can be better addressed by means of the construction of theory. That is, possibly the theories that can purport more stability —without meaning to say that they are static or irrefutable— will be those that explore what pedagogical strategies, application contexts, and possible impacts, are about. Interestingly, the reason why these theories and their propositions are normally declared analytic is precisely their stability. If we turn to normative questions, my position is less optimistic. In respect of the question of what ought to be done in a concrete situation, general principles will always be of doubtful application. This is so because in any pedagogical situation a number of principles and values will always be relevant, and may enter in conflict with each other. Moral dilemmas are the rule and not the exception. Even if the general principles had already been established, decisions about what to do are not simple, and cannot follow an algorithm. Given this, and just like the case of causal questions, a critical normative assessment of every new situation encountered will be unavoidable. No normative theories will help one get rid of the responsibility of having to ethically choose a path for action every time. Ethical knowledge, just like causal knowledge, does not constitute theory, is to a great extent tacit, and is of an uncertain nature.

And now, a clarification note: I have written, perhaps too informally, about three types of questions and three corresponding types of pedagogical theories. Nevertheless, any pedagogical theory has within it propositions of the causal, analytic and normative kinds, which are not independent from each other. The expressions used here should then be taken as emphasising, or perhaps making more explicit, a certain kind of questions and propositions.

6. FINAL REMARKS

In this paper I have attempted to show the reach that reasonably pedagogical research can have in terms of construction of theories. In doing so, I have come to the conclusion that it can give theoretical answers to analytic questions, but not so much to causal or normative questions. These should always be answered in the particular local context in which they arise, in close connection with pedagogical practice. But nevertheless, pedagogical research cannot and should not leave aside any of them. I have also argued that empirical research, in the classrooms, doing intervention and observation, will be very useful for the whole of pedagogical research, including the philosophical side of it.

As a final implication of my discussion here, there is a word of caution. On the one hand, empirical pedagogical research carried out using experimental or quasi-experimental methods can still be very useful, but should not be seen as constructing theory. And on the other hand, the work of philosophers of education still needs to be brought down to the classrooms, with research, to be confronted not with observation but with other ideas that have as their source the multiplicity and complexity of classroom situations. This would help to address in a more rigorous way the ethical and conceptual issues of pedagogy.

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[1] Given the above discussion about Quine's rejection of the analytic-synthetic distinction, the expression "analytic questions" may be unfortunate. Nevertheless, I use it here for convenience, but without trying to establish any clearcut distinction with other questions. The borders are fuzzy. Analytic questions would be those that, in Rorty's

terminology, would tend to be answered more by looking them up in a dictionary rather than in an encyclopaedia (Rorty, 1991). Quine warns us against taking too seriously this distinction between dictionaries and encyclopaedias.

[2] If the analytic-synthetic distinction could be made, then it might still be possible to find the (limited) number of analytic sentences that define the meaning of any one sentence or word. To understand a sentence or a word would be to understand the set of sentences that define its meaning. In a holistic view of meaning that cannot be done.