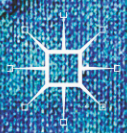
EDUCATION SYSTEMS AND LEARNERS

Knowledge and Knowing

David Scott



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palgrave
macmillan

David Scott
Institute of Education
University College London
London, United Kingdom

ISBN 978-1-137-59883-7 ISBN 978-1-137-59884-4 (eBook)
DOI 10.1057/978-1-137-59884-4

Library of Congress Control Number: 2016957761

Cover illustration: © Iulia Shevchenko / Alamy Stock Photo

Printed on acid-free paper

This Palgrave Macmillan imprint is published by Springer Nature
The registered company is Macmillan Publishers Ltd.
The registered company address is: The Campus, 4 Crinan Street, London, N1 9XW, United Kingdom

To: Lucas, Robin and Jake Scott

Acknowledgements

Versions of chapters two and four were originally published respectively in D. Wyse, N. Selwyn, E. Smith & L. Suter (Eds.). (2016). *The BERA/SAGE handbook in educational research*, SAGE, and Scott, D. (2017). *New perspectives on curriculum, learning and assessment*, Springer. In addition, pages 49–52 and 63–69 of Scott, D. (2000). *Realism and educational research*, Routledge, and pages 49–52 of Scott, D. Learning affordances of language and communication national curricula. *The Curriculum Journal*, 27, 1 are republished in this book in a significantly abridged form. Permissions have been received from the three publishers, with thanks.

Contents

List of Tables

CHAPTER 1

Introduction – Education Systems and Their Sub-systems

This book is about knowledge and the way it is and can be formed, that is, given shape and meaning. Sociohistorical cases of knowledge development that I will be examining in this book are: the Research Excellence Framework (REF) for UK higher education institutions and its proposed complementary framework for teaching and learning in these higher education institutions, the Teaching Excellence Framework (TEF); class sizes in English schools; teaching and learning practices in schools and higher education institutions; disciplinary knowledge; international comparative assessment systems such as the Programme for International Student Assessment (PISA); and peer reviewing in academic journals, for research grants and in promotion exercises in higher education institutions. Broadly, the focus will be on how we make educational judgements about educational matters, where the *we* is understood as not just the author and readers of this book but all those interested in the formation and development of the education system in the UK and its equivalences elsewhere.

Knowledge is not as a consequence treated unproblematically, as it is by many politicians who separate out facts from values in an unreflective way; or by journalists who refuse to accept that their carefully managed accounts of events and happenings in the world are always ideologically framed both in relation to their content and to how they are presented (A recent editorial in the *Guardian* Newspaper (15 August 2016) suggested that: 'Journalists do not deserve protection because they

D. Scott, *Education Systems and Learners*,
DOI 10.1057/978-1-137-59884-4_1

constitute a protected group, they need it because they can show the world as it really is and allow the unheard to find a voice'); or of course by many academics, not least in the field of education in which I work, whose brand of knowledge is both dangerously reductive and philosophically naïve. So, for example, some argue that the epistemological frame for any enquiry has to be reduced to concepts and the relations between them that can subsequently be measured; or that it is not possible to judge between different and rival theories about the same social object.

However, nothing that I have written here proscribes a social dimension to the development of knowledge, and in turn this has to be carefully plotted and recorded by those committed to some form of truthful enquiry. Research, which is the principal mechanism for knowledge development, is both descriptive (understood in a non-representationalist way) *and* developmental and prescriptive, that is, it both gives an account of reality and in the process changes the nature of that reality, though not in every instance. It redescribes and reformulates the object of the investigation, and in some cases this is quite clearly its intention. (For evidence of this look no further than the extraordinary influence of the Programme for International Student Assessment (PISA) on educational communities and systems round the world.) It is incumbent on us, however, to treat all knowledge development as work in progress, as the philosopher, Karl Popper (2002), was inclined to do.

The Research Excellence Framework

The Research Excellence Framework (REF) in 2014 is the most recent exercise in a series of national assessments (formerly known as Research Assessment Exercises (RAEs)) of the quality of research in British Universities going back to 1986. The Higher Education Funding Council (HEFCE) and their equivalent bodies in Wales (Higher Education Funding Council for Wales (HEFCW)), Scotland (Scottish Funding Council (SFC)) and Northern Ireland (Department for Education and Learning (DEL)) are responsible for organising the REF and accountable to the government for doing so. As a result, HEFCE and the other three bodies allocate research monies to the UK universities using a formula that is decided after the exercise has been completed (in some of these exercises 2* outputs were funded generously, whereas in others they only received a cursory reward). In 2014, universities were required to submit four outputs per member of staff (with some exceptions) (65% of the aggregated score), a series of

impact case studies (20% of the aggregated score) and an account of their institutional research environment (15% of the aggregated score) to 36 discipline-based subpanels.

In 2014, 155 institutions submitted the research outputs of 52,077 research staff members for scrutiny and assessment. In total, the 36 subpanels were required to read 191,232 individual research outputs and grade them on a scale which ranged through 4*, 3*, 2*, 1* to unclassified. Some panel members have admitted that they were advised to spend roughly 20 minutes on each piece, which might be a 250-page book, a 10,000-word article in a learned journal or a 15,000-word chapter in a book. Time constraints meant that only a superficial reading of the pieces could be made, and it is therefore possible to conclude from this that the longer and more substantial the piece of work, the less reliable was the judgement being made of it. One consequence of this was the mistaken assumption made by research directors in universities that researchers should submit refereed articles rather than books or book chapters, an output model that members of natural science bodies felt more comfortable with than those working in the humanities or in some parts of the social science community. The judgements made by panel members were meant to be criteria referenced, though subsequent accounts of the deliberations that were made after the initial assessments were completed have confirmed that adjustments were made to these initial assessments to bring the 36 subpanels into line with each other, thus providing contradictory evidence to the claims made by university research directors that their internal assessment exercises were in line with, or accurate predictions of, actual results.

The criteria that were supplied by HEFCE (and taken up by the other funding bodies) were as follows (Table 1.1):

Table 1.1 Overall quality profile: definitions of starred levels

Four Star (4*): Quality that is world-leading in terms of originality, significance and rigour.
Three Star (3*): Quality that is internationally excellent in terms of originality, significance and rigour, but which falls short of the highest standards of excellence.
Two Star (2*): Quality that is recognised internationally in terms of originality, significance and rigour.
One Star (1*): Quality that is recognised nationally in terms of originality, significance and rigour.
Unclassified (U): Quality that falls below the standard of nationally recognised work.

Source: REF 2014: Assessment Framework, Annex A, 43.

At this point in the book (see Chapter 3 for a more comprehensive account of the making of criterial judgements in education), it is enough to suggest some problems with this model. Firstly, excellence is being defined in terms of geographical scope and thus a neat and largely meaningless hierarchy is being set up which does not reflect the depth and meaning-in-use of the concept of excellence. (Self-evidently, meanings-in-use definitions of words or concepts change in relation to different conditions and consequently have histories.) Bizarrely, the guidance for the 2014 REF denies that this form of words is about geographical scope, though the explanation for the use of these words does not add much to how they can and should be interpreted. The second point is that the three subcategories used (i.e. originality, significance and rigour) are understood differently by different disciplines or even (and this is more important given the nature of the divisions used by HEFCE, i.e. the 36 subpanels) within those disciplines themselves. Evidence that allows a judgement to be made about a piece of work, it is suggested, is domain specific and this includes those criteria that an exercise such as the REF uses to make these judgements (whether they are actually used is a different issue, but this is certainly the intention). The third point is that in effect the reader or assessor is being asked to grade each piece of work on a five-point scale without paying much attention to any criteria relating to excellence, and consequently, their judgements are based on the idea that this piece of work is better than this piece, which is better than this other piece, and so on. The reasons then for making these judgements are implicit and therefore presumably, a variety of notions (some of which are directly in contradiction with each other) of what makes one piece better than another are being used.

As a result of this, league tables of excellence were produced, which allows us in theory (at least this is the intention) to know what the best institutions for research in the UK are. And yet we have lingering doubts about what we think it shows. Jonathan Wolff in the *Guardian* Newspaper (2015) suggests, for example, that there are at least thirty-five different ways of compiling the league tables. Should they show research power, research intensity or institutional capacity? What about the weightings given to the three elements: outputs, environments and impact? Different weightings favour some institutions at the expense of others. And then there are the educational judgements that are made. We are led to believe that if those making these judgements go through the correct procedures they can act as

disinterested judges and produce disinterested judgements. This is to deny that evidence and evidence-producing processes (including judgemental criteria) are domain-specific. Even if those making these judgements are trained so that they have the capacity to follow a set of algorithmic rules relating to calibration, assessment and moderation, there is likely to be an element of unreliability in the exercise of such a capacity. Given all this uncertainty, how much credence should we give to the positions of these institutions in the league tables?

Then there is the preparation for this exercise. In 2008, an HEFCE accountability review suggested that it cost the sector an estimated £47 million (this was clearly an underestimate, since it did not account for all the time spent by academics in preparing for the exercise) (HEFCE 2008). This has encouraged people to argue for a low-cost metrics system; however, despite the claim made that a number of powerful and predictive indicators could be used (i.e. citations, recursively weighted citations, co-citations, hub/authority indices, etc.) these cannot solve the problem alluded to above that none of them addresses the validity gap between the performance of the institutions and the way that performance is described; indeed their use is likely to widen that gap.

Preparation for the exercise has involved a number of different models of professional development. One model focuses on developing the capacity to make these educational judgements by imitating the processes adopted by the panel members in the actual REF, that is, calibration, assessment and moderation. This is likely to have three consequences. Although the person undergoing such training now has the capacity to make better judgements about the quality of outputs, this does not mean that they have developed their capacity to either produce better outputs or help other people produce them. Making good judgements about quality in research is not the same as developing those capacities that allow them to produce these outputs in the first place. The second consequence is that this process of judgement and peer review is likely to set colleague against colleague. The third consequence is that though this process can allow the identification of good or excellent outcomes, which then can act as exemplars for staff, most genuine processes of learning and capacity development involve in-depth and supported processes of reflection and work, of which this can only be a small part, and this results in holistic processes of professional development being marginalised.

This model of professional development can be contrasted with a process which is directly related to improving the capacities of

university staff and which is focused on those core activities that constitute their academic work. This, in the judgement of most people working in the field, comprises collegial, non-competitive, non-technicist, non-managerial and collaborative processes of learning. In this sense then the REF is not concerned with professional development processes, but with the making of inter- and intra-judgements about disciplines, institutions, departments and individuals, which has the effect of creating different cadres of academics, those who can contribute to the exercise and those who teach. It is a costly exercise in allocating research revenues. And, in addition, it is supported by a view of knowledge and capacity-development which can be broadly described as managerial and technicist. The same managerial and technicist knowledge-development model is in use in the way schools and colleges in the UK are inspected.

Inspection

English schools are inspected by the *Office for Standards in Education, Children's Services and Skills* (Ofsted). This typically happens once every five years, but more often for schools where problems have been highlighted. Schools are rated 'Outstanding', 'Good', 'Requires Improvement' or 'Inadequate'. In Wales, schools are inspected by *Estyn*, at least every six years. They are graded from 1 ('outstanding') to 5 ('poor'). In Scotland, *Her Majesty's Inspectorate for Education* monitors schools. They choose a random sample of 240 schools across the country to assess each year. Schools are not given a specific result or grade, but a letter explaining their strengths, weaknesses and targets. Northern Irish schools are inspected by the *Education and Training Inspectorate* (ETI) using a risk-based schedule, and this means that schools that are causing concern are inspected more frequently. Schools can be rated as 'Outstanding', 'Very Good', 'Good', 'Satisfactory', 'Inadequate' or 'Unsatisfactory'.

OFSTED inspections have become more detailed and frequent over the past decade, and the introduction of the 'Requires Improvement' grade has meant that many schools are moving towards a simplified curriculum with less variety than in previous years, and also taking fewer risks in delivery, particularly for deprived pupils or those in low-attaining groups. This has been fuelled by a reduction in real terms in school funding for many institutions.

It was 1984 when the national government set up the Office for Standards in Education (Ofsted) as a school inspection service. Ofsted's formation had not been planned; it was an opportunistic response to an amendment adopted during the passage of legislation that had been intended to produce significantly 'lighter touch' arrangements. The effect of Ofsted was to introduce a high-stakes inspection regime in which schools deemed not to meet its criteria were 'named and shamed', and suffered draconian interventions or were closed. Ofsted's views impinged on many aspects of the 'internal conduct, curriculum and discipline of the school'. By the end of the Conservative government in 1997, English school leaders were leading the business management of a school institution within a competitive market economy, and they were leading the delivery of a nationally prescribed curriculum, and the threat of an adverse judgement from Ofsted made it increasingly risky for head teachers to allow their professional judgement, philosophy, vision and values to stray too far from Ofsted's standard expectations.

What this means is that knowledge of schools and classroom teaching and learning practices was being developed (over a short space of time, two days is the usual length of time for an inspection) in relation to a small sample of observations (in many cases inspectors do not even stay for the full duration of the lesson), a set of metrics about performances of one kind or another, and the collection of some limited interview material. For example, 'in conducting a risk assessment, Ofsted analyses: pupils' academic achievement over time, taking account of both attainment and progress; pupils' attendance; the outcomes of any inspections, such as survey inspections, carried out by Ofsted since the last routine inspection; the views of parents, including those shown by Parent View, an online questionnaire for parents; qualifying complaints about the school referred to Ofsted by parents; and any other significant concerns that are brought to Ofsted's attention' (School Inspection Handbook 2015, Government UK). Furthermore, the judgements being made by Ofsted inspectors are criterial in form (see Table 1.2):.

Judgements made against criteria using a simple set of conceptual building blocks, such as in the example above, have their own problems as legitimate forms of knowledge (cf. Chapter 3). And this implies that knowledge of schools is being formed in particular and specific ways. The issue of how we understand the impact and potential impact of class size on the practice itself provides another example of how knowledge-development is always context-specific.

Table 1.2 Grade descriptors for overall effectiveness

Outstanding (1)
- The quality of teaching, learning and assessment is outstanding.
- All other key judgements are likely to be outstanding. In exceptional circumstances one of the key judgements may be good, as long as there is convincing evidence that the school is improving this area rapidly and securely towards outstanding.
- The school's thoughtful and wide-ranging promotion of pupils' spiritual, moral, social and cultural development and their physical well-being enables pupils to thrive.
- Safeguarding is effective.

Good (2)
- The quality of teaching, learning and assessment is at least good.
- All other key judgements are likely to be good or outstanding. In exceptional circumstances, one of the key judgement areas may require improvement, as long as there is convincing evidence that the school is improving it rapidly and securely towards good.
- Deliberate and effective action is taken to promote pupils' spiritual, moral, social and cultural development and their physical well-being.
- Safeguarding is effective.

Requires Improvement (3)
- Other than in exceptional circumstances, it is likely that, where the school is judged to require improvement in any of the key judgements, the school's overall effectiveness will require improvement.
- There are weaknesses in the overall promotion of pupils' spiritual, moral, social and cultural development.
- Safeguarding is effective.

Inadequate (4)
- The judgement on the overall effectiveness is likely to be inadequate where any one of the key judgements is inadequate and/or safeguarding is ineffective and/or there are serious weaknesses in the overall promotion of pupils' spiritual, moral, social and cultural development.

Source: Office of Standards in Education, Children's Services and Skills (OFSTED) 2015, Government UK

Class Sizes

Pupil–teacher ratios vary across the four nations of the UK. In 2014–2015, UK government pupil–teacher ratios were: for England 20.3 in primary schools and 15.0 in secondary schools, for Scotland 16.8 in primary schools and 12.2 in secondary schools, for Wales 25.3 in primary schools and 16.2 in secondary schools and for Northern Ireland the respective figures were 21.1 at the primary level and 15.2 in secondary schools. More than 100,000 infants were being taught in primary school

classes larger than the statutory maximum, as state schools in England, Northern Ireland and Wales took advantage of rules allowing them to avoid the statutory class size limit. (In Scotland there are different rules.) In Scotland the percentage of P1 to P3 pupils in class sizes of 18 or less increased from 12.7% in 2006 to 21.6% in 2010, before decreasing to 12.2% in 2015. In the rest of the UK, more than 1 in 20 infant school classes are above the statutory maximum, with most able to exceed the legal limit because of exemptions to the maximum of 30 children. The 2015 school census reveals that the number of primary school pupils has risen by 2% in England, with the extra 94,000 pupils equivalent to a rise of six pupils in each of the 16,800 state primary schools.

The number of reception, year one and year two pupils in lawfully large classes in England jumped from 76,000 in 2014 to 96,000 in 2015, a rise from nearly 5% of all pupils to nearly 6%. But while the number of lawful classes with more than 30 pupils rose from 2400 in 2014 to nearly 3100 in 2015, the average infant class size was unchanged at 27.4 pupils. That was helped in part by a drop in the number of classes that illegally breached the limit, suggesting that schools have become more adept at winning legal exemptions for larger classes. It is generally accepted that smaller class sizes have beneficial effects for children, especially at pre-primary and primary levels (cf. Blatchford et al. 2003), and thus from this it is possible to determine what an optimum learning pupil–teacher ratio might be, though of course this can be disputed.

And yet the conclusions that Blatchford et al. (2003) and others come to are based on an aggregated judgement about the types of activities that occur in classrooms. All these different activities are subsumed into one general concept, which can then be compared to a generalised notion of outputs or results from participation in a range of activities in classrooms. All the fine-grained detail of these activities is lost in the Gadarene rush towards a simplified set of metrics to allow comparisons to be made. In reality, the idea of an optimum class size depends fundamentally on the activity being undertaken in the classroom. Some examples of learning tasks or activities are: working with other people, individual study, sharing, debating, playing games, working with amplifying technologies, summarising, writing, talking, listening, reflecting, meta-reflecting, demonstrating, giving feedback, responding to feedback, engaging in a conversation, building a structure, remembering (recalling), categorising a concept, evaluating a schema, enumerating, grasping the meaning of informational material, explaining, generalising, applying previously learnt information

in new situations to solve problems and many more. As a result of adopting a methodology that simplifies a complex issue and acts to reduce the depth of the conceptual framing of the research, distortions occur. This unreliable knowledge about optimum class sizes then becomes an established fact, and is readily translated into policy prescriptions (though for other and mainly economic reasons these policy prescriptions are sometimes ignored or marginalised). Another example of the way knowledge of learning within schools is developed is the Programme for International Student Assessment (PISA).

Programme for International Student Assessment (PISA)

Andreas Schleicher (2013), from the OECD and with regard to PISA, uses a methodology that involves the ranking of a variety of countries in relation to their performance on a series of tests, and then identifying those systemic elements that are present in high-performing countries and not present in low-performing countries. From this he concludes that it is possible to identify the optimum conditions for a system's effectiveness. He is therefore able to suggest that: children from similar social backgrounds can show very different performance levels, depending on the school they go to or the country they live in; there is no relationship between the share of students with an immigrant background in a country and the overall performance of students in that country; there is no relation between class size and learning outcomes within or across countries (the conceptual framework he works to here makes the unjustified assumption that all the different types of learning activities are optimally performed with the same class size); there is no incompatibility between the quality of learning and equity since the highest performing education systems combine both; all students are capable of achieving high standards; and more generally, top-performing education systems tend to be more rigorous, with fewer curriculum items and with these being taught in greater depth.

The approach has a number of flaws in its conceptualisation and application. The first of these is that an assumption is made that a person has a knowledge, skill or dispositional set, which is configured in a particular way (i.e. it has a grammar), and it is this knowledge, skill or dispositional set, or at least elements of it, which is *directly* assessed when that person is tested. In contrast, any testing that is carried out with the purpose of determining whether these attributes are held, not held or even partially

held by an individual, always involves an *indirect* process of examination, where the additional element is a conjecture, retroduction, inference or best guess.

A second false belief is that this grammar is organised into elements, there are relations between those elements and each element can be scaled, which can then be directly investigated. This can be contrasted with a position which suggests that, in the application of the knowledge, skill or dispositional set, whether for the purposes of testing or for use in everyday life, a range of other knowledge elements, skills and dispositions are referred to. There is, therefore, a set of factors that in combination may result in construct-irrelevance variance (Messick 1989), that is, variance amongst a population of testees as a result of factors that do not have anything to do with the construct being tested. Even if knowledge of or competence in the construct is equally distributed in this population, some testees will do better than others (that is, on their actual scores) and this is not because they have greater knowledge or are more competent in the construct being tested. This might involve either construct-under-representation or construct-over-representation (Wiliam 2011), and within the confines of the test itself it is impossible to determine which of these has occurred.

A third false belief is that in the use of a knowledge-set, or in the performance of a skill or in the application of a disposition no internal transformation takes place. There is also an external transformative process at work, and thus a fourth false belief is that testing a person's knowledge, skills and aptitudes has no washback effects on either the original knowledge construct, or the internally transformed knowledge-set ready for testing. In contrast, the well-documented process of washback works in just this way (cf. Stobart 2008), so that instead of the assessment acting merely as a descriptive device, it also acts in a variety of ways to transform the construct it is seeking to measure.

A fifth false belief is that the process of testing works in a unidirectional linear fashion. For example, a person knows something, that person is subjected to a test which is designed to test for traces of that learning in a population of knowers with similar characteristics, and a score in relation to that construct is recorded indicating that the person either knows it, doesn't know it or knows it to some extent. No consideration is given to bidirectionality, incorporating forward and backward flows, so that the taking of the test and the recording of the mark impact on and influence the original knowledge construct. This changes the structure (both

quantitatively and qualitatively) of the construct, and its affordances, making the original determination of it and them unreliable.

A sixth false belief is that different types of knowledge, including those at different levels of abstraction, can be tested using the same algorithmic process; and a seventh false belief is that the performance on the test represents to a greater or lesser extent (given that the person may have been distracted or constrained in some way or another) what the testee can do or show, rather than there being a qualitative difference between the performance on the test and the construct, skill or disposition of the testee. An individual may have to reframe their knowledge set to fit the test, and therefore the assessment of their mastery of the construct is not a determination of their capacity in relation to the original construct, but a determination of whether they have successfully understood how to rework their capacity to fit the demands of the testing technology.

An eighth false belief is that a test can be constructed which is culture-free or free of those issues that disadvantage some types of learners at the expense of others. The extent of cultural bias in the PISA tests is unrealised and certainly under-reported. In addition, a particular technical problem with PISA relates to its sampling procedures. If different types of sampling in the different countries are used, then some of these countries will be disadvantaged compared with others. Sampling issues are present in any test, whether they are referring to selecting children from a number of grade levels and not specifying proportions from each grade, to selecting parts of countries for reporting purposes and ignoring the rest, as in the latest PISA tests (OECD 2014), where only the richest and better-educated cohort of learners was entered (from Shanghai), and these were allowed to represent China as a whole, to the selective (by the individual country) non-participation of some types of schools in some countries and not others. Cultural differences take a number of different forms, such as, ascribing different values, and different strengths of values to cultural items, or determining the nature, quality, probative force, relevance-value and extent of evidence, or focusing on practices which may be more familiar to people in some countries and less so in others. However, more importantly, cultural differences with regard to the selection of test items refer to the expression of the problem to be solved. If, for example, different national idioms, different national ways of thinking embedded in language forms and different normic values woven into the fabric of national discourses are ignored, then the presentation of the actual test items as well as the range of possible answers that can

be given may favour students from one nation at the expense of students from another.

There are a number of ways of identifying good practice. The first is identifying outputs from the system (these can be test scores, dispositional elements, acquired skills, ethical and moral qualities); that is, outputs that have resulted from the individual's participation in the system itself. The argument is then made that one system is better than another because it has better outputs, and, further to this, that the characteristics of these national systems should be bottled up and transferred wholesale to those countries or jurisdictions which are considered not to be successful or effective in these terms.

If the information collected about individuals in a system of education at the end of their time spent in the system is used to make judgements about the quality of provision within them, then there are two possibilities: raw scores – student scores are aggregated to allow comparative judgements to be made about these schools, districts, states or nation states; and value-added scores – value-added data analysis models the input of particular institutions or systems, such as schools, in relation to the development of individuals that belong to those institutions or systems. As a result of these processes, a value can be attached to the input of the educational institution or nation as it has impacted on the progress of the individual(s) who attended it, or been a part of it. The accuracy of such modelling depends on the belief that the educational researcher has in the reliability and validity of the data that is used, in the decisions they make about which variables to use in the modelling process, and also in the ability of the researcher to develop appropriate indicators or quasi-properties to reflect the actual properties of individuals, educational institutions and nations, and their covariance in real-life settings. This in theory allows one to make comparative judgements between students, schools, districts, states or nation states.

A further way of determining quality in a system is by identifying a norm so as to allow a comparison to be made. For example, a system of education, whether international, national or local can be compared with, and marked against, a model of best practice, where this model is constructed in terms of the inclusion of all the possible elements that could and should form an education system (i.e. structures, institutions, curricula, pedagogic arrangements and evaluative procedures), their arrangement in the most logical way (e.g. that curricular intentions should precede pedagogical approaches and indeed derive

their credibility from these curricular intentions) and the identification and enactment of logically formed relational arrangements between these elements (i.e. that evaluative washback mechanisms should not be allowed to distort the curriculum as it was originally conceived). The norm that is used comparatively is constructed through sound logical and philosophical foundational principles. And in addition the meaning of concepts is treated as an empirical matter, as to how they are used in communities. A reliance on outputs in the comparative process is unsafe and more importantly likely to be invalid. The methodological approach then becomes a searching for mechanisms, relations and structures that are potentially causally efficacious, can be contextualised (historically, culturally and socioeconomical), but can also contribute to human wellbeing. And in turn this would involve the avoidance of reductionist and decontextualised accounts (such as in Mourshed et al. 2010) of how education systems round the world operate.

A final example of how knowledge in and of a practice is developed concerns a training course to improve writing techniques for participants where their purpose is to inform, educate and influence their target audience.

Developing the Practice

This is an advertisement for a training programme.

The Average Reader will Give You 5–10 seconds of Their Attention
In order to convey your message in that time, it is essential that your writing is clear, concise, persuasive and engaging. Attend our practical Effective Promotional Writing, one-day course led by a writing expert. Join her and an intimate group of peers from the public sector to gain knowledge on how to inform, educate, persuade and influence your target audience.

Hands on Interactive Sessions include:

- Establishing what your audience wants to read and educate them by creating relevant insights to become a recognised thought leader.

- Learn how to persuade your audience (service user or stakeholder) by acquiring effective skills to improve the way you communicate.
- Exploring current and relevant insights and how to apply best practice.
- Understanding how to write to any audience, online and offline and build a relationship with service users.

It should be noted that: at the beginning is a disputed fact about an average reader, throughout the teacher is given the imprimatur of an expert, a claim is made that communication of this type is vital to being successful and as a consequence knowledge of this type needs to be developed by everyone. The idea and practice of communication is being developed in a particular way and so that it has a particular form, that is, it now operates in the expressive mode (cf. Taylor 1985). This book is above all about knowledge of education systems and learners, and it is therefore important for us to understand what these are.

Education Systems

Education discourses and consequently (though not inevitably) practices round the world have been dominated over the past twenty years by neo-liberal ideologies, management and control systemic approaches, and empiricist epistemic construals. This book moves from a discussion about education systems and their functions and purposes to appropriate ways of describing and making judgements about these systems and their parts. This then allows redescriptions and new judgements to be made about primary, secondary and tertiary education practices and the possibilities within them for developing productive learning environments. This is an exercise in practical rationality, and consequently it has implications for the ordering and subsequent reordering of education systems and learning practices.

In the first place we need to determine what an education system is and the possibilities inherent within the concept. An education system can be categorised as a set of institutions and relations between those institutions, or even as a coordinating body for a number of subsystems, which have a particular relation to the state and a particular position within it. However, this doesn't mean that the state (and, in particular, its boundaries and relations with other parts) and the education system (and its boundaries

and relations with other systems) remain the same over time. The shrinking or at least attempted shrinking of the state (from welfarism to neoliberality) involves a redefining of what the state is, what an education system is and what the relations between the two are. These relations (internal and external) may change for a number of possible reasons, for example, the development of new ideas, natural progression, contradictions caused by structural tensions and so forth.

It is fairly easy to understand a system as a coordinating body that directs a number of subunits, so that if the central authority demands action of a particular type, then these subsidiary bodies will implement its directives. The cohering element in the notion of a system being used here is that one body commands a series of other bodies. However, it is rare for any actual system to function in this way. Within the system the extent and type of power that the coordinating body can exercise over the other elements may be differently exercised. For example, if we consider the English education system, one of its characteristics is that there is a small (about 7% of students) but influential private sector (larger numbers of its alumni are to found higher up the system in high status universities, for example, and larger numbers of its alumni are to be found in powerful professions in society). As a result, a system's coordinating body may have less or more direct relations with its parts. Again, it may be that some of these relations become so attenuated that it becomes harder to include them in the system. Private language schools are an example.

The way I am using this concept should not be confused with the adoption of a Parsonian structural-functionalist framework (cf. Parsons 1964) that sees society as a complex system whose parts work together to promote solidarity and stability. I am using it in the book to refer to complex sets of arrangements that societies make to set in place structures for providing education for children in their society, and here the system is not being used to indicate an end point such as stability, stasis, etc. but those institutional arrangements made and continually remade by societies. This does not mean that a functionalist perspective is being advocated; however, what it does suggest is that arrangements of people and resources and allocations of people to functions and roles and the power arrangements that are the backdrop to decision-making are what constitutes the system. Again, this does not imply that any particular pattern of allocation/arrangement etc. is either the best or even the most popular. What it implies is that there is a variety of systems and that they work in different ways. Furthermore, those allocations and arrangements change over time.

Another way of thinking about it is as a unified body; coherence lies in its unity. The system can be governed not through networks of power (usually one-way) but through its purpose or intention. Thus it might consist of a large number of separate entities, which have a common purpose. If we look at the history of education systems (and perhaps especially England in the twentieth and twenty-first centuries) the system no longer appears to be coherent or unified, but it still continues to function, or at least seems to be doing so. I am suggesting that the system's conceptual roots are neither political (i.e. power networks) nor administrative, but lie with data technology and surveillance. What unites the disparate parts of the system is the flow of performance data and their fine-grained analyses from all parts of the system. All the elements of the system, curriculum, policy flows, institutions, bureaucracies, systems of inspection, local authority systems of governance, central government controls and the like are now considered to be subservient to the element of data flows. The system coheres and is reimagined in use through data and is no longer held together by mythologising processes that coalesce round notions of unity, progression and relations.

We may even be able to think about the system as a linguistic device. All those entities that we have come to think of as parts of a system have some common property, that is, they all relate to the nurturing of children or they all have an educational function (even if this is hard to define). This of course would bring private language schools back into the fold as a good case could be made that they are educational institutions. However, language schools are not coordinated by a central body, and they do not have direct and commanding relations with that central body.

So, if we believe that systems only change through the actions of human beings, and thus we are foregrounding a notion of intentionality, then how they learn, how they express that learning and how they set about changing the system as a result of what they have learnt are key moments in change processes. On the other hand, if we believe that systems, such as educational systems and learning environments, should not prioritise intentionality over and above other forces for stasis and change within a system, then structuralist and materialist views of system change prevail.

Technical-rationality thinking makes the assumption that change can be predicted or at least can be read off from the presumed effects of causal mechanisms. These causal mechanisms then presuppose that if a set of common elements are present and combine together appropriately, this will result in a standardised result. The understanding is that any set of causal

mechanisms operates in a linear and predictable pattern and effects can thus be read off from causes that persist across time. As a result educational systems are relatively stable, though within such systems there are mechanisms for improvement, such as meeting the needs of accountability systems, and incentivisation processes. Complex systems thinking is premised on the idea that systems do not change in this simple way; but are non-linear, unpredictable and in effect at a meta-level cannot be described. This is chaos theory, not in the sense that one should despair of ever being able to describe, predict and propose change to control the system, but that the system is in truth complex. To reduce it to a set of demands for control by policy-makers is to do it a disservice. We have a responsibility to try to understand it as it is. The logic of targets and standards (a typical reform mechanism) therefore only makes sense if one adopts an uncomplicated and non-complex view of the way a system operates. The need to build into our theory the non-predictability of reading off what is going to happen within a system is as a result essential.

Objects and relations between objects change their form over time, as do systems. An example of this change process at the epistemological level is the invention (insofar as the set of concepts and relations between them is new) of the notion of probability (cf. Hacking 1990) in the nineteenth century, and this changed the way social objects could be conceived and ultimately arranged. Change then can occur in four ways: contingent ontological, planned ontological, epistemically driven ontological, and in the transitive realm of knowledge, epistemological (cf. Scott 2011). With regard to the example above, the invention of probability, two phases of change can be identified. The first is where knowledge is created and thus operates at the epistemological level, the new arrangement of knowledge. The second is where this knowledge has real effects at the ontological level, so that new arrangements, new formations, new assemblages come into being. The dilemma is that the social world, in contrast to the physical world, is always in a state of transition and flux, so that it is hard to argue that there are invariant laws by which the world works, at all times and in all places, except in a basic logical and rational sense.

The English Education System

It is possible to trace some of the developments in and changes to the forms of educational governance in England over the last twenty-five years, concentrating on the largest part of the UK, both demographically and geographically. This is not a complete history of educational reform

over this period, since the volume of centrally directed experiments and interventions has been such that it is difficult to document them all. However, this period can be characterised as a continuous process of change, flux and perturbation, in which successive governments experimented with, intervened in, and changed, the governance of the system. Changing the types of rewards and sanctions for teachers, the criteria for judging quality within the system, the compliance capacity of the workforce and how they judged themselves and each other contributed to changing the learning experiences of children. Ball (2008) argues that the processes of public sector transformation in the English education system had five key elements: de-concentration, disarticulation and diversification, flexibilisation, destatisation and centralisation. The first of these, he suggests, was the 'devolving of budgets and teacher employment to the school level' (2008: 24). The second of these processes, that of disarticulation and diversification, refers to processes such as the weakening of the local government structure, the introduction of new types of schools with different governance and financing arrangements (e.g. city technology colleges, grant maintained schools, academies, and free schools), and diversification, so that, as Ball (2008) suggests, there is 'a self-conscious attempt to promote new policy narratives, entrepreneurship and competitiveness in particular. Through these new narratives new values and modes of action are installed and legitimated and new forms of moral authority are established and others are diminished or derided'.

The third of Ball's processes of public sector transformation is flexibilisation, where a plethora of approaches to teachers' conditions of service were legitimated, a new tier of teaching assistants was introduced into schools, and new and competing (with existing and well-established forms) systems for training teachers were introduced. The fourth process is destatisation and destabilisation. Ball (2008: 26) explains this as the 'introduction of new providers by contracting-out of services, programmes and policy work, drastically blurring the already fuzzy divide between the public and private sectors'. The last of Ball's processes of public sector transformation is, perhaps paradoxically, that of centralisation. This was manifested in the retention of a national curriculum, albeit that large parts of the sector were allowed to opt out, the central funding and governance of certain types of schools and the creation with substantial powers of an inspection service to act as an enforcer of government policy, with this rapidly becoming known as a standards and quality agenda.

From this discussion of various examples of educational knowledge development, and then a brief discussion of what an education system is (issues that are integral to the notion of a learner are discussed in Chapter 4), we now move to examining how these education systems and their subsystems can in the first instance be described or at least whether or not and in what form an account can be given of them.

CHAPTER 2

Accounts of Education Systems, Teachers and Learners

The focus in this chapter is on how accounts of education systems, teachers and learners and their activities can be constructed, and how they can be redescribed and subsequently reconfigured. However, I am not making a claim here that reality can be collapsed into text, a philosophical position that has proved popular with post-modernists, linguistic post-structuralists and even materialist theorists of learning. Consequently, I will work with and from a notion of ontological realism; that is, there is a world out there which is separate from any person's knowledge of it, and it would function in all significant respects in the same way whether it was known or not, or whether it was being known or not. Thus even in the knowledge creation act, a clear separation is established between being in the world and knowledge of that being in the world, though we should be aware of the danger of making an over-sharp distinction between them (cf. Brandom 2004).

Proponents of naive realist approaches to educational research claim that knowledge of the object reflects, corresponds to or represents the ontological state, which is characterised as real because it exists separately from the way it is described, theorised about or made into knowledge (cf. Scott 2011, for a critical account of this approach). Critical realists, on the other hand, argue for a notion of ontological realism and in addition, an epistemological relativism, whilst at the same time not giving up on the idea of being able to make true but fallible statements about that reality. Roy Bhaskar (1998: xi, *his*

D. Scott, *Education Systems and Learners*,
DOI 10.1057/978-1-137-59884-4_2

emphases), a committed critical realist, gave voice to this claim in the following way:

> However, if the relation between the theories is one of conflict rather than merely difference, this presupposes that they are alternative accounts of the *same* world, and if one theory can explain more significant phenomena in terms of its descriptions than the other can in *its*, then there is a rational criterion for theory choice, and *a fortiori* a positive sense to the idea of scientific development over time. In this sort of way critical realism claims to be able to combine and reconcile *ontological realism, epistemological relativism* and *judgemental rationality.*

The most important of these is ontological realism. Even then, theories about the world are produced socially (this is the essence of epistemological relativism and the core of the argument being made in this book), but this does not and cannot rule out the possibility of judging between rival theories. It is therefore possible to argue that a meta-theory should have the following elements: ontological realism, epistemological relativism and judgemental rationality and that this meta-theory is not internally incoherent. These are foundational and universal claims. (I address these issues in more detail at the end of this book.)

The object that is being investigated, for example, an education system, a teacher or a learner, exerts an influence on the way it can be known (to think otherwise would be to break any form of link between mind and world); so that the methods being adopted, which have as their end-point knowledge of the object, are tailor-made for the object and this also implies that different objects should be investigated in different ways. A singularity of method is rejected and a plurality of methods is accepted. However, there are a number of problems with this approach. In order to identify what the appropriate methods are for investigating a particular object, the investigator already has to have knowledge of the object because only then can she choose the right methods for investigating it, which in turn renders the investigation pointless. There is a vicious regress here, which can only be remedied by the investigator using every possible method at their disposal. But even then the investigator has no way of knowing which version ($(O + M)_1$; $(O + M)_2$; $(O + M)_3$; and so on, when O refers to an object and M to a method) is the correct one. And, in addition, if a different way can be found for establishing that an object exists, such as through a series of unbreakable and therefore unequivocal

argumentative steps (the inferential method, for example), then it may be possible to confidently state that there is a reality out there separate from any person's knowledge of it.

A more appropriate way of proceeding is to understand the object as that which is known. Again, the conceptualisation of the process as object (O) + theory of the object (T) + method (M), which has in part been determined by an idea of the constituency of the object, is false. To say that an object exists is also to say that it has the potentiality to be known under some description or another. This does not imply an anti-realist position because the object's formation is not a solitary or solipsistic act, but is embedded in history and persists long after the act of knowing has been concluded. However, what this does imply is that knowledge of the object is relative to the historically specific conditions of its production. Furthermore, social objects and social mechanisms operate in open systems and therefore have particular properties, including generative causal powers. All of this is directly relevant to the descriptions we can make of education systems, people and learners.

Social and Educational Research

There have recently been calls to adopt approaches to the study of the social world (in relation to educational research, see Moss (2015), and in relation to making judgements about educational research, see the Research Excellence Framework (2015)) which deny the need to address ontological and epistemological concerns – approaches which can be described as operating outside of and in opposition to philosophical framings about the nature of reality and how we can know it. Though the purpose of these approaches is to support and strengthen a particular ideological view of human behaviour, for example, that members of the educational research community working together can make reliable and valid judgements about its activities, in reality these approaches favour those forms of research and judgement that can be described as empiricist and technicist.

Ontological and epistemological beliefs underpin the development and use of strategies and methods by empirical researchers. In contrast, proponents of a pragmatic position, using this term in its ordinary language sense, argue that it is possible to separate out these beliefs from the adoption of methods and strategies. These methods and strategies then are determined by how useful they are, and even by whether they are fit for purpose.

If this is rejected, an alternative is required. The researcher is born into a world that is already resourced, and with regard to methodology, this consists of a series of opposing arguments for the use of certain types of approaches. A choice therefore has to be made, though of course the researcher may not be aware of all the possible options and indeed some options that have not yet been invented. As a result, they may only be able to make a limited choice, but a choice nonetheless. They use particular approaches, and draw conclusions from the data they collect, and in doing so implicitly claim that their version of reality is better than other possible versions. Making methodological choices per se means that the researcher is formulating a belief that the choice they make is a better choice than the one they did not make because it will lead to a more truthful representation of what they are trying to portray.

However, researchers may accept that they are working to a truth criterion, but then define their search for the truth in a way that is different from other researchers. Bridges (1999) suggests that there are five conceptions of truth (there may be more, but they have not yet been invented, or codified): truth as correspondence, truth as coherence, truth as what works, truth as consensus and truth as warranted belief. These different theories of truth are so framed that they imply a relationship between a statement and a referent, so a researcher can say, if they adopt a correspondence theory of truth, that a statement is true if it corresponds to a state of affairs in the world: 'P is true if and only if p – i.e. it corresponds with an actual state of affairs or condition' (Bridges 1999: 601). Again, a researcher can say, if they adopt a conception of truth as coherence, that a proposition is true if it is consistent with a further set of propositions: '$P_1 \ldots P_n$ are true if and only if they represent a coherent, consistent and comprehensive set of propositions' (Bridges 1999: 603).

It is also possible to suggest that the referent in each particular case is of a different order, so, for example, a correspondence version of truth refers to an ontological state, whereas truth as warranted belief refers to whether it satisfies an epistemological test to determine its value. Furthermore, some of these conceptions of truth allow for the possibility of a social element whereas others do not. So, truth as correspondence would suggest that a belief in epistemic relativism is unsound, whereas truth as consensus is predicated on a belief that a universal a-historical warrant cannot legitimately be developed. These different theories are so framed that belief in one precludes belief in another. Even if it is denied that a theory of truth is a logical requirement of proceeding in the world as a

researcher, or at least that there is no universal warrant for truth, this does not contradict the assertion that is being argued for here: that in making a choice between alternatives that already have been formulated, the researcher is necessarily making a claim that the choice they make is better than one they did not make.

This position identifies a relation between a philosophical issue and empirical research; in the example above the issue is that of truth, but a similar exercise could have been conducted in relation to other philosophical concepts such as objectivity or ontology. It further suggests that any beliefs the researcher may have about the nature of the social world and even more importantly any beliefs they may have about how they can know it are so compelling that certain types of methods and strategies used by them are appropriate and others inappropriate. Thus, an experimental approach to the study of education can legitimately be adopted if the experimenter accepts a number of ontological and epistemological positions, which are justified and rationalised separately from their instantiation in the collection and analysis of data. These might consist of a belief that the social world is not mediated by consciousness so that it is possible to argue that controlled conditions replicate uncontrolled conditions in real-life situations. Or, they might consist of a belief that a controlled setting can eliminate the values, preconceptions and underpinning epistemic frames of the researcher.

The argument that I have made so far is that pragmatic approaches, again using this term in its ordinary language sense, to both educational research and making judgements about it are deficient because they do not take account of ontological and epistemological concerns. Four ontological and epistemological strategies have been identified: induction, deduction, retroduction/retrodiction and abduction. At appropriate points in this chapter explanations of these strategies are provided, arguments in favour and against each of them are made and a preferred approach is identified. In line with the approach set out above ontological and epistemological issues are foregrounded.

Epistemology

Epistemology has traditionally been concerned with what distinguishes different knowledge claims, specifically between legitimate knowledge *and* opinion and belief. When in the nineteenth century the social sciences were beginning to be developed, they did so under the shadow of the

physical sciences. Therefore as immature sciences they sought to mirror the procedures and approaches adopted by the natural sciences (or at least by an etiolated version of scientific methodology which rarely equated with how scientists actually behaved).

Such positivist/empiricist approaches can be characterised in the following way. There is a real world out there and a correct way of describing it. This allows us to think that theorising is simply a matter of following the right methods or procedures. What follows from this is that the knowledge produced from this algorithmic process is always considered to be superior to common sense understandings of the world, because it is systematic and rigorous. Science works by accumulating knowledge, that is, it builds incrementally on previous knowledge. However, it is hard to argue that the social sciences have developed a body of knowledge, which presents unequivocal truths about its subject matter. Furthermore, twentieth- and twenty-first-century philosophy has generally accepted that any observations we make about the world, including those which are integral to the research process and can be construed as 'facts', are always conditioned by prior understandings we have of the world. There are no theory-free facts (Quine (1951) – in this article he suggests that the distinction between synthetic and analytical truths is unsustainable), and this puts at risk the distinction made by positivists/empiricists between observation and theory.

The positivist/empiricist method equates legitimacy with an idealised view of scientific activity and is characterised as a set of general methodological rules. A clear distinction is made between knowers *and* people and objects in the world. Facts can be identified, free of the values and personal concerns of the observer. Thus, any assertions or statements made about this world are about observable measurable phenomena, and this implies that two theorists if they apply the correct method would come to the same conclusions. It is the correct application of the method that guarantees certainty and trust in the theories we produce. Although all these assumptions are significant in their own right, they give the impression that positivism and empiricism are simply highly idealised abstruse doctrines; however, such theories have important social consequences and speak as authorities in the world about social and physical matters.

This conception of theory-development is and has been disputed by interpretivists, critical theorists and postmodernists, who in their turn, have been criticised for not providing a way of developing their theories which fulfils the Enlightenment desire for universal knowledge that is shorn of

superstition, personal preference and special pleading. Interpretivists, critical theorists and postmodernists thus sought to provide an alternative to a view of theory-building which prioritised reduction to a set of variables, a separation between the knower and what they sought to know, a means for predicting and controlling the future and a set of perfectly integrated descriptions of the world with a view of the social actor as mechanistic and determined. Interpretivist approaches provide one possible alternative. They focus on the meanings that social actors construct about their lives and in relation to the world, and argue that human beings negotiate these meanings in their social practices. Human action then cannot be separated from meaning making, with our experiences organised through preformulated interpretive frames. We belong to traditions of thought, and the task of the theorist is to make sense of these interpretations, even though such interpretive activity is mediated by the theorist's own frame of reference. This is a practical matter for each individual, though of course they cannot make meanings on their own, since all meaning-making is located within cultural, linguistic and historical communities of practice. The field of study is therefore the meaningful action of social actors and the social construction of reality; and one of the consequences is that the social sciences are now thought of as distinct from the natural sciences.

Being in the world is therefore understood as a practice, primed for investigation, but resistant to algorithmic and mechanistic methods for describing it used in the natural sciences. Critical theorists and critical realists take the interpretivist critique of positivism/empiricism one stage further. They look for a solution either in communicative competence (cf. Habermas (1981) or in the stratified nature of reality, cf. Bhaskar (2010)). The focus here is on the former and in particular Habermas' argument that any claim to theoretical credibility must be able to make the following assertions: this work is intelligible and hence meaningful in the light of the structuring principles of its discourse community; what is being asserted propositionally is true; what is being explained can be justified; and the person who is making these claims is sincere about what they are asserting. These four conditions if they are fulfilled allow a theorist to say something meaningful about knowing. The aim above all for a critical theorist is to develop knowledge that is potentially transformative or emancipatory. Its purpose is therefore the direct replacement of one set of values (unjust, muddled and discriminatory) with another (rational, just and emancipatory).

The fourth framework is a postmodernist one and again it should be noted that it was developed in reaction to positivist and empiricist

epistemic frameworks and in particular to all those epistemologies which posit a real world separate from the activities of the knower. As Lather (2007) suggests, any work or theory should give a voice to those social actors that have been traditionally marginalised (an explicit emancipatory purpose), and in the process undermine and subvert the agendas held by those with more power in the world than others; surface for public discussion those textual devices (both spoken and written) used in conventional theory-development, and suggest ways of countering these powerful knowledge constructions; question how theorists construct their texts and organise their sets of meaning in the world; and re-introduce the theorist into the research text by locating them within those frameworks which act to construct them as theorists and as human beings.

All these frameworks cannot be equally correct and this explains why theorists produce conflicting and contradictory results about important educational matters. However, the situation is more serious than this, since even though two theorists may subscribe to the same epistemology, they may still disagree with one another, even if they are focusing on the same set of social problems. The dispute might be about correct and incorrect uses of the method, different views and interpretations of the epistemological tradition to which they claim to belong, or the use of different interpretive frameworks. This has precipitated what has been called the crisis of representation, and it is hard to imagine how we can escape from it, since the alternative is to revert back to a pre-enlightenment time of knowledge being privileged because of who could command the most attention.

However, theorising is too important to simply ignore the problems of representation alluded to above. Indeed, we need to understand how our theories are constructed and how power is ever present in their construction. This is because theory-development is conducted with and through other people (some of them more powerful than others), and the theorist is always in the business of collecting, collating and synthesising accounts by social actors of their life worlds and activities in the world.

In order to provide a full account of educational research, I therefore need to surface those epistemological and ontological frameworks, which underpin processes, strategies and methods used by education researchers. In addition, I need to make explicit the way in which educational researchers move, sometimes in a seemingly effortless manner, from preconception, through data description to post-conception or summary of findings. Four approaches have been developed: induction, deduction, retroduction and abduction.

Induction

A commonly used approach in educational research is that of grounded theory, developed by Glaser and Strauss (1967) in their seminal work, *The Discovery of Grounded Theory*, and, as we will see, modified by them and later collaborators in response to persistent criticisms. It is possible to plot the way in which grounded theory developed from its early emphasis on induction through to an acceptance that researchers bring with them to the data setting a variety of theoretical assumptions about the world, which they test against new data which is collected. However, it should not be assumed that grounded theorists have abandoned altogether their inductive orientation, and this approach is essentially one of discovery; theory develops from the data and not by the testing of deductively formulated hypotheses.

Grounded theorists argue that their method is both analytical and a specific way of understanding the social world. Glaser and Strauss originally recommended that the researcher should avoid presuppositions, other hypotheses and previous research studies, so that the data collected by the research team would be uncontaminated by theories developed by other people. They did, however, accept that at some stage the emergent theory should be tested against theory developed by other researchers, thus incorporating it into the cumulative development of theory about society. Strauss, but perhaps not Glaser, has since accepted that '.... trained researchers are theoretically sensitised' (Corbin and Strauss 2007: 227). The original tabula rasa approach was heavily criticised (cf. Bulmer 1979) on the grounds that researchers bring with them to the setting a mass of partially formed theories and ways of understanding the social world, which inevitably impact upon initial decisions about data collection, the boundaries of the field being studied and the methods used. However, though Strauss modified his position, his validity criterion was still whether the analysis is grounded in the data, i.e. monosemically formed from it. This implies three tests: comprehensiveness (the theory takes account of all the data); logical coherence (the one correct way of organising and representing the data is identified and applied); and phenomenological bracketing (the analyst is able to put to one side her preconceptions and prejudices during the analysis).

This leads onto the second point about the processes described above: the inductive nature of their project. Clearly, grounded theorists accept that theory always emerges from the data, though early theory is

subsequently tested against later data; and, indeed, the emergent nature of theory-development means that both inductive and deductive processes are put to use. Furthermore, the emergent theory subsequently drives later data-collection methods, allowing grounded theorists to characterise the relationship between data and theory as dialectical. At different moments the one drives the other and vice versa. The inductive strategy that this represents has been described by Harré (2011) as consisting of three principles. The first of these is the principle of accumulation. Scientific knowledge consists of a series of facts about the world and it grows by the addition of new facts, which do not affect the integrity of the old facts. The second principle is the principle of induction, whereby 'there is a form of inference of laws from the accumulated simple facts, so that from true statements describing observations and the results of experiments, true laws may be inferred' (2011: 42). The third principle is that of instance confirmation, whereby a greater number of instances of an observed event allows a greater degree of belief in the law.

Deduction

A fairly typical deductive approach has a number of clearly defined steps. A research hypothesis is developed. This comprises the identification of a number of discrete variables, which the hypothesis suggests co-exist in a specified way. The hypothesis is operationalised, so that the relations between the variables and their applications can be construed as observational data and can be measured. Data are collected and a strategy, whether it is experimental, survey or case study, is chosen. In addition, a sample of cases is made, and the relationship between this sample and its parent population established. The empirical data are then used to confirm, disconfirm or partially confirm the original hypothesis or hypotheses. Finally, this process may be repeated, and, if this further process of testing is successful, the hypothesis becomes accepted as theory.

Critical rationalists such as Karl Popper (2002) suggested that we cannot make observations without invoking a theoretical schema of one type or another; and that the inductive process, whereby theory building always proceeds from the collection of observable facts, is flawed in both a logical and practical sense. His critique rests on the notion that because a number (however large) of similar events have occurred, we cannot conclude from this that a causal relationship has been identified. In other words, there are no logical grounds for extrapolating from past

experiences to future occurrences. In addition, because Popper accepted that all observations are theory-dependent, then necessarily there is a deductive element in social theorising.

Deductivists begin with implicit and explicit theories about the world, which they then proceed to test in and on the world. The precise origin of these theories is left deliberately obscure. However, this testing can never provide absolute proof of the truth of a hypothesis or theory; repeated testing only allows both the rejection of clearly false theories and the development and refinement of others. In addition, if a theory cannot be potentially falsified, it cannot be considered to be a theory at all.

For Popper (2002: 89–90) the method of the social sciences comprises trying out tentative solutions to certain problems; problems emanating from the initial focus of the investigation and those foci formulated during it. Solutions are proposed and criticised. However, if a proposed solution is shown to be unable to be subject to criticism, then it is excluded as unscientific, although perhaps only temporarily. If the attempted solution is open to criticism, then an attempt is made to refute it, for all criticism consists of attempts at refutation. If it withstands criticism it is accepted temporarily; and accepted above all, as worthy of being discussed and criticised. The scientific method is one of tentative attempts to solve problems, by conjectures that are controlled by extensive criticism. It is a consciously critical development of the method of 'trial and error'.

Popper's solution depends on a distinction between knowing and being, or epistemology and ontology. Since the means of arriving at the truth are fallible and immersed in specific geo-historical traditions of knowledge (this is at the epistemological level), it is never possible to know reality directly (this is at the ontological level). Social scientists can in fact only make rational guesses about it and then test those guesses as best they can. However, since knowing is subject to changing conditions, to know absolutely is a fiction. Knowing, for Popper, does not have a teleological finesse about it; only by careful conjecture and refutation can theories be developed about both the natural and social worlds, which in turn and over time may be superseded by newer and better theories.

There are a number of problems with this approach. First, since all observations are theory-laden, the testing of theories against observations has a sense of circularity about it. Thus when Popper rejects the notion of psychoanalysis as unscientific, for example, because it cannot in theory be falsified, the test itself is unreliable because it assumes a particular configuration of observable data that is not shared by psychoanalysts. Second,

the move from the critical deductive process to the rejection of theories if they cannot be potentially falsified does not follow logically. Popper is here making two separate points. Third, the rejection of the theory because it has been falsified rather than verified implies that reality can never be known as such. This is because his critical deductive approach never allows one to say that one theory is better than another because it accords with experience, but only that it might be a good theory because it has been modified as a result of being tested against a world of facts. In the end, this process of hypothesising and re-hypothesising is self-defeating.

Popper's celebrated critique of induction and his advocacy of a deductive strategy point to the differences in the respective approaches adopted by inductivists and deductivists. However, as we observed with a typical quasi-inductive approach such as grounded theory, it has elements of both induction and deduction.

Popper's modified version of deduction nullifies one of the traditional criticisms made of this approach, which is that data can never be free of the preconceptions and frameworks of the data collector. However, more significantly, the method lacks predictive power because it is wholly based on events that occurred in the past. This is because it does not follow the inductive principle of inferring from past occurrences to future events. The deductive-nomological model, also known as Hempel's model or the Hempel-Oppenheim model or the Popper-Hempel model, is an extension of the original logical positivist model developed by Hempel, and it relies very much on probabilistic elements being introduced into the equation. It is also the dominant model in the field of education round the world. Because neither inductive nor deductive research strategies have provided convincing explanations of how social scientists can develop knowledge of society and educationalists of educational systems and activities, other strategies have been suggested: retroduction/retrodiction and abduction.

Retroduction and Retrodiction

A way of solving the problems created by induction and deduction has been suggested by critical realists (cf. Bhaskar 2010). Again, the first move that is made is to distinguish between the epistemological and the ontological realms (in fact, unless this is done, as Bhaskar (2010) argues, theorists are guilty of the ontic fallacy – the unjustified conflation of these two levels). Those constant conjunctions or patterns of events that are experienced are merely the appearance of reality; they reflect real

mechanisms that are causal in nature and that exist at the transcendental level and therefore do not make themselves immediately known. In fact, he identifies three levels or domains: the real, the actual and the empirical. In the domain of the real reside the mechanisms, powers of which drive actual events that produce actual experiences. These events are real, whether they are observed or not. If they are, they are located in the empirical domain. A theory is realist, therefore, if it acknowledges that something exists whether it is known or not, and, furthermore, it may still be real without appearing so; all claims are fallible, in that they are always open to refutation and further exposure to the collection of new data; all claims to knowledge are transphenomenal, so that which is real goes beyond and underlies appearances, and these underlying mechanisms endure longer than their appearances and make them possible, indeed generate them; and finally, reality may actually be counter-phenomenal, in other words, knowledge of real structures certainly will go beyond appearances, but in addition may actually contradict those appearances. In order to understand these processes, careful experimentation has to take place in order to actualise mechanisms; researchers set up a situation in which the three domains coincide. Bhaskar (2010: 4) suggests that

> we have in science a three-phase schema of development, in which in a continuing dialectic, science identifies a phenomenon (or range of phenomena), constructs explanations for it and empirically tests its explanations, leading to the identification of the generative mechanisms at work, which now becomes the phenomena to be explained, and so on. On this view of science, its essence lies in the move at any one level from manifest phenomena to the structures that generate them.

For Bhaskar, though this procedure more obviously applies in the natural sciences, a unity of method between the natural and social sciences is both possible and desirable.

This method or procedure can be understood at the levels of strategy and method as a series of steps or action-sets (cf. Bhaskar 2010). The first entails a process of reasoning and analysing causal laws as expressions of the tendencies of natural and social objects. The second is resolving a concrete event occurring in a context into its components. The third is redescribing the components in theoretically significant ways. The fourth is a retroductive move or moving from describing the components of

an event to proposing explanations about what produces or are the conditions for the event. The fifth is eliminating alternative possible explanations. The sixth is identifying explanatorily crucial explanations. The seventh is correcting earlier proposed explanations in the light of the temporarily completed analysis. And finally there is a need to explain the parameters of these subsequent explanations and how they relate to the ontology and epistemology of the world.

Pratten (2007: 196) goes on to provide a second model of explanation, one that is more suited to the social world:

> referred to as applied (or practical or concrete) explanation, or the RRREI(C) model – a form that is essential when conditions are fundamentally open – proceeds in a manner that is somewhat different. First, a complex event or situation of interest is *R*esolved into its separate components, i.e. into the effects of its separate determinants; second, these components are then *R*edescribed in theoretically significant terms; third, a knowledge of independently validated tendency statements is utilized in the *R*etrodiction of possible antecedent conditions, which involves working out the way in which known causes may have been triggered and interacted with one another such as to give rise to the concrete phenomenon under investigation; whereupon, fourth, alternative accounts of possible causes are *E*liminated on evidential grounds. This may be followed by *I*dentification and *C*orrection as in the pure model *(i.e. the retroductive model described above)*. (My comments in italics.)

Clearly, the viability of such a method depends on a belief in realism, albeit of a sophisticated kind. It also depends on a conceptualisation of reality that includes unobservable entities. The existence of these mechanisms and structures is inferred from a complicated process of experimentation and testing. Retroductive processes comprise the fashioning of inferential connections between mind and world, and therefore constitute moves, which take one 'from a description and analysis of concrete phenomena to a reconstruction of the basic conditions for these phenomena to be as they are' (Bhaskar 2010: 34). Since we do not and cannot, given our epistemological framings and spatio-temporal positionings, represent that world in our languaged accounts of it, we have to fall back on inferential accounts; that is, the only possible way of giving an account of what the world is like is by inferring what that world is from the available evidence, i.e. we infer from sensate experience to the real structures of the world. What this

does not mean though is that the contents of the world are inferences that we make; only that in the act of knowing this world we are necessarily engaging in inferential processes.

Abduction

The abductive reasoning strategy is a form of logical inference, which consists of a move from an observed phenomenon to a theory that can account for that observation. In abductive reasoning the premises do not guarantee the conclusion. Here we are dealing with an inference to the best possible explanation. This strategy gives due weight to the descriptions that actors provide of their intentions, plans and projects. However, observers might want to go beyond these descriptions. Abduction therefore comprises a move from lay to technical accounts of social processes and lives, and is an alternative to inductive, deductive and retroductive strategies.

The abductive strategy is the one generally used by hermeneutic or interpretive researchers and focuses on drawing out the meanings used by social actors as they live their daily lives. The principle is best expressed by Giddens (1986: 161), when he suggests that 'the production and reproduction of society thus has to be treated as a skilled performance on the part of its members, not as merely a mechanical series of processes'. What follows from this is that 'we cannot describe social activity at all without knowing what its constituent actors know, tacitly as well as discursively' (Giddens 1986: 336). This perspective gives due weight to the descriptions that actors provide of their intentions, plans and projects. The alternative would be to fall into the trap of conceptualising human actors as the agents of structural forces that are beyond their control and therefore do not allow them to act intentionally.

Three broad traditions have dominated sociological thought since its inception. The first focuses on the brute and imposing facticity of society and relegates the human actor to a subsidiary role. This may take the form of subservience to society as a functional whole (Parsons 1970), to the overwhelming pressure exerted on the superstructure by economic arrangements (Marx 2009) or to the constraining influence of discursive frames (Fairclough 2001). These forms of downward conflation between the cultural and sociocultural spheres provide little real evidence that human actors can control their destinies and are reflexive beings who monitor and can thus by implication change their behaviours.

Pitted against this is a view that emphasises the active and intentional flow of social life. Sociologists who work within this tradition recognise the central importance of the social actor in their descriptions of social life. More extreme versions ignore the pervasive and routinised character of much of that social life and seek to sustain a notion of Verstehen (Weber 1964) without recourse to any constraining influences exerted by society. Such interpretive and interactive philosophies have found expression in movements such as symbolic interactionism, ethnomethodology and some forms of ethnography. More recently there have been various attempts to provide a synthesis and in doing so give full weight to both structure and agency in social life. This points to one of the major weaknesses of interactionist and interpretive methodologies. Prioritising descriptions of the intentions and plans of social actors fails to position and locate these activities within the enabling and constraining contexts of life. The emphasis is on the agential thrust of activity, with a consequent neglect of structural influences.

The most compelling of the interpretive and meaning-based methodologies is symbolic interactionism, and much of the empirical literature in the field of the sociology of education over the past three decades and a half have been influenced by it in one form or another. Two important concepts are central to these analyses. The first is that of negotiated order: people negotiate the various roles they are expected to play. The second is that of interpretation. Roles, behaviours and understandings are dependent upon interpretive activity. The emphasis on the intentional aspect of human activity has been criticised because it involves a number of unwarranted assumptions about human behaviour and also fails to account for social constraints. Human beings are not equally able to control and influence events: society is stratified in various ways. This means that some human beings have greater degrees of freedom than others. Second, interactionism implies that society is simply the sum of a series of individual decisions, and cannot operate as a set of specific material constraints and enablements, a notion that is hard to sustain.

Symbolic interactionism leaves unanswered certain questions about epistemology; in particular, about whether researchers should attempt to maintain the integrity of the phenomena they are studying. Most theorists working from an interpretivist perspective accept that social scientists need to build on the lay concepts of social actors. What is at issue is how far theorists and empirical researchers should go; in other words, whether the concepts and ideas used by the social scientist should be anchored in lay

discourses or whether it is methodologically acceptable to import other notions that these social actors may not recognise. This movement from first-order to second-order constructs involves abductive reasoning and may take a number of forms.

Schutz (1963), for example, describes it as a process of developing models of typical social actors, which by virtue of how they have been constructed have typical motives and behave in typical ways. However, for him, these second-order constructs are always directly related to and anchored in lay descriptions of the social world. There is of course a sense in which the empirical researcher always goes beyond the self-constructed life-notions developed by participants. The process of collecting data is an intrusive act by the researcher; in the course of an interview, the researcher's biography imposes an order on how the social actor understands their life. When this is textually inscribed, a further process of intrusion takes place. The hermeneutic process involves closure at some arbitrary point by the researcher. This closure takes the form of a 'going beyond' the way of understanding developed by the social actors under scrutiny. Abduction therefore comprises a movement from lay to technical accounts of social processes and lives, and is an alternative to inductive, deductive and retroductive/retrodictive strategies.

Reasons and Causes

The key to understanding the world is answering the question as to whether reasons can be causes. This is important because it impacts directly on the choice of methods for collecting data to understand human activity. Is it possible to determine ex post facto that the reasoning activity of an individual can provide an adequate explanation for a particular event in which this individual played a prominent part? Texts produced through interactive processes such as interviewing and involving interpretative activity, it is suggested, can be truth-developing mechanisms. This argument hinges on the idea that the reasoning process undertaken by an individual can lead directly to actions; and this means that intentionality is a genuine idea. This does not mean, however, that rationalisations of the reasons for their actions by individuals do not take place, and indeed, interviews as a methodological tool generally focus on these post-hoc rationalisations. However, the post-hoc rationalisation is emergent from the actual reason for the activity and thus retains elements of it, though it is not reducible to it.

The difficulty then becomes that these reasons (which by necessity have a directive quality about them) are embedded in networks of reasons for doing things, which exist independently from the consciousness of the individual, though clearly the individual has the potentiality to access them. A person can have a reason for their action, is convinced that the reason that is given by them is the actual reason as to why the action took place and believes that the action would not have taken place without the reason being developed prior to the action. And yet the reason that is given is not the real reason for that action. Furthermore the rationalisation of the original reason is not necessarily a distortion of that original reason, it may involve a redescription of that reason, which now entails the placing of the action in wider social, political, economic and discursive contexts (some of which are developed during the research process by the researcher or trusted 'other'). The purpose is to grasp the reasoning action in its setting of rules, practices, conventions and fundamentally peoples' expectations.

What this implies is that there is always a cause–effect relationship in any particular action or event. And this in turn implies that in most circumstances the person is a skilled knower, especially with regard to their own reasons for their actions, even if the original and motivating reason is subsequently rationalised over time. And what this means is that the job of the researcher in the first place is to collect together accounts by key players in a particular event, with the proviso that, though reasons can be causes, there is always a difficulty with distinguishing between primary causes and subsequent rationalisations.

Practical Methodologies – Retroductive and Abductive Strategies

In pursuing causal explanation via a constant conjunction model, with its stress on that which can be observed and controlled, researchers have tended to overlook the liabilities, powers and potentialities of the programmes and people whose behaviours they seek to explain. If this is correct, then the data-collection methods and the research design are going to be different. The reason for this is that researchers are now committed to understanding mechanisms that may not actually operate in practice (i.e. produce effects) because the external conditions for the release of the generative mechanism may not be present. Researchers therefore have to adopt a two-fold strategy: identifying the appropriate

generative mechanism and examining the actual conditions that have produced the effects that they have observed. Since the reality, which they wish to describe, is social in nature and comprises social actors interacting with each other, they cannot simply assume that those actors are compelled to behave in particular and specific ways by causal mechanisms which they cannot observe and which they do not understand. Causal relations need to be understood as configurations of social actors making decisions, whether appropriate or not, within certain determinate conditions, and further, the making of those decisions and the subsequent retroductions that are made changes both the contexts in which future decisions are made and the identity of those social actors.

In the first instance then, educational researchers need to examine a range of phenomena. The first of these – structural properties at each time point – may or may not have been activated in the particular circumstances, but provide access to understanding the essential contexts of action. In doing this, researchers are attempting to understand a second phenomenon – interpretations of those relations by relevant social actors. Data needs to be collected about these interpretations because they provide access to those interpretations and their effects. Instead of assuming that a structural property always operates to facilitate human actions and interactions at every time point, it is important to understand when, where and how these different structures are influential; and furthermore, what the precise relationship is between them at specific moments and places during these interactions.

Researchers therefore need to gather data about those relations between different structures at each time point, and those perceived relations between different structures at each time point by the relevant social actors. This is a necessary part of the research process for two reasons. First, it provides access for the researcher to those real relations referred to above. Second, social actors' perceptions of those relations constitute a part of them. They may also be motivated by unconscious forces which compel them to behave in certain ways and which may conflict with the accounts they give of their reasons for action. By examining their intentions, it is possible to make a judgement about how much they know and how this impacts on decisions they make.

Educational and social researchers also need to consider the unintended consequences of actions. Some activities may be designed, and thus have a degree of intention behind them, which may change those structural properties; others less so. But more importantly, all actions have

unintended consequences. After each interaction, however limited, its effects on those structures, which provide the contexts for future exchanges and interactions, need to be assessed. This last requirement for research therefore refers to the subsequent effects of those intended and unintended actions on structural properties. Finally, there is the focal point of any investigation: the degree of structural influence and the degree of agential freedom for each human interaction. This is the crux of the matter because it allows the researcher to understand the complex relationship between agency and structure at each time point. From this description of processes, we now move to trying to understand how we make judgements about education systems, people within them and educational practices.

CHAPTER 3

Judgements About Education Systems, People and Practices

Within the community of practice that I belong to, I make judgements all the time; judgements about the quality of a piece of work, the reasonableness of accepting an application for promotion, the effectiveness of a teaching programme and so forth. All these judgements are inferential judgements about evidence and the conclusions that can be drawn from this process. In making a judgement about a system, an institution or the performance of a person, evidence and its analysis are central. There are two types of evidence: primary evidence, which is not and cannot be a-theoretical, and comes in the form of testimony or direct observations of worldly events or happenings; and a codified chain of reasoning which comprises the collection and analysis of primary evidence and its positioning in an inferential sequence to allow a conclusion or judgement to be made (as to whether and to what extent an hypothesis about the organisation, text or person is reliable and valid). Evidence can be more or less authentic, reliable and accurate, and more importantly, more or less salient, where this is defined as a chain of reasoning involving evidence and inference leading to a conclusion about a set of activities and involving judgements at every level. So, a piece of evidence may have a weak indirect relationship to the chain of reasoning, or a strong direct relationship to the chain of reasoning, because it refers to the chain itself and not to evidential elements of it.

Furthermore, salience as a criterion for determining the suitability of a piece of evidence for supporting a judgement is practice-specific. This refers to the kinds of information which serve as supporting facts in making

D. Scott, *Education Systems and Learners*,
DOI 10.1057/978-1-137-59884-4_3

a claim, and these, it is suggested, are practice-dependent: what is a relevant fact is determined within a practice. Therefore, evidence may not be salient because it does not fit with the evidence base within which that claim is embedded and which gives it some measure of credibility. And further to this, each and every evidence-set also has within it a threshold for determining the required probative force of any claim that is made.

Evidence in relation to a judgement about a system, institution, text or person therefore may be invalid for a number of reasons: domain incommensurability; non-conformity to the implicit and explicit rules of the domain; a lack of probative force to achieve credibility within the domain; its lack of fit with the way the domain is formed; the degree and type of fallibility accepted in the domain and the degree to which the evidence set provides a complete or incomplete account of the activities being investigated. The content of that evidence and the form it takes differs between domains. And this in turn means that domain-specific judgements are illegitimate if and when they are applied in other domains and in particular in domain-specific sets of evidence and inference, and this refers above all else to any claims that are intended to be generic or universal, such as those used in the Research Excellence Framework (REF).

There are a number of ways by which such judgements can be made. The first is deontological, where the judgement is made in terms of a set of absolutely right actions or a set of universal precepts. A second way is consequentialism. This suggests that a normative judgement can be made in relation to the consequences of the actions of participants in the programme, and not in terms of intention, circumstance or process. There are a number of different versions. The first of these is actual consequentialism, where an act is judged to be correct or morally right in relation to those consequences that actually resulted from the actions of the individual or institution. Direct consequentialism, on the other hand, suggests that an act is morally right only in relation to the consequences that directly flow from the act itself, as opposed to consequences relating to the agent's motives, or acts of a similar type and so forth. Evaluative consequentialism depends only on the value of the consequences and filters out from the equation any consequences that can be described as non-evaluative. Hedonistic consequentialism refines this still further, so that value can only be given to those consequences that focus on pleasure and pain, and not other types of goods such as freedom, or intrinsic knowledge. A further variant, universal consequentialism, focuses on the consequences for everyone, as opposed to particular group or sectional interests.

A third way by which such judgements can be made is by examining the intentions of the programme, text or person, and then comparing what has actually happened with what was intended to happen. There are a number of problems with this. Intentions are always future orientated, and fundamentally they reflect what key participants think can be achieved in terms of what currently exists and how what currently exists may change in the future, that is they are predictive. Furthermore, they may be wrong, misguided, badly formulated or incorrectly predictive.

The discussion so far has focused on how we can and do make judgements about educational matters. I have already suggested here that these judgements and the way they are made are underpinned by particular epistemological and ontological positions. The issue of whether it is possible, within the limits of language, to develop lists of evaluative criteria or even whether it is possible to judge between different views of knowledge is therefore of immediate concern.

Judgemental Criteria

A wide range of criteria and criterial systems are in use. For example, Furlong and Oancea (2005) suggest in relation to applied educational research that there are four interrelated and interdependent dimensions of quality: epistemic, technological, capacity development and value for people and economic. Within each of these dimensions, they suggest a number of sub-dimensions; so, the epistemic dimension comprises: trustworthiness, capacity for making a contribution to knowledge, explicitness, propriety and paradigm dependence. The technological dimension comprises: purposivity, salience or timeliness, specificity and accessibility, a concern for enabling impact and flexibility and operationalisability. The capacity development dimension requires the piece of work being judged to be plausible, collaborative, reflexive or deliberative, receptive and/or transformational. And finally, the economic dimension comprises marketability, cost effectiveness, auditability, feasibility and originality. The implication of their argument is that for a piece of work to be judged to have reached a threshold of excellence, it should meet the requirements of these dimensions and sub-dimensions, or at least that when a judgement is being made, these criteria should be central to the way the judgement is made.

In a similar fashion, the UK Research Assessment Panel for Education has identified three criteria for judging the worth of research texts, and

thus by implication the research they report: originality, significance and rigour. These concepts can be and are understood and used in different ways by those whose task it is to make judgements about educational texts, people, institutions or practices, because they are making these judgements from different epistemological and ontological perspectives, even if they are not prepared to admit it.

Each subject panel was required to spell out how it would interpret these criteria in their own areas. The Education panel in 2007 did this at some length. Originality was defined as

> a characteristic of research which is not merely a replication of other work or simply applies well-used methods to straightforward problems, but which engages with new or complex problems or debates and/or tackles existing problems in new ways. So, for example, a review of existing research can demonstrate originality if it analyses and/or synthesises the field in new ways, providing new and salient conceptualisations. Originality can also lie in the development of innovative designs, methods and methodologies, analytical models or theories and concepts. (Higher Education Funding Councils 2006 RIDCIT0019: 32–33)

Significance, it was argued, could be judged in different ways according to whether the research is basic, strategic or applied. Research has, or has the potential to have, considerable significance if it breaks new theoretical or methodological ground, provides new social science knowledge or tackles important practical, current problems and provides trustworthy results in some field of education. These results might be empirical or analytical and theoretical, providing new (and sometimes challenging) conceptualisations, and evidence for audiences ranging from academics to policy-makers and practitioners. Ways of evaluating the significance of research include judging its effects or potential effect on the development of the field, examining contributions to existing debates and assessing its impact or potential impact on policy and practice. The nature and degree of immediate impact on policy-makers or practitioners will provide some useful indication of significance in terms of 'value for use'. However, there may be reasons for high impact that are not dependent on research quality; and, equally, in many cases the observable impact of high-quality research is achieved only over the longer term. Theoretical and more analytical research can also be of high significance if it takes forward the state of current international knowledge in its field, and has influenced, or has the

potential to influence, the work of other theoreticians. In education it is possible that such significant theoretical advances also influence practitioners and/or policy-makers, although it will probably need a deliberate strategy to ensure that this happens. (Higher Education Funding Councils, 2006 RIDCIT0019, pp. 32–3)

Rigour, on the other hand,

> can be judged in many ways, and can helpfully be associated with methodological and theoretical robustness and the use of a systematic approach. It includes traditional qualities such as reliability and validity, and also qualities such as integrity, consistency of argument and consideration of ethical issues. It certainly entails demonstrating a sound background of scholarship, in the sense of familiarity and engagement with relevant literature, both substantive and methodological. Different dimensions of rigour will be important in different types of research but rigour can best be assessed on a case by case basis using whichever dimensions are most appropriate. In the case of outputs that are primarily directed towards utility, it is still the rigour of the underpinning research work that will be assessed and will need to be evident. (Higher Education Funding Councils 2006 RIDCIT0019: 33)

In 2014 the Education Panel offered these definitions of the three criteria, considerably foreshortened from those offered in 2007:

> *Originality* will be understood in terms of the innovative character of the research output. Research outputs that demonstrate originality may: engage with new and/or complex problems; develop innovative research methods, methodologies and analytical techniques; provide new empirical material; and/or advance theory or the analysis of doctrine, policy or practice.
>
> *Significance* will be understood in terms of the development of the intellectual agenda of the field and may be theoretical, methodological and/or substantive. Due weight will be given to potential as well as actual significance, especially where the output is very recent.
>
> *Rigour* will be understood in terms of the intellectual precision, robustness and appropriateness of the concepts, analyses, theories and methodologies deployed within a research output. Account will be taken of such qualities as the integrity, clarity, coherence and consistency of arguments and analysis, such as the due consideration of ethical issues.

Understanding them and putting them into practice are domain-specific, as we will see. This means that the debate (where the purpose of the exercise is to make judgements that are not domain-specific) shifts from an argument about the inherent contradictions in the making of these judgements to managing these contradictions so that the practice of making judgements can seem to be coherent. This involves the exercise of various power stratagems, some of which have become increasingly acrimonious in the modern academy.

Internal, External and Parasitic Criteria

A fundamental distinction can be drawn between the different criteria that have been suggested, and this is their internality or externality. Internality refers to the quality of the piece, with the focus on validity, sufficiency of evidence, sufficiency of process of evidence gathering or systematicity, which in turn is validated by inter-subjective judgements within a particular discourse community, or by judgements made by individuals who subscribe to the values of a discourse community. However, whether subjectively or inter-subjectively validated, the focus is not on the impact it makes on that community or any other community, but on the quality of the piece; internal criteria are epistemically focused. External criteria, on the other hand, refer to the impact of the piece, so the piece is judged to be sound if it can be shown to have made an impact on an agent or agency in the world. A single external criterion may be deemed to be necessary, although not sufficient, for making a judgement about the quality of the piece, especially if a multi-criterial approach is adopted. The reason for distinguishing between these two types of criteria is that a piece of work can be internally sound but have made no impact, and conversely, a piece of work can be internally flawed but may still have made an impact, either positively or negatively, on a discourse community. Two examples of the latter are Harden and Thomas (2005), and Tooley with Darby (1998), which in both cases have been criticised for internal flaws (cf. Strathern 2000; Hammersley 2001; MacLure 2005), but it would still be accepted that they have had an impact on other discourse communities and ultimately on the discourse community within which they are embedded.

A piece of work can be internally sound, that is, it represents the world adequately; however, it still may not be adequate at the level of external satisfaction. For example, it may not be useful, it may not have had any

impact and it may not have contributed to the development of the research community or to any capacity within it. It is internally sound in the sense that it is epistemically valid. The assessor in using external criteria in judgement is switching their attention from the original account and focusing on a different problem: that of the impact of that account in different discourse communities, and this requires a different range and type of evidence to be collected to determine whether or not it is adequate. As I have suggested above, this still requires the use of epistemic criteria, although these are now being invoked to determine the adequacy of a different operation.

There are a number of criteria that cannot be treated as criteria in their own right but are parasitic, that is, their value relates to the values given to first-order criteria, such as epistemic validity or impact on a discourse community or communities. For example, a piece of work can only be valued for its transparency if that which is being made transparent is epistemically valid. If this is not epistemically valid, then the attribute of transparency has no value.

An example of a second-order criterion is intentionality. It has been suggested that the stated intention of the author or authors should be a necessary, but not sufficient, element in any judgement about worth that is made. A piece of work should in part be judged as to whether it conforms to its stated purposes. In this case, no overall judgement should be made as to its impact or to its internal validity, or even to the soundness or otherwise of those intentions, without at least some reference to the stated intentions of the author or authors, if they can be safely understood. Thus, if the intention of the author is that it should have no impact, it may still meet the requirements for soundness in relation to this intentional criterion because there is an intention behind the piece, which acts as a satisfier for quality.

However, if we have good grounds for believing that the stated or implicit intention of the researcher is flawed, or even that, in all the possible cases that have come to our attention and all the possible cases that could come to our attention, there is the possibility that a researcher could have a misguided intention, then the inclusion of intentionality as one of our criteria is suspect. A criterion such as intentionality can only be used in this way if it has a close relationship with other epistemic criteria, such as truthfulness, validity or reliability. It is therefore a second-order concept. The assessor is being asked to make her judgement not in relation to whether the researcher has an intention but in relation to whether the

intention or purpose of the piece being assessed is sound. Furthermore, this means that no value can be given to intentionality in a criterial set unless a further judgement is made that this intention is sound or reasonable, and this involves a further judgement about the background to the research being made.

Probative Force

A further issue that needs to be addressed is the probative force of the conclusions made in a piece of research. If a researcher makes a theoretical claim about an educational matter, she is also claiming that this theory is a better theory for explaining all the available evidence than all other possible theories, and the truth claim embedded here would compel the practitioner to modify her practice if it was relevant to that practice. To do otherwise would be to base her practice on custom and experience rather than on the prescriptive force of research findings. However, much research does not make the claim that it has an absolute view of truth, but rather badges its findings as helpful guidance or lacking in contextual detail or as tentative, and therefore deliberately does not make the claim that it should be accepted as the complete truth about the matter in hand. In this case, an acknowledgement is being made that the exercise of practical wisdom involves selecting from all the available evidence. This does not mean that the practitioner ignores the evidence and does what she feels was right all along, but it does mean that evidence and hypothesising are treated here as strictly non-determinative.

A criterial judgement is considered to be sound if it satisfies the requirements for that judgement to be made. For a piece to be judged to have met the requirements of being significant, for example, it must have conformed to a model of what significance means to the person making the judgement, and this comprises two processes: first, that the criterion is adequately defined, and second, that this general definition is applied to the particularity of the piece in a satisfactory way, so that this piece in part or in its entirety is an adequate example of the criterion. A criterion then is a statement about the quality of a piece or any future piece, and implicit within it is a model of what constitutes sufficient evidence for a judgement to be made that it conforms to the criterion, and evidence in the particular example being considered here (i.e. significance) refers to the structure of the piece, whether it shows to the reader that the argument made is significant and so forth. The reader, who is making the judgement that

it is sound, needs to have found good reasons or evidence as to why it meets those requirements. The reader may also have looked for evidence that the piece has not met the criterial requirements; in other words, she is looking for evidence or examples of places within the text that would indicate that the satisfiers for the criterion have not been met. If she finds a sufficient number of examples in which the author has not adopted a significant approach, then she is likely to judge that it has failed to meet these satisfiers. Thus, moments of positive affirmation and negative disconfirmation are implicit within the process.

Furthermore, as Hammersley (2005) makes clear, if a piece of work is to be judged by a list of criteria rather than a single criterion, then two conditions have to be met. First, the relationships between these criteria have to be clarified. Are they for instance in a hierarchical relationship to each other? Do they have different values attached to them? If they do, are these implicit or explicit? And second, the application of criteria still requires an interpretive process to be undertaken by an assessor or assessors, and this involves the surfacing of background knowledge and the reaching of agreement between those assessors. This reaching of agreement is fraught with difficulties, especially if the discourse community is fractured or consists, to use Bernstein's (2000: 67) phrase, of 'a variety of specialised languages'.

However, it is not a question of abandoning one set (e.g. internal criteria) at the expense of another (e.g. external criteria) but of deciding on the relative value of each. This is inherently problematic; first, because different types of research may have different purposes and thus to give a low value to a piece that is designed to have no practical or instrumental purpose would be to discriminate against it. (A particular mechanism such as the REF may of course have this as its intention; that is, research, which can show an immediate form of impact, is rewarded at the expense of a piece, which cannot show this.) The second reason is that a further justification, which is an addition to the individual justification for each criterion, has to be provided, and this relates to why one criterion should be given a higher or lower value than another, and this applies even if all the designated criteria are given equal values. In the process of identifying these criteria, an implicit value is given to each, and this value is relative to values that could be given to other criteria within the set, and in turn, these relative valuations need to be justified. Those making these judgements thus need a meta-theory that provides a rationale for the values given to the different criteria.

Assessors make judgements about quality, although the background to their judgements may be implicit. What is the origin of their judgement? They may have had experience of performing the same action before, and although their understanding of what is involved may have changed over time, it has been influenced by previous encounters with the same problem. They may in the past have had their view moderated by examples of other people performing similar actions to their own, and they have assimilated these experiences into their repertoire of beliefs, leading to certain well-rehearsed practices/actions. Knowledge in judgement is still tacit, even if at various points in time that tacit knowledge has been surfaced for reflection and contemplation and amended accordingly. They have a model of what good research looks like when they make a judgement, and in part, they match up the piece under scrutiny with this model. There may, however, be a further process at work, which is that because they are aware that there are a number of different and conflicting ways of making a judgement about a piece of research, they suspend their own set of beliefs and judge the work to be sound if it conforms to the collective judgement of the discourse community in which they work, as they understand it.

Reaching agreement between assessors may also be problematic. Judgemental criteria, if made explicit, have to be framed so that any group of assessors would understand and use the concepts embedded in these criteria in the same way. It is not possible to focus exclusively on the results of such assessment processes because there may be a variety of reasons as to why agreement is reached. For example, assessors do not refer to the stated criteria but use their tacit knowledge of the problem to make their individual judgements, and these happen to be in agreement. A second possible explanation for agreement being reached is that during the process of reaching agreement, the group of assessors adjust their understanding either of tacit criteria that they are using or of the written criteria that they are meant to be using so that they reach an agreement about the meaning of the criteria and the way they should be used, and then apply them. A third explanation is that the group of assessors are constrained by the power dynamics of the setting and readily agree to another person's judgement on the basis that that person is more knowledgeable or experienced, or that it is in their best interests to stifle their own opinions and agree with them.

These however are possible cases and do not reflect all possible cases, one of which is that tacit knowledge is marginalised, the criteria are so

framed that unequivocal agreement can be reached and stratified power relations are not implicated in the judgements that are subsequently made. Such criteria and the processes attached to their application can therefore potentially provide sufficient reasons for making the claim that a proper judgement has been made about an object, text or piece of research.

Evidence in Judgement

All judgements about educational matters are inferential; that is, evidence is collected and a conclusion is drawn from that piece of evidence or evidential set. In making a judgement about a piece of research in relation to a set of criteria, or in taking part in a collective process of judgement making, evidence is investigated. However, the relationship between evidence and judgement is complicated. That evidence or evidential set has either a strong or a weak warrant and is domain specific: what kinds of information will serve as supporting facts in making a claim is dependent on the practice within which it is embedded. Claims then are domain specific, so one set of practices or a domain requires a different type of evidence base than another.

In making a judgement about a piece of research using a set of criteria, the issue of fallibilism is salient, both as it relates to the judgement made by the assessor and as it relates to the use of evidence by the researchers to support their hypotheses. This is because in making a judgement, true belief (that x is better than y, where x and y refer to different pieces of work) may consist of an acceptance that a weak form of evidence to support the hypothesis that is being made and/or a weak relationship between evidence and hypothesis is all that is required. In this case, knowledge is fallible; however, it may still be acceptable either to the reader or user of research or to the discourse community in which they work. Thus, when a judgement is made that a piece of research is relevant, plausible, transparent or whatever, no assumption is being made that it is perfectly plausible, transparent or relevant. It is accepted that it meets some but not all the requirements of these criteria.

Fundamentally then, a judgement about knowledge has a background to it, and in part, this reflects the degree to which research is considered to be fallible. A number of different types of fallibilism have been suggested. The first sense that can be given to fallibilism is where the individual believes that because they are positioned in relation to the external world, then their perspective is limited and thus the knowledge they

produce is compromised and incorrigible. A second type of fallibilism comprises the possibility of making mistakes that in theory could be corrected and is therefore a corrigible version of fallibilism. A third type is a form of epistemic scepticism in that the individual holds that no true knowledge is possible because there are no convincing arguments to refute the possibility of being radically deceived. Again, this type is incorrigible because if it is accepted, there can be no possibility of correction. A fourth type reflects Popper's (2002) hypothesis that knowledge is produced through processes of conjecture and refutation, but this can never attain to a perfect form of knowledge. This is in effect an epistemological version of fallibilism but is also ontologically orientated since the changing and emergent nature of reality means that knowledge always lags behind its referent. Again, this is an incorrigible version of fallibilism because there is no possibility of ever keeping abreast with the way the world is currently structured. Epistemological fallibilism may also cast doubt as to whether the various forms of logical relations between items are sufficiently robust to allow the production of perfect knowledge. The reason for distinguishing between these different forms of fallibilism is because they assign different values to corrigibility, and thus some demand a strong form of incorrigibility, others weaker ones. The application of epistemic criteria in judgement is therefore determined by the degree and type of fallibility underpinning the epistemology used by the researcher or researchers in making their knowledge claims.

There is a further dimension that needs to be considered, and this refers to the nature of the evidence itself and in particular to the way it has been gathered; in other words, its implicit (usually) warrant. If evidence is contaminated by vested interests, then it may be considered to be unsound. However, at a foundational level, there may be disagreement about the possibility or otherwise of any evidence being produced that is not imbued with interest values of one type or another. If, for example, a Gadamerian perspective is adopted, then the soundness of evidence is judged by whether a sufficient acknowledgement of the background to the collection and presentation of the data is made (Gadamer 1975); in other words, there can be no value-free data or evidence that can be collected. This however is treated not as sufficient for designating a piece of evidence as sound or unsound, but only as a necessary element of such a process.

A piece of evidence on its own may not be enough to confirm or falsify a belief that is held, since it may be that a concatenation of evidence is

required to confirm or falsify a belief. Thus, the problem arises as to the relationships between these different items of evidence. Again, more evidence of the same type merely gives the researcher greater confidence that they are correct to hold the belief that they in fact do hold. However, the belief that they have may not require more of the same type of evidence, because even if they collect many instances of the same type, this can never prove conclusively that they are correct to hold that belief. It may be that different types of evidence are required to confirm or disconfirm that belief. Furthermore, the strength of the evidence, which leads the researcher to hold a belief, is always undermined, that is, it becomes weaker, if alternative hypotheses generated from that data could be identified.

A more fundamental problem with the relationship between evidence and claim may arise, and this is that if two individuals hold different background theories, they are likely to disagree about the worth and strength of a piece of evidence in relation to the claim they are making, and the only way to settle this dispute is to evaluate the worth or otherwise of these competing background theories. This may be difficult because those theories comprise radically distinct views of the world. If sufficiency of evidence is identified as an epistemic criterion for judging the worth of a piece, this cannot act as a neutral arbiter for assessors who may disagree fundamentally about the nature, quality, probative force and extent of that evidence. This means that there are normative constraints on concept-use and it is this that allows judgements to be made. Perhaps the most fundamental sense in which we can understand the social processes involved in knowledge formation, even more than with the making of judgements about people, institutions or texts, is the activity of learning itself.

CHAPTER 4

Learning Environments

In this chapter I want to focus on learning mechanisms in specialised environments, and this calls for an engagement with learning theories. Five theories of learning are examined here: behaviourist, phenomenological, cognitivist, constructivist and materialist. Each of these in turn has implications for pedagogic approaches and optimum learning environments. Throughout I will be engaging in a modelling exercise. Models are representations/expressions of the real world, without the extraneous detail. They are not the real world and it would be a mistake to think that they are. They are designed to help us better understand how the world works (although they might also be understood as activities in the world). However, their use raises a number of questions: for example, what expressive and representational purposes do they have? What kinds of entity are they? And what is their pedagogic function? In addition, any model that is conceived has normative elements; that is, theorists are explicitly suggesting that this model or framework is better than other models or frameworks that have been and could have been devised. This applies, above all, to the activity of learning.

Learning as a process has a set of pedagogic relations, that is, it incorporates a relationship between a learner and a learning object, which could be a person, a text, an object in nature, a particular array of resources, an artefact, an allocation of a role or function to a person or a sensory object. A change process is required for this, and it is either internal to the learner or external to the community of which this learner is a member.

D. Scott, *Education Systems and Learners*,
DOI 10.1057/978-1-137-59884-4_4

Learning then is conditioned by an arrangement of resources, including spatial and temporal elements. These arrangements are embodied, discursive, institutional or agential, and this has implications for the types of learning that can take place. Each learning episode has sociohistorical roots. What is learnt in the first place is formed in society and outside the individual. It is shaped by the life that the person is leading. It is therefore both externally and internally mediated, and the form taken is determined by whether the process is cognitive, affective, meta-cognitive, conative or expressive. Thus, learning has an internalisation element where what is formally external to the learner is interiorised by the learner and a performative element where what is formally internal to the learner is exteriorised by the learner in the world. Within this framework, behaviourists, complexity theorists, cognitivists, cultural-historical activity theorists, social constructivists, symbol-processing theorists, sociocultural theorists of learning, actor network theorists and critical realists conceptualise the various elements of learning and the relations between them in different ways.

Wenger (2008), for example, and particularly in relation to classifications of the concept, distinguishes between psychological and social theories of learning. In the first category he places behaviourist theories focusing on behaviour modification, cognitivist theories focusing on internal cognitive structures, constructivist theories focusing on building mental structures whilst interacting with an environment and social interaction theories that focus on interactive processes but understands them from a primarily psychological perspective. In the second category there are a series of social theories of learning. These include activity theories such as cultural-historical activity frameworks, socialisation theories such as community of learning theories (cf. Wenger 1998) and organisational theories that concern themselves both with the ways individuals learn in organisational contexts and with the ways in which organisations can be said to learn as organisations.

A theory of learning pivots on the idea that there is an entity called for the sake of convenience a human and this entity has a relationship (both inward and outward) with an environment (for some, this entails a post-humanising and materialising process, cf. Edwards 2015). A further complication is that any description of this process and set of relations entails another and different set of actions and relations. In mapping or characterising the field, here there is a concern with epistemic differences between the range of theories presented, though these differences also focus on the probative force and attached value given to these relations and entities.

A Theory of Learning

A curriculum in essence is a planned programme of learning, and therefore if we are to understand it, we also have to develop a theory of learning. As a concept, learning is fundamentally related to knowledge, and therefore if we are thinking about learning and the practices of learning, we also need to make reference to what is to be and how it is learned, and typically what we are aiming at in such considerations is some form of knowledge. Philosophers usually divide knowledge into two categories, knowing-that and knowing-how. (They sometimes add a third category, knowing-by-acquaintance, but this is not central to the argument that I am making.) The suggestion here is that these forms of knowledge are fundamentally different; in other words, there are strong and impermeable boundaries between them. I want to suggest using a formulation from Robert Brandom (2000) that this is misleading, and that consequently some of the problems that these strong insulations have created can be resolved. This has implications for the theory of learning and knowledge-development that I am arguing for here and therefore for any curriculum theory that follows from it. I also want to suggest that in society these different forms of knowledge are given different statuses or have different attachments of importance, so, for example, vocational knowledge (broadly thought of as being about processes) is considered to be less important than academic knowledge (broadly understood as being about propositions), but these ascriptions of importance do not lie in the intrinsic nature of each knowledge form but in the way these knowledge forms are realised in particular societies.

Knowledge then is fundamental to the three types of learning that can be identified: cognitive (relating to propositions), skill-based (relating to processes) and dispositional (relating to embodiments). Cognition comprises the manipulation of those symbolic resources (words, numbers, pictures etc.), which points to (though not necessarily in a mirroring or isomorphic sense) something outside itself, though the referent might also be construed as internally related, or more specifically, as a part of an already established network of concepts (e.g. cf. Brandom 2000) or as expressive (e.g. cf. Taylor 1985). Skill-based knowledge is different from cognition because it is procedural and not propositional. Dispositional knowledge refers to relatively stable habits of mind and body, sensitivities to occasion and participation repertoires. Distinguishing between knowledge of how to do something (or process forms of knowledge), knowledge of something (or, in Brandom's terms, judging that claim in terms of

its relations within and to a network of concepts, and making the subsequent commitments that this entails) and embodied forms of knowledge (assimilating an action and being able to perform in the spaces associated with that action) is important; however, they are in essence all knowledge-making activities, and furthermore as we will see can be formulated generically as acts of learning.

Robert Brandom (2000) suggests that acting in the world requires the use of, and is underpinned by, conceptual frameworks of one type or another. For him, propositional knowledge or making a claim that this or that is the case is, in common with the other two forms of knowledge, a process of doing and thus of knowing how to do something or other. And this results in all three types of knowledge having the same general form, and this allows them, in this form, to be understood as learning actions or acts of learning. Brandom expresses this formulation in the following way:

> 'Assertion', 'claim', 'judgement', and 'belief' are all systematically ambiguous expressions – and not merely by coincidence. The sort of pragmatism adopted here' seeks to explain what is assert*ed* by appeals to features of assert*ings*, which it is claim*ed* in terms of claim*ings*, what is judg*ed* by judg*ings*, and what is believ*ed* by the role of believ*ings* (indeed, what is express*ed* by express*ings* of it) – in general the content by the act, rather than the other way around.' (his italics) (Brandom 2000: 8)

As a result propositional knowledge-development activities are construed as individual processes that involve assertings, claimings, judgings and believings.

This means that propositional knowledge is not thought of as fundamentally different from procedural and embodied forms of knowledge since assertings, claimings, judgings and believings are of the same order as riding(s) (a horse, for example), driving(s) (a car, for example), teaching (s) (a class, for example) or cooking(s) (a meal, for example). Note the way these four activities are typically thought of as knowing-how processes, whereas the first four activities are usually thought of as knowing-that processes. However, what I am suggesting is that in order to make a claim of knowing, we are not, as commonly thought, providing a description of an experience (i.e. constructing propositional knowledge) but making a claim about it in what Sellars (1997) has described as 'a space of reasons', and that what follows from this is that we can and should understand and use concepts specifically in relation to current and future-oriented

networks of meanings. Brandom (1994: 48) has described this as 'playing a role in the inferential game of making claims and giving and asking for reasons', with the notion of giving a reason being understood as the making of an inference, so that if one makes a claim of knowledge, the contents of that claim consist of inferential commitments made in applying it in the world and further to this, these commitments refer to both the circumstances surrounding its content and its consequences. This strong version of inferentialism has been criticised on three counts: the translation of representational contents into inferential contents in every case cannot be satisfactorily made (Fodor and Lepore 2007); there is an over-emphasis on concept development and use and as a consequence an under-emphasis on other forms of knowledge development (Standish 2016); and there is an implied conflation between inferences drawn from knowledge claims and inferences which are a central part of these claims or judgements.

And further to this, the issue of representationalism needs to be addressed. Both Brandom and Taylor reject crude versions of representationalism that have dominated previous and current theories of learning, such as behaviourism and cognitivism. Representationalist theories of mind identify an inner realm of representations and an outer realm of objects in the world, which are placed in some form of dynamic tension. What follows from this and what should then be the focus of our investigation is not so much the existence of these two realms and the possibility of their identification, but the relationship between the two. The question therefore becomes, how do we understand the relationship between mind and world? Charles Taylor (1985) argues that this relationship is one of action rather than representation (whether this is understood as correspondence, reflection, sameness or manifestation) and this formed the central concern of his expressivist philosophy. Brandom (2004: 2) also sought to heal 'the dualistic wound inflicted by the heedless use of an over-sharp distinction between mind and world'. Both Taylor and Brandom in arguing for an expressivist view of the mind-world relation do so by prioritising expression before representation in the semantic process, that is, in the determination of meaning. (There are some important differences in their solutions to the problem, but they at least agree about the nature of the problem.) Expressing a feeling in action, for example, makes a difference to what that feeling is like. The minded action is not a representation of an action in the world, but, as Taylor (2011: 23) suggests, 'an expression makes something manifest in an embodiment'. Moral judgements bring about something. They do not simply act as

reflectors of some preformulated reality. Expression is a form of human activity. If meanings do not come before expression, then it is the expression itself that constitutes the meaning, though there are of course normative constraints on language-use and it is this that allows judgements to be made.

Five theories of learning are examined below, behaviourism, phenomenology, cognitivism, socioculturalism and materialism. The representational problem is also present here, since it is the dominant metaphor in behaviourist, cognitivist and materialist theories of learning. In the latter case representationalism is explicitly repudiated, indeed, this is the central argument made in its development as a theory of learning. However, by denying the possibility of both an agent and a referent in the process, this in itself means that the type of relation that constitutes the connection between mind and world can never be properly examined and given expression to (as an activity in the world). The first theory of learning is behaviourism.

Behaviourism

Behaviourism is a philosophical theory and has been used specifically within the discipline of education to provide an explanation for the play of social and educational objects in history. It makes three interrelated claims. The first of these is that if investigators are trying to understand the psychology of a human being, they should not be concerned with what is in her mind but with how she behaves. The second claim is that behaviours can be fully and comprehensively explained without recourse to any form of mental construct or event. The source of these behaviours is the environment and not the mind of the individual. And the third claim which behaviourists are likely to make and which follows from the first two claims is that if mentalistic terms are used as descriptors then they should be replaced by behavioural terms or, at least, those mind-dependent constructs should be translated into behavioural descriptors. These three claims provide the foundations for three behaviourist sub-theories: a methodological theory of behaviourism, a psychological theory of behaviourism and an analytical theory of behaviourism.

Methodological behaviourism has its origins in the sociological theory of positivism and the philosophical theory of empiricism, which can be understood as having the following characteristics: determinacy (there is a singular truth which can be known); rationality (there are no contradictory

explanations); impersonality (the more objective and the less subjective the better); verificationism (the meaning of statements about human behaviours and their origins are understood in terms of observational or experimental data); and prediction (explanations of human behaviours are knowledge claims formulated as generalisations from which predictions can be made, and events and phenomena controlled). John Watson (1930: 11), one of the originators of behaviourism, in this vein wrote as follows in relation to the purposes of investigating human behaviour: 'to predict, given the stimulus, what reaction will take place; or, given the reaction, state what the situation or stimulus is that has caused the reaction'. Psychological behaviourism has its roots in British empiricism and in particular in the associational theory of David Hume. Observed or experimentally induced associations allow the investigator to uncover causal structures on the basis of processes of spatio-temporal contiguity, succession and constant conjunction. Learning is therefore understood as associational without recourse to mental states or events, with an emphasis on the reinforcement histories of subjects. For psychological behaviourists any reference to experiences (especially if couched in the language of mental states or events) should be replaced by observations of events in the environment; and references to thoughts, ideas or schemata should be replaced by references to overt observable behaviours and responses to stimuli. Analytical behaviourism, whilst sharing many of the elements of methodological and psychological behaviourism, in addition, avoids what has come to be known as substance dualism; that is, the belief that mental states take place in, and should be treated as separate from, non-physical mental substances, and yet are causally efficacious, especially with regard to events in the material world.

Behaviourism as a theory of learning then suffers from a number of misconceptions. Because of its strictures against immaterial mental substances, agents endowed with the capacity to operate outside of embodied, socially derived or genetic causal impulses, reasons being conceived as causes of human behaviour, intentionality as a central element in any theory of human behaviour, and the internal conversation in learning (cf. Archer 2007), it is now rarely thought of as a coherent or convincing theory of learning. A number of problems with it have been identified, and perhaps the most important of these is the claim that a theory of human learning is not sufficient unless reference is made to non-behavioural mind-dependent states, whether these are cognitive, representational or interpretive. In particular, this refers to the way an individual represents

the world in relation to how they have done so in the past, and how this is conditioned by institutional, systemic, embodied and discursive structures; stories, narratives, arguments and chronologies; and structures of agency. A second reason for rejecting behaviourism is the existence of internal or inner processing activities. We feel, intuit, experience, and are aware of, our own inner mental states in the learning process. To reduce these phenomenal qualities to behaviours or dispositions to behave is to ignore the immediacy and instantaneous nature of those processes which condition learning. Finally, it is suggested that reducing learning to individual reinforcement histories is to develop an impoverished or incomplete theory, and consequently marginalise pre-existing structures, developed schemata, complex inner lives, prior representations and structural enablements and constraints, which allow learning to take place.

Behaviourist frameworks have implications for learning and instruction. The argument is made that positive reinforcement (Skinner 1953) leads to the replication of desired behaviours if the person comes to associate them with the receipt of rewards, such as merit marks or special privileges. Furthermore, knowledge is conceptualised in relation to the principles of behaviourism and as a result has a restricted shape and form. Again, this has implications for the construction of learning programmes, curricula and learning environments and indeed for wider issues such as identities, subjectivities and representational modes. Behaviourists use feedback, or in their terms, reinforcement, to modify behaviour. This is in contrast to cognitivists and sociocultural theorists who understand feedback as a guiding, supporting and strengthening mechanism to facilitate change within the conscious minds of learners.

Phenomenology

In contrast to behaviourist perspectives on learning there are phenomenological approaches. Phenomenology is a meta-philosophy that focuses on the three key aspects of learning, the relationship of the individual to and with the world involving a process of change, the subsequent conception and activation of being in the world, and how our descriptions, words, schema and theories can provide us with some purchase on that world. The focus is on the givens of immediate experience and this is an attempt to capture that experience as it is lived, both by the individual herself and the external observer. This knowledge-making activity is directed in the first instance to the things in themselves that are the objects of

consciousness, and that try to find 'a first opening' (Merleau-Ponty 1962 [1945]) on the world, free of those presuppositions brought to any learning setting. This entails a learning methodology which foregrounds subjective experiences and understands them in their own terms, both linguistically and conceptually, whilst at the same time treating these two modes separately. This presupposes that the experience of others is accessible to us, even if with the greatest of difficulty. And this points to the break with behaviourism that phenomenologists generated. Whereas behaviourists are concerned above all with the behaviour of individuals and eschewed the inner workings of the mind, phenomenologists understand consciousness as essential to any theory of learning. They are different aspects of the same phenomena; the world as it is lived by the individual and as it is known by that individual and others.

Phenomenological meta-theorists argue for a bracketing or suspending of our everyday understandings, beliefs and habitual modes of thought. This involves the bracketing out of our facticity (a belief in the factual characteristics of objects) and transferring the focus to our experiences. This complements the epoché where we learn (through a process of change) to see (because this is more truthful) only what is given directly in consciousness. The phenomenological reduction then is this attempt to suspend self and other viewpoints and already conceived perspectives on the world.

A number of phenomenological learning approaches have been developed: individualist, situated structural descriptive, dialogical and hermeneutic. The first of these, the individualist strand, comprises a process of introspection, where the learner assumes an external viewpoint in relation to herself and tries to understand her experiences from this external perspective. The second of these is a situated structural descriptive or empirical approach to learning. Here the learner looks for commonalities in the many appearances of the phenomenon, which is the object of the investigation. Beliefs are understood in most circumstances as causes of behaviours. Dialogical phenomenology is a pedagogic approach, which prioritises personal and structural change delivered through bracketing and the epoché. Hermeneutic phenomenology is concerned with understanding texts and in the first instance the learner seeks to understand and acknowledge the implicit assumptions she makes in relation to the text and her bracketing out of these presumptions.

Phenomenological approaches have significant implications for teaching and learning practices. They reconceptualise the pedagogic relationship so

that learning is now understood as a responsible, precarious and uncertain relationship between the teacher and the learner, and fundamentally as a 'personal existential relationship without an epistemological purpose' (i.e. it cannot be planned) 'as its first premise' (Saevi 2015: 342). Saevi further suggests that phenomenological conceptions of learning are about:

> helping the child to grow in and to humanness with and through the support of human, democratic, moral, ontological and existential intentions, incarnated in the pedagogical relationship. Not knowing the outcome of education and still trusting that there will be some outcome, now or later, is an educational intent that is carried by the adult's responsible ability and willingness to dwell in a kind of moral-pedagogical hesitation on behalf of the uniqueness of the child. The unique indefinite child has a potential that is both undecided and undecidable, and fundamentally unknown to the teacher. (Saevi 2015: 352)

What this means is that phenomenologists support a different conception of pedagogic relations to those embedded in preformed curricula, standardised learning programmes and summative forms of assessment and control. Feedback mechanisms are understood as those mechanisms, which are used to support pedagogical relationships that allow the learner to uniquely realise their potential, without specifying in advance or throughout the process what that potential is.

Cognitive Theories of Knowledge

Cognitive theories of knowledge part company with behaviourism's focus on observable behaviour. The emphasis is on mental structures and processes, and on internal representations of reality by the learner. Knowledge therefore has both external and internal referents. The central issues that interest cognitivists are the internal mechanisms of human thought and the processes of knowing. They are concerned to find out the answers to questions such as what and how it is stored, and how the integration and retrieval of information operates. Winograd and Flores (1986: 73) suggest that this symbol-processing or cognitive approach has the following characteristics:

> At its simplest, the rationalistic (i.e. symbol-processing) view accepts the existence of an objective reality made up of things bearing properties and entering into relations. A cognitive being 'gathers information' about these

> things and builds up a 'mental model', which will be in some respects correct (a faithful representation of reality) and in other respects incorrect. Knowledge is a storehouse of representations, which can be called upon for use in reasoning and which can be translated into language. Thinking is a process of manipulating representations.

Many of these ideas and assumptions (perhaps formally expressed, and in philosophical terms understood, as representationalist) can be traced back to the early decades of the twentieth century, for example to the cognitive learning theory of Edward Tolman (1932) or Jean Piaget's cognitive development theory. These theories of learning identify the basic mechanisms of learning in terms of stages, and the representation and storage of information. Jean Piaget (1962) suggested that there are a number of interactive mechanisms located between the stimulus and the person that characterise learning. The first of these is accumulation and this is where there is little schematic formation in the individual (usually due to age) and learning consists of recall and applications in situations that are similar to those which were originally absorbed. The second is assimilation and this is where a new element has to be addressed and made sense of by the individual; but this process is still essentially passive. The new elements are easily absorbed, indeed assimilated, into the existing schema of the individual and easily applied in the field in question. The third element is accommodation and this is where the new element cannot easily accommodate to the new schema and thus a process of transformation of both takes place, i.e. the original stimulus or object of learning and the schema that is attempting some form of accommodation with it. In Piaget's terms it has been internalised.

Piaget (1970) proposed that children and young learners progress through an invariant sequence of four stages: sensorimotor, pre-operational, concrete operational and formal operational. Those stages reflect differences in children's cognitive abilities. The learning process is therefore iterative, in which new information is shaped to fit the learner's existing knowledge, and existing knowledge is itself modified to accommodate the new information. Piaget's theory has a variety of implications for learning and instruction, such as, that the learning environment should support the activity of the learner. Learners acquire knowledge through their actions. As a result, a learning environment is created that encourages learners to initiate and complete their own activities. This is an active, discovery-oriented environment. Feedback is considered to be an essential requirement for the actions

of the learner, and this relates fundamentally to future learning experiences. In addition, learners' interactions with their peers are an important source of cognitive development: peer interactions are essential in helping children move beyond egocentric thought.

Learners need to adopt instructional strategies that make them aware of conflicts and inconsistencies in their thinking, i.e. they must experience disequilibrium, or an imbalance between their current cognitive structures and new information to be assimilated, in order for them to move to a new stage of development or to a state of equilibration. Content is not introduced until the learner is cognitively ready to understand it. As a result, the instructional design focuses on the development of an instructional method to facilitate the process of organising schematic structures, and to make meaningful connections between what the learner already knows and the learning object. Feedback mechanisms in cognitivist terms are understood as corrective with the expert or teacher engaged in providing information to the passive recipient. In contrast, facilitative feedback is more closely associated with the socio-constructivist viewpoint where feedback is understood as a dialogic process that takes place within a learning environment to help students gain new understandings, without determining what those understandings are.

Constructivist Theories of Learning

This symbol-processing or computational view of learning can be compared with learning theories which foreground cultural aspects, situated or embedded in society. Situated-cognition or sociocultural theories of learning view the person and the environment as mutually constructed and mutually constructing. As a result they stress active, transformative and relational dimensions to learning; indeed they understand learning as contextualised.

A particular iteration of sociocultural or constructivist theories is cultural-historical activity theory. That there now is a three-generation model of cultural-historical activity theory is part of its formation as an established theory. This and each generation of activity theory can be understood in two distinct ways. The first is in terms of its historical trajectory, so it is possible to understand Lev Vygotsky's (1978) theory of mediation as a reaction against what it emerged from, i.e. it sought to replace the stimulus-response model of the behaviourists, because it became apparent that there were aporias, gaps and contradictions in the theory itself

(the theory in short was inadequate); or it can be understood as an attempt to frame the concept as a universalising category. Both of these versions have meta-theoretical and thus universalising elements, insofar as the first requires a theory of history and the second requires a theory of social psychology. However, these universalising elements are framed in different ways.

Lev Vygotsky (1978) inspired the first iteration of cultural-historical-activity theory, and as its centrepiece had the well-known triangular model of subject, object and mediating artefact. When people engage in a learning activity (and in a sense this constitutes the principal activity of consciousness), they do so by interacting with the material world around them (though here the material world is embodied, structured and discursive). What they are doing is entering into a social practice, which is mediated by artefacts. This needs to be qualified in two ways: there cannot be an unmediated practice, so, for example, a discursive practice cannot be a-theoretic, and that as a consequence it is not possible to have direct access to the practice itself; indeed, it is difficult to understand the idea of a practice which is separate from the way it is mediated for us. Vygotsky (1978) therefore suggested that artefacts, such as physical tools, technologies or social norms, mediate relations between people and the environment. This in turn led him to a preoccupation with the notion of meaning and thus to the development of a notion of semiotic mediation and in particular to a rejection of the behaviourist paradigm, which posited a passive object-to-subject relationship.

Learning can be seen as adaptive rather than transformative, and Vygotsky's (1978) work has always been associated with the latter rather the former. However, the notions of adaptation and transformation are complex. The idea of adaptation would suggest that what is learnt conforms to those sets of behaviours, norms and strategies which constitute the social world, and which are external to the learner. The learner enters into a state of equilibrium, so that what is inside the mind of the learner (this changes) is now synchronised with what is outside the mind of the learner (which has not undergone any change at all). On the other hand, a transformative approach would suggest that both the mind of the learner and the object in the environment have changed. What this implies is not that one theory is misguided and should be replaced by another – a better account of a practice – but that there is a need to build into the theory being developed the possibility that some learning is adaptive and some is transformatory.

Four issues are of concern here. The first relates to whether meaning resides in the object itself or is created in conjunction with or through the interaction between subject and object. The second relates to the idealist tendencies in Vygotsky's thought and the potential they have for misappropriation and confusion (cf. Bakhurst 2009). The third issue is that all these mediating devices are expected to work in the same way, even though they have different grammars and constitutions. And what follows from this, specifically in relation to learning, is that it is hard to believe that every interaction has an equal possibility of influencing and thus changing the zeitgeist or at least the learning environment. For Vygotsky (1978) the focus of his analysis was tool mediation and the activity system where these mediations occurred, rather than the individual per se. However, what is being suggested here is that this activity can be transformational both for the system (or learning environment) and for the individual, but not in every circumstance.

The second generation of cultural historical activity theory (cf. Engeström 2001) is usually though not necessarily associated with the development of the original theory by Alexei Leontiev (1978), and in particular, his elaboration of the concept of activity, so that a distinction is now drawn between an action and an activity. An action is said to be motivated by the intention of the person: the person has an object or objective in mind; an activity is understood as undertaken by a community and thus has some of the characteristics of that community, i.e. a division of labour, various means of production and so forth. This still leaves many unanswered questions about both the mind-world relation and the way both of these and the relationship between them is transformed.

Five principles underpin the third iteration of cultural-historical activity theory, and in its articulation it is possible to discern its Marxist and Vygotskyian origins (Engeström 2001: 136). The first principle is that the activity system is central to the process of learning, that activity system being collective, artefact-mediated, object-orientated and networked with other activity systems. This constitutes the primary focus of analysis. The second principle emphasises the way the activity system is stratified, historicised (traces of other human activity are present) and multiply layered. The third principle is that activity systems are in a state of constant flux and thus are transformed as they are shaped. The fourth principle is that a notion of contradiction is central to the transformation of the activity system. These contradictions are both internal and external to the activity system being examined, and, as Engeström (ibid.) reminds us, they are

> not the same as problems or conflicts. Contradictions are historically accumulating structural tensions within and between activity systems. [...] Activities are open systems. When an activity system adopts a new element from the outside... it often leads to an aggravated secondary contradiction where some old element... collides with the new one. Such contradictions generate disturbances and conflicts, but also innovative attempts to change the activity.

Finally, the fifth principle suggests that activity systems move through long cycles of change, as the internal and external contradictions lead to and indeed cause individual and collective changes.

Vygotsky's central arguments about development and instruction have a number of implications. Cognitive development is better achieved through the use of dialogic pedagogies, in which the learner develops their ideas and understandings in discussion with their teacher and peers. This means that learning progresses better when the learning objects are scaffolded by a learning expert or at least by someone with more experience of the learning object and the learning process than the learner. In addition, learners need to be given tasks that are focused on what is developing within their minds rather than in relation to knowledge already developed, and they need to develop conscious mastery of the learning objects rather than reciting facts that may have little meaning for them. Edwards and Mercer (2007) refer to the former as principled knowledge and the latter as ritualised knowledge. The development of principled knowledge is not subject-specific, but involves general principles of learning, such as, that it is important not to teach something until the learner is able and ready to make sense of it. Programmes for learners should not be limited or constrained by the use of diagnostic or summative forms of assessment or by learning environments which do not allow help and support from teachers, parents and other students. The knowledge framework that structures the learning experience is understood as propositional, skill-based and dispositional, and is socially conceived both in origin and in individual development. As a result, arrangements within the learning environment need to be made which allow collaboration, collaborative learning, flexible learning and meta-forms of learning. This pedagogy would involve a rejection of strong insulations between different types of students and would be in opposition to essentialist notions of intelligence and ability. In addition, feedback mechanisms from a socio-constructivist viewpoint are understood as facilitative, with feedback seen

as a process that takes place within a learning context involving a dialogue between the teacher and the learner to help the learner gain new understandings.

Post-Human, Actor-Network and Complexity Theories of Learning

What distinguishes a complexity theory of learning from conventional theories is the different foci of researchers and investigators, so that it is now the flows and relations between objects rather than the objects themselves that solicit our attention (cf. Davis and Sumara 2006). Society is characterised by notions of continuous emergence, flux and change, which though non-predictive, can be adequately captured in language. Objects in the world cannot be characterised by their essential qualities, but only through their interactions with other objects. Complexity resides in all these various interactions which produce new objects (characterised as different forms of structure), and results in a bewildering array of arrangements of material and human objects; and because they are difficult to characterise rarely allow definitive accounts of what is going on to be produced. It is the complexity of these object-interactions and their subsequent and temporary coalescences that makes it difficult to provide complete descriptions of them. The epistemic level is unsynchronised with the ontological level because researchers and investigators have not developed sufficiently their instruments and conceptual schema for capturing something that is both ever-changing and has too many elements to it, i.e. it is too complex. However, this does not categorically rule out the possibility of providing more complete descriptions of events, structures, mechanisms and their relations in the world, and this suggests a notion of human fallibility which means that our actions (which correspond to learning episodes) are corrigible. The twin elements of complexity and temporal emergence (where systemic formations are understood as not incommensurable) cannot preclude correct descriptions being made of activities in the world, only that these elements can create considerable difficulties. This is further compounded by how emergence operates ontologically.

Many of these theorists go further than this (e.g. Osberg and Biesta 2007), and hold to a version of emergence in which there is a radical incommensurability between different formations over time (whether

material, embodied or discursive). Furthermore, it is impossible to predict what inter-connections, new formations and iterations of the object-system will be realised because the principles of the new mechanism are not given in the current arrangements. In other words, the relations between objects and the objects themselves, which make up activity systems, are not patterned in any meaningful sense; there is a radical incommensurability between these different iterations. What this also suggests is that any attempt to describe even the basic outline of the system and the way it works is incompatible with this idea of radical incommensurability. For example, the autopoetic principle (Maturana and Varela 1987) cannot coexist with radical incommensurability and chaos theory. In a similar way, localism, historicity, holism, organisational necessity, complex causality, logical circularity, non-linear dynamics and uncertainty, positive feedback, self-organisation and inter-connected diversity, are all principles which pertain to and indeed define complex systems (Alhadeff-Jones 2010); but which act to order our understandings of these complex systems and thus in part contradict the more important principles of radical incommensurability and chaos.

It is possible to focus on the formations, but not on the way they were formed. This operates at the ontological level. In other words, though one formation, it is acknowledged, has emerged from a concatenation of others (prior to it in time), this process cannot be codified or captured symbolically (using words, numbers or pictures) except by using words such as chance, non-linearity or non-predictability. However, each of these, as I have already acknowledged, is contested conceptually. Because something is non-predictable at the time it operates does not mean that it cannot be described after it has happened; a post-hoc theorisation of the object or arrangement. Non-linearity implies that the sequence of events has not followed the accepted pattern whether this has been deduced from previous occurrences or from logical and normative investigations, i.e. what should happen if X is transformed into Y, if certain logical canons are adhered to. Chance by virtue of what it is precludes an explanation of it.

Actor Network Theorists argue for a symmetricality of human and non-human elements, which means that at the level of analysis they should be treated in the same way. This has the effect of marginalising the hermeneutic dimension of learning, and fits better a structuralist or materialist ontology. The intention is to understand history not as the outcomes of originary actions by individuals or collectivities of individuals, but as sets of

material objects (human and non-human) coalescing and working together. It is the networks, confluences, collective action sets that produce the conditions of action. What follows from this is that the contents of these networks and the inevitability of flux and change as essential elements are likely to mean that our descriptions of them are incomplete and fragmentary. However, what applies to the networks and assemblages themselves and to the relations between them, also applies to the meta-theory itself. Thus notions of symmetry, translation, problematisation, interessement, immutable mobility, delegation, multiple-perspectivism and actor-networking should be understood as incomplete and undeveloped as the theorist tries to plot what is happening and what has happened.

Translation is the process by which entities come together to form networks, assemblages and the like. Fenwick and Edwards (2010: 98) suggest that an entity is a way to refer to various things that can be 'entanglings of human and non-human, including different kinds of material things and immaterial (conceptual, moral, virtual) things and actions, that are not pre-given, essentialised and defined'. The problem of symmetricality is foregrounded here, as this does not allow different entities and therefore different networks potentially to have different effects because they have different grammars and different capacities to influence the internal and external relations of a network or assemblage. By forgoing boundary and capacity analysis, the investigator is left bereft of explanatory tools.

Actor network theorising cannot then, amount to an argument in favour of social patterning or systemic predictability. Actor network theorists have argued against treating those traditional educational constructs and forms, such as curriculum, learning, leadership, management, standards, etc., as stable, expressing their opposition to the conventional understandings of these terms by pointing to the emergent and unstable ontology of material, discursive and human objects, and the need to move away from prioritising intentionality and therefore human agency over other objects in the world. This creates a particular aporia in the theory of actor networking, for which the notion of the actant is barely able to compensate. By disprivileging the agential and giving it equal status to other objects, action network theorists are making a point about what happens in the world. They are implicitly if not explicitly arguing not just that as theorists they should foreground something other than human agency, i.e. the relations between different networks of human

and non-human material objects, but that this allows a better purchase on the world than theories which privilege an essentialised version of the human being and their relations.

All discussions of a person over time require some understanding of change; that is, the notion of change is built into the conception of the human being. There is also the problem of persistence. If there were no cohering element between time moments, so that every moment entails a change of person, we would not have a sense of personhood, which therefore has to include a notion of persistence over time, and, in addition, has a notion of emergence. And this is emergence understood in its two modes: as a temporal phenomenon and ontologically as a response to the stratified nature of reality.

This sense of agency, structured in different spatial and temporal ways, allows and conditions the various acts of learning. Charles Taylor (1998: 12) writes about this sense of agency and its differential structuring in the following way:

> So autonomy has a central place in our understanding of respect. So much is generally agreed. Beyond this lie various rich pictures of human nature and our predicament, which offer reasons for this demand. These include, for instance, a notion of ourselves as disengaged subjects, breaking free from a comfortable but illusory sense of immersion in nature, and objectifying the world around us; or the Kantian picture of ourselves as pure rational agents; or the romantic picture . . . , where we understand ourselves in terms of organic metaphors and a concept of self-expression. As is well known the partisans of these different views are in sharp conflict with each other.

In characterising the field, there has been a concern with epistemic differences between the principal theories of learning, and therefore inevitably with the strength, probative force and attached value given to those relations and entities. This is the way the field is constructed. However, there are two implications of this. The first is that because the field has been constructed in a particular way this does not then preclude choices being made between these different theories. And secondly, these choices are underpinned by a particular theory of knowledge, which also has implications for the development of a theory of learning in which knowledge plays an important part.

Learning Models

Theoretical and contextual considerations impact, then, on how elements of teaching and learning are realised. Acknowledging this allows the identification of a number of learning models: assessment for learning, observation, coaching, goal-clarification, mentoring, peer learning, simulation, instruction, concept-formation, reflection, meta-cognitive learning, problem solving and practice. And each of these in turn is underpinned by a particular theory of learning. What this means is that any model of learning that is employed is constructed in relation to particular views of how we can know the world and what it is. These models or learning sets (and this includes feedback mechanisms of a particular kind) give different emphases to the various elements of a learning process.

The first of these models is the assessment for learning model. Assessment for learning can be presented as five key strategies and one cohering idea. The five key strategies are: engineering effective classroom discussions, questions and learning tasks; clarifying and sharing learning intentions and criteria for success; providing feedback that moves learners forward; activating students as the owners of their own learning; and activating students as instructional resources for one another (Wiliam and Thompson 2008). And the cohering idea is that evidence about student learning is used to adapt instruction to better meet learning needs; in other words, teaching is adaptive to the student's learning needs and evidence from the assessments is used by teachers, learners or their peers to improve instruction (ibid.).

An important aspect of this model is the active engagement of the learner in the learning process as both an initiator and user of feedback. The key then is the relationship between assessment (designed as formative and developmental) and learning. Evans (2013) has suggested that this also includes a number of key processes: feedback is on-going and an integral part of assessment; assessment feedback guidance is explicit; greater emphasis is placed on feed-forward processes rather than feedback activities; and learners are engaged in, and with, the process. The assessment for learning movement has been criticised on three grounds: the focus on formative assessment has inevitably marginalised other learning elements; as a result, some of the strategies are both misunderstood and consequently misapplied, for example, peer learning does not amount to asking students to make quantitative judgements about their colleagues' work in relation to a set of criteria;

and the reductive process for the purposes of quantifying and comparing results may have led to a distorted understanding of the process of learning.

The second learning set is an observation model. Here the teacher displays the action which the learner is required to imitate in the classroom, and then later in the context of application. There are three principal types: a live model involving a demonstration or acting out of the behaviours to be learnt; a verbal instructional model where this comprises descriptions and explanations of behaviours; and a symbolic model, examples of which are scenarios and expressive performances. These are stimuli for learning. The learning skills required of the learner are: observing a performance by the teacher, whether this comprises live modelling, verbal instruction or symbolic modelling; comparing the performance with an embodied form of that display already held by the learner; adjusting their current construct through modification or substitution; practice by the learner whilst being supported within the artificial environment; practice by the learner without support within the artificial environment; transferring the skill to the real environment whilst being supported; and consolidation without support through use in the real environment (cf. Bandura 1977). This model is underpinned by a cognitivist theory of learning.

The third of these is a coaching model. Here the focus is on a series of steps: modelling by the expert; coaching whilst the learner practices; scaffolding where the learner is supported during the initial stages with that support gradually being withdrawn as the learner becomes more proficient (coaching here involves the teacher in identifying for the learner deviations from the model in the performance of the learner, and then supporting the learner as they make attempts to correct this performance); articulation by the learner of that process; reflection on those processes and comparison with the expert's reasons for action; and exploration where the learner undertakes the various activities without support (cf. Collins et al. 1989). Coaching can be seen as a one-to-one activity, or as a collective exercise within a community of practice. This model better fits a sociocultural theory of learning.

A fourth model involves clarifying and sharing learning intentions and criteria for success with the student over a period of time. To this end, teachers provide learners with explicit statements and explanations about the instructional objectives in a lesson or series of lessons (Zimmerman and Schunk 2011). Goal clarity has three learner-focused aspects:

explanations about how they are expected to perform the tasks assigned to them; opportunities for them to grasp what is expected of them; and reflections about their capacity as self-directed learners in the completion of the task. This mechanism comprises a number of processes: identifying the standard and interpreting its meaning; providing a description with the learner of their mastery of that standard, which should allow the identification of weaknesses in their capacity and the means for ameliorating these weaknesses; record-keeping for further identification of the learner's current capability; reflection on this and the identification of the means of improving; and a meta-reflective record of progress in the curriculum (Meece et al. 2006).

A fifth model is mentoring. This supports the informal transmission of content knowledge, social capital or psychosocial resources. It is usually conducted face-to-face and involves a relationship between two people, one of whom is considered to have greater knowledge, wisdom or experience. Five possible mentoring techniques have been identified (cf. Aubrey and Cohen 1995): supporting the learner and taking part in the same activity and learning side-by-side with them; preparing the learner for the future even if they are not ready or able to learn what is being offered to them in the present; catalysing learning so that it provokes a different way of thinking, a change in identity or a re-ordering of values; showing through personal example; and finally, helping and supporting the learner in reflecting back on their previous learning. The terms coaching and mentoring are often used synonymously; however, important distinctions between these two approaches can be identified. In distinguishing between these two terms, Clutterbuck and Megginson (2005) identify three specific differences in terms of emphasis: time-scale, approach and context. For example, coaching is focused on performance change whilst mentoring is focused on managing elements of the life-course; and coaching is focused on the immediate context whereas mentoring involves enlarging a learner's networks. In addition, coaching is typically seen as of much shorter duration and in response to a specific goal, whereas mentoring considers immediate issues as part of long-term change. Both mentoring and coaching are about achieving change, and place a strong emphasis on the development of learner self-regulation through the use of appropriate tools, such as critical reflection and scaffolded support.

A sixth model of learning is peer learning. The other forms of learning comprise unequal relations between the teacher and the learner. Here the assumption is made that the learning relationship is between equals, and

thus a different form of learning is implied. Examples of this type of learning include: being offered emotional support if learning proves to be difficult and this is always a better form of support if given by someone who is going through the same learning process; dyadic performance confrontations, where learning is provoked by confrontational exchanges between learners so that each individual can test their theories, ideas and constructs against those held by other learners engaging in the same type of learning; pair-problem-solving, where learning is enabled through cooperation between two learners of roughly equal standing, so that in a problem-solving exercise, better solutions are forthcoming because there are two problem-solvers rather than one; reciprocal peer tutoring, where non-expert tutoring between equals has the advantage of each person being able to make their own evaluation of the advice being offered unencumbered by status or hierarchy; and scripted cooperative dyads, where peer engagement is focused on the joint production of a script, artefact, performance or text with the advantage that alternative and new interpretations/readings are forthcoming (cf. Falchikov 2001).

A seventh model of learning involves simulation. Simulation is a reproduction of an event or activity, conducted outside the environment in which that event or activity usually takes place. Simulations can be produced through computer games, role-plays, scenarios, presentations and affective and conceptual modelling. The purpose of this learning process is to simulate a real event, and this is to allow the person or persons taking part in that simulation to explore it, to experiment within it, to understand the process, to begin the process of internalisation, to experience albeit in a limited way the emotions and feelings that would normally accompany the experience in real-life, and fundamentally, to allow learning to take place through trial and error and making mistakes in safe situations, which do not have the consequences they would have in real-life situations. Simulations compress time and remove extraneous detail. They are immersive learning experiences, where skills and performances can be enhanced in a way that is not possible outside the simulation. Simulation is an element of learning that has implications for all the theories of learning that have been identified above. As a consequence of the simulative effect the pedagogic object is different in some fundamental respects from the original learning object.

In the instructional model the teacher needs to: gain the attention of the group of learners; inform the learners of the objectives of the learning exercise; stimulate recall of prior learning amongst the group of learners,

so that the new information is related productively to previous and current learning; present content to the learner; implement appropriate scaffolding processes; stimulate a performance by the learner; provide feedback to the learner which is a comment on their performance and allows corrective action to take place; and evaluate the corrected performance (cf. Gagné 1985). Cognitivist theorists of learning commonly advocate instructional models of learning, because of the emphasis they place on invariant knowledge objects and schematic adjustments to accommodate these objects.

A concept-formation learning process focuses on the re-forming of the conceptual schema held by the learner and one version of it is underpinned by an inferentialist pragmatist philosophy (cf. Brandom 2000). This positions knowledge and knowledge-development within networks of meaning that are social in character and historical in origin. Learning is complex and potentially rich and rewarding, where the learner is presented with a mass of information, ideas and opinions from a number of different sources (i.e. books, articles, lectures, seminars, emails, eseminars, personal communications and so on). What the learner does is shape this mass of information, and this shaping can take a number of different forms: partial shaping, complete shaping, discarding with no replacement, confusion, on-going, going backwards and forwards and so on. Shaping takes place against a scholarly background; aspects of which may or may not be implicit and where some but not all of its aspects can be surfaced for deliberation. Conceptual learning is irredeemably social, embedded and selective. So the learner has to absorb some of the ideas they are presented with and discard or partially discard others. Again, this notion of concept-formation has elements of sociocultural theories of learning.

Reflection is a seminal form of learning. It has been variously described as critical reflection, reflective practice, reflective thinking and reflexivity. Whereas some see these terms as interchangeable and as having similar meanings, others have sought to differentiate between different types and levels of reflective activity (cf. Black and Plowright 2010). Not all reflection is critical reflection. Bolton (2010: 13) defined reflection (single loop activity) as 'an in-depth consideration of events or situations outside of oneself: solitary or with critical support', and reflexivity as a double loop process which includes reflection and reflexivity and is focused on 'finding strategies to question our own attitudes, thought processes, values, assumptions, prejudices and habitual actions, to strive to understand our complex roles with others'. Wilson and Demetriou (2007) differentiate between three types of reflective practice: intensive action reflection which

is seen as tacit, implicit and occurring on a daily basis in practice where individuals use intuitive tacit knowledge to inform practice (reflection-in-action); reactive or reflective learning (knowledge of action) involving immediate reactive reflection on events that have already taken place; and deliberative reflection (knowledge for action) involving the conscious management of thoughts and activity and the deliberate setting aside of time to ensure that judgements are based on a deep understanding of a particular issue.

The learning cycle, developed by David Kolb (1984), is based on a belief that deep learning (learning for real comprehension) comes from a sequence of experience, reflection, abstraction and active testing. Reflection is a form of evaluative thinking. It is applied to ideas for which there is no obvious solution and is largely based on the further processing of knowledge and understanding and possibly emotions that the learner already possesses. It is thus a second-order internal activity, which can in certain circumstances be transformed into a learning strategy. There are some optimum conditions for reflection: time and space, a good facilitator, a supportive curricular or institutional environment and an emotionally supportive locale for learning. Models of learning based on the learning cycle have been criticised for introducing behaviourist notions such as learning styles and passive experiences of the learning object, and in particular, by actor network theorists, with their dislike of pre-given, essentialised and defined processes and objects.

Meta-cognitive learning refers to learners' awareness of their own knowledge and their ability to understand, control and manipulate their own cognitive processes. Most meta-cognitive processes can be placed within three categories (cf. Harris and Graham 1999). The first is meta-memorisation. This refers to the learners' awareness of their own memory systems and their ability to deploy strategies for using their memories effectively. The second is meta-comprehension. This refers to the learners' ability to monitor the degree to which they understand information being communicated to them, to recognise failures to comprehend and to employ repair strategies. And the third is self-regulation. This term refers to the learner's ability to make adjustments in their own learning processes. The concept of self-regulation overlaps with meta-memorisation and meta-comprehension; its focus is on the capacity of the learners themselves to monitor their own learning (without external stimuli or persuasion) and to act independently. These regulatory processes may be highly automated, making articulation of them difficult for the learner.

A problem-solving approach is where the learner finds out for themselves rather than being given answers to problems. The learner is required to engage in a series of interrogative processes with regard to texts, people and objects in the environment, and come up with solutions to problems. The learner is also required to use the skills of information retrieval, information synthesis and analysis, and knowledge organisation. The learner may come up with inadequate, incorrect and faulty syntheses and analyses. However, this is acceptable because the learning resides in the process rather than the end product. Problem-solving learning involves the learner in judging their own work against a curriculum standard and engaging in meta-processes of learning, that is, understandings about processes related to their own learning; the development of learning pathways; the utilisation of formative assessment processes; the development of personal learning strategies; and the internalisation of the curriculum.

Finally, there is practice. Practice is the act of rehearsing a behaviour over and over again, or engaging in an activity again and again. This reinforces, enhances and deepens the learning associated with the behaviour or activity. Choosing between these models depends on the nature and constitution of the learning object; in other words, the former is logically dependent on the latter. It also depends on the choice of learning theory that is made. These learning models have a crucial role to play (whichever one is chosen) in processes of learning and constitute elements of Bernstein's (2000) pedagogic device.

Pedagogic Knowledge

Knowledge is transformed at the pedagogic site, so it is possible to suggest that qualities such as: the simulation of the learning object, the representational mode of the object, its degree and type of amplification, control in the pedagogic relationship, progression or its relations with other learning objects (i.e. curriculum integration), the type of pedagogic text, relations with other people in the learning process, the organisation of time (temporal relations) and types of feedback mechanism are fundamental components of this pedagogic transformation. What this means is that in the learning process, the learning object takes a new form as a result of changes to its properties: simulation, representation, amplification, control, integration, textual form, relations with other people, time and feedback. In contrast to some frameworks, i.e. Bernstein's sociolinguistic code theory (2002) or

Maton's (2014) knowledge and knowers thesis, the sheer complexity of the possible pedagogic knowledge forms that this allows means that relations between pedagogic arrangements and social arrangements, and between these pedagogic arrangements and notions of identity-formation and social positioning, can only be tentatively sketched out. I will not be attempting this task here.

The first of these is the degree and type of simulation. In a simulation a new medium is chosen which gives the learning object a new form, these media being virtual, graphic, enumerative, enactive, symbolic or oral. Indeed, depending on the new form, there is a distance between the original object and the mediated object, and this can vary in strength. This does not mean that the object is better or less well represented in its new form, only that it takes on a new guise; it is pedagogically formed. And this means that its potential impact is likely to be different. A simulation might involve, for practical purposes, a computer representation of something in nature that cannot be experienced by the learner. Inevitably, the elements of the object and the relations between those elements are both reduced and changed in the simulation; and what this means is that any reaction or response to the object by a learner is influenced by its new media as well as the shape and form it now assumes. The response is always to the mediated object. And the implication of this is that the pedagogical relation between the learner and the world is never direct but is realised through the mediated object, with the process of knowing the unmediated object a retroductive one ('from a description and analysis of concrete phenomena to a reconstruction of the basic conditions for these phenomena to be as they are' – Bhaskar 2010: 34), although this may be understood in a different way by the learner.

A second property is the type of truth criterion that the knowledge-constructor adopts. In Chapter 2 I referred to David Bridges' (1999) five conceptions of truth: truth as correspondence, truth as coherence, truth as what works, truth as consensus and truth as warranted belief. This property comprises a determination of the relationship between knowledge and the world, though it should never be assumed that this relationship is straightforward, linear or easily understood.

A third property, which is subject to transformation during the learning process, is amplification. Amplification is a central term in rhetoric, and stands for all the ways that an argument, explanation or description can be expanded and enriched. In addition, amplification refers to the capacity of the pedagogic object to increase in size, in extent, or in effect, as by the

addition of extra material. The use of a microscope in a science laboratory, or the use of the Internet to extend the reach of the learning object, or the taking of a deliberate and alternative position from the accepted norm for the sake of debate or to further the argument, but always to deepen the learning process, are typical examples of amplification.

A fourth property is control in the pedagogic relationship. Framing refers to the message system of pedagogy (cf. Bernstein 2000). Do teachers and pupils control its content, its organisation, how it is sequenced and so on? A syllabus with rigid topics, to be completed in a predetermined order, within a specified time, is strongly framed. Weak framing occurs when the teacher is able to select topics on the basis of some principle, and organise the sequence and pacing of material according to pupil readiness. Two control pathways can be identified. The first refers to the relationship between teacher and learner *and* the curriculum organisers of knowledge (these organising processes may be formal or informal), so a teacher or facilitator of the message system has either a restricted or extended control over the way it is received in the pedagogic setting. The second refers to the relationship between the teacher *and* learner and again this refers to the amount of control either one or the other has over the constitution of the message that is central to the pedagogic or learning process. Clearly, in this last case the one varies in relation to variation in the other.

A fifth property is curriculum integration or the types of relations between other learning objects. Progression is one manifestation of these relations. Curriculum standards, or learning objects, are written at different levels of difficulty. Most forms of progression between levels or grades in curricula round the world are based on a notion of extension, i.e. at level one a student should be able to do this or that, at level two the student is expected to be able to do more of this or that, and at level three the student is expected to be able to do even more of this or that. However, there are other forms of progression between designated knowledge sets, skills and dispositions besides extension. Indeed, some knowledge sets, skills and dispositions cannot be appropriately placed at some lower-level or even some higher-level grades. For example, many countries round the world have chosen not to start formal reading processes until at least seven years of age, and thus reading does not feature in the curriculum standards at pre-primary levels in these countries.

Modes of progression can take a variety of forms. The first type is prior condition. In the acquisition of particular knowledge, skill and dispositional elements, there are prerequisites in the learning process.

An example might be mathematical where knowledge of addition is a prerequisite of multiplication. A second type is maturational. A maturational form of progression refers to the development of the mind of the child. There are some mental operations that cannot be performed by the child because the brain is too immature to process them. A third type refers to the notion of extension. An extensional form of progression is understood as an increase in the amount, or range, of an operation. Greater coverage of the material is a form of progression, so a child now understands more examples of the construct, or more applications of the construct, and can operate with a greater range of ideas. A fourth type is a notion of intensification; and this refers to the idea of deepening or intensifying the construct or skill. Whereas extension refers to the amount or range of progression, intensification refers to the extent to which a sophisticated understanding has replaced a superficial understanding of the concept. This refers to the complexity of the operation. There is also a type of progression, abstracting, where movement is from a concrete understanding of a concept to a more abstract version. A further measure of progression is an increased capacity to articulate, explain or amplify an idea or construct, i.e. the child retains the ability to deploy the skill and in addition, she can now articulate, explain or amplify what they are able to do and what they have done. A final form of progression is about process, and this refers to the way the learner accesses the curriculum object. An example could be moving from an assisted performance to an independent one. These forms of progression are not of the same order; however, they refer to different aspects of the process of learning. There is no category error here. They are linked by their capacity to affect different parts of the learning process, and in particular, where an individual moves from one state of being to another. For example, extensional forms of progression focus on the objects of learning, whereas process forms of progression focus on the learner and the way they can and do respond to these objects.

Fogarty (1991) has identified ten models of curriculum integration and these range from strongly classified and strongly framed curricula, as in the traditional or fragmented approach, *to* weakly classified and weakly framed networked approaches to curriculum planning (cf. Bernstein 1985). Between the two extremes: traditional or fragmented and networked approaches, she identifies eight other points on the continuum: connected, nested, sequenced, shared, webbed, threaded, integrated and immersed. Each of these forms of integration can only be understood in

relation to their position on this continuum and in relation to how they approximate to one or the other of the end points of the continuum.

Finally, pace of learning is important, i.e. the pace at which a student works in completing a learning activity, or the pace at which they are expected to work against some norm, i.e. the average or mean of a population. Pace can be understood as a performative construct so that it is not meant to provide an empirical description of how a person has performed but is designed to act as a stimulus to increase the pace of learning for the general population; it thus has an explicit normative function.

A sixth property is the constitution of the task given to the learner in the pedagogic setting. As I suggested in a previous chapter, there is a range of learning tasks or activities that take place in classrooms, such as: working with other people, individual study, sharing, debating, playing games and so forth. Learning tasks have a number of constituent elements and how they differ in kind allows us to determine and identify these different elements: media of expression, the logic of this mediated expression, its fit with a learning model, its assessment mode and its relation to real-life settings. Media of expression include: oral, graphic, pictorial and enumerative modes. Each of these media has an encompassing logic to them, so that a task which requires a written response to a request is of a different order as a learning experience to one which requires an oral response. A further component of a pedagogic task or activity is the mode of assessment that inheres in it, with these modes of assessment being understood broadly as formative or summative. Finally, there is the authenticity of the task and this refers to whether the task relates to real-life settings or not, or to the degree to which it does this.

The activity or learning task has a logical relationship with the learning model being employed. Frequently there is a mismatch between them so the task or activity (i.e. an oral response to a question, a written analysis of a text, a reading exercise, an argumentative response, a feedback loop and so forth) and the type of learning model that is being adopted are incompatible. For example, a metacognitive exercise that is focused on propositional knowledge rather than process knowledge would be inappropriate. A dialogic peer-learning exercise that asked each participant to grade each other's work on a five-point scale again would be inconsonant. Feedback that failed to engage the learner in a conversation would not work.

Questioning, for example, sets up a choice situation between a finite range of possible answers. The type of answer that can be given legitimately

has to be implicit in the grammar of the question, both in its form and content. For example, open-ended questions offer an infinite range of answers; that is, the restricting and enabling quality in the question is weakly formulated. What this means is that there is a greater range of possible answers to the problem. This has to be qualified in the sense that some questions by virtue of their propositional content have a greater facility for generating appropriate answers; whereas other questions have fewer possibilities for generating appropriate answers. However, this does not nullify the original proposition, which is that the form a question takes, placing this on an open-ended to closed-ended continuum, restricts or enables the types of correct answers that can be given to that question to different degrees. The reason for designating both an enabling and restricting function is to indicate that any action performed by an individual is located in discursive and material contexts and that these contexts exert an influence on the action itself.

A seventh property is the relationship between the learner and other people in the pedagogic setting. One way of characterising the relationship between the person, text, object in nature, particular array of resources, artefact, allocation of a role or function to a person or sensory object *and* the learner is by determining its strength along a continuum ranging from a diffuse mode to a concentrated mode. What this means is that the message being conveyed is embedded in a relationship between the stimulus and recipient, which is either diffuse or concentrated, or could be placed on a continuum between them. An example of a diffuse strategy is an instructional mode of learning where the stimulus is being shared by a number of people. An example of a concentrated strategy is a one-to-one coaching relationship. What are the possible effects of these two types of learning? Since the relationship is both from the catalyst to the learner or learners and also from the learner or learners to the catalyst then this is going to influence the type of message received by the learner. We model the world as a sequence of messages passing from one to the other. The stimulus is clearly of a certain type. These are message conveyance systems or processes of semiotic transmission that operate with a particular stimulus denied to the learner if the stimulus for learning is different.

Learning is always embedded in temporal arrangements of one type or another. A curriculum is an arrangement of time given to different items of knowledge, so any learning episode is going to be embedded in these arrangements of time. These eight properties of the learning environment means that there is potentially a large range of possible environments since

there is considerable variation within each dimension and in most cases variation in one dimension is independent of variation in the others. Finally, there are feedback mechanisms and again there is variation in this element.

Feedback

Feedback is a systemic property (in the case I am considering here this is the learning process or system) and broadly consists of two types: feedback as it operates in closed systems and feedback as it operates in open systems. Closed systems are characterised by two conditions: objects operate in consistent ways, and they do not change their essential nature. Indeed, feedback mechanisms in this mode act to return the system to a state of equilibrium. Neither of these conditions pertains to open systems. Social objects are the real manifestations of the idealised types used in discourse and are the focus for any enquiry. They are structured in various ways, and because of this, they possess emergent powers. The powers that these mechanisms such as feedback processes exert can be one of three types (cf. Brown et al. 2002). Powers can be possessed, exercised or actualised. As a result, a causal model based on constant conjunctions is rejected and replaced by a generative-productive one, and objects and relations between objects (as in educational systems, learning processes or testing regimes) have emergent properties.

A closed system operates through deterministic rules, which govern its change processes. As Osberg (2015: 28) suggests:

> Such rules produce self-generated feedback within the system, which in turn generates an interlocking and irreversible hierarchy of change, which causes the properties that emerge in prior levels to constrain the properties capable of emerging in subsequent levels. Thus any emergent features of the system are generated in a fully determined series or 'trajectory', which, provided the initial conditions remain the same, can be replicated with absolute precision time and again.

While this form of historical change leads to continually evolving arrangements and institutions, especially with regard to learning, the change that is produced is self-contained within the system itself. Feedback is thus generated within the system and has as its purpose the maintenance of equilibrium within that system. This can be compared with the

irreversibility of a system where the rules that underpin change (including particular manifestations of feedback) do not determine and cannot determine what actually emerges.

Prigogine (1980), for example, describes this as 'symmetry breaking', and he further argues that it then becomes a matter of chance, because this is an open system. The insertion of a notion of chance at each critical moment means that the 'material historicity' of the system will be both unpredictable in practice and also in principle. In this sense, then, both change and feedback fit with a 'metaphysics of difference/change and hence also with a number of post-structural perspectives' (Osberg 2015: 29); and are in opposition to weak emergentist perspectives as in structuralist, behaviourist and phenomenological understandings of system change and feedback.

Closed and open systems can also be distinguished by the degree and type of determinism that each implies. Determinism would imply in its strongest form that our thoughts, feelings and subsequent behaviours do not deviate from the impulsions laid down in our genetic make-up or in customised knowledge within our bodies or in the social arrangements (i.e. embodied, discursive, agential, institutional and systemic) that constitute our lives. However, if we want to build in notions of agency and feedback, then we have to believe that our cognitive and volitional capacities can operate without recourse to, and outside of, those causal impulses that come from these determining impulses. Furthermore, if we hold to a belief that our cognitive and volitional capacities are inextricably tied to our genetically determined, embodied or socially determined impulses, then it follows that our capacity to determine whether or not we are being deceived, i.e. our capacity to tell the truth or not about our fundamental belief in determinism, is thoroughly compromised. Agency therefore involves a set of activities that are not caused or influenced by those impulses that emanate from our genetic, embodied or social beings; that is, they do not involve an affirmation or a negation of them or even a reaction against them.

Hattie and Timperley (2007) use assessment feedback as a general concept to categorise definitions and types of feedback using the following dimensions: role, type, foci, meaning and function. Functionally, feedback has a scaffolding form and aims to bridge the gap between the level achieved by an individual learner and a normative level, which is subsequently used to amend that gap. However, Hannafin et al. (1993) argue that it can only be called feedback if it 'alters the gap' and has an impact on learning. They distinguish between task, strategic and affective feedback.

Task feedback is defined as providing activities that clarify or reinforce aspects of the learning task. Strategic feedback comprises diagnostic-prescriptive, performance, management and process activities. Affective feedback is understood as a process of engaging learners through eliciting and sustaining their interest and engagement. Hattie and Timperley's (2007) four-fold model of levels of feedback (task, process, self-regulation and self) is an extension of this.

Black and Wiliam (1998) distinguish between directive (what needs to be changed) and facilitative (what processes can guide the learner to make those revisions to their work) types of feedback. Nelson and Schunn (2009), in developing this framework, identify three broad types: motivational, where the intention is to influence the beliefs of the learner and their willingness to participate in the learning activities; reinforcing, where the aim is to reward or to punish specific behaviours; and informational, where the purpose is to change the performance of the learner in a particular direction. They point to the importance of being able to develop knowledge through a transfer of learning so that it is applicable in new contexts. Thus feedback is understood as multi-functional in relation to different learning environments, the needs of the learner, the purpose of the task and the particular relation feedback has to the learning theory being employed. A directive approach to feedback fits better a cognitivist perspective where it is understood as corrective with the expert providing information to the passive recipient. Alternatively, facilitative feedback identifies more closely with a socio-constructivist view where feedback is seen as a process that takes place within a learning environment, without determining what those understandings will be. Significantly, these two perspectives should be seen as reinforcing rather than as opposite ends of a continuum. The socio-constructivist view is highlighted in the need to see feedback as an integral and iterative part of the learning context and within formative assessment frameworks that emphasise interactions between teachers, pupils and subjects within communities of practice (cf. Boud and Falchikov 2006). Furthermore, within a co-constructivist approach, it is also accepted that the teacher learns from the student through dialogue and participation in a range of shared experiences (cf. Lave and Wenger 1991). Within such environments, feedback is understood as iterative, adaptive and dynamic, with different learners receiving different types of feedback and this varies at different stages of the learning process.

I have examined in this chapter the concept of learning in relation to: learning theories, i.e. behaviourist, phenomenological, cognitivist, constructivist and materialist; learning models, i.e. assessment for learning, observation, coaching, goal-clarification, mentoring, peer-learning, simulation, instruction, concept-formation, reflection, meta-cognitive learning, problem-solving and practice; and the many-faceted components of learning environments (i.e. the simulation of the learning object, the representational mode of the object, the amplification of pedagogic resources, control in the pedagogic relationship, progression or relations with other learning objects over time (curriculum integration), relations with other people in the learning process, the organisation of time and pace of development (temporal relations), the type of pedagogic text and the evaluative mode). Above all in this chapter, I have sought to position feedback mechanisms, their constitution, their function and their possible effects, as parts of a learning process. This social theory of learning then has implications for teaching and learning practices in the modern academy, and the appropriate relationship between everyday practical knowledge and what can only loosely be described as scientific knowledge.

CHAPTER 5

Learning and Academic Knowledge

A first step for any knowledge investigator (and in this book this is my role) is to contrast scientific knowledge (broadly knowledge that is integral to pedagogic processes) with practical knowledge (broadly knowledge that allows us to go on in life), that is, to identify the constituents of each and the relations between them, and then to show how they are different or the same. For example, it has been suggested that scientific knowledge is nomological (i.e. the knowledge claim can be couched in a language of rules and invariant happenings), whereas everyday or practical knowledge is idiographic (i.e. the focus is on the meaning of contingent, unique and perhaps subjective phenomena).

In Chapter 2, I suggested that there are four possible approaches that can be taken by the investigator in their work: inductive, deductive, retroductive and abductive strategies. An inductive-nomological approach consists of three processes (cf. Harré 2011): accumulation, induction and instance confirmation. A deductive-nomological approach involves the collection of empirical data to confirm, disconfirm or partially confirm an original hypothesis or hypotheses. Retroductive processes comprise the fashioning of inferential connections between mind and world, and therefore constitute moves that progress from an instance of a concrete phenomenon to the basic conditions for it to be as it is (Bhaskar 2010). Finally, the abductive reasoning strategy is a form of logical inference, which consists of a move from an observed phenomenon to a theory that can account for that observation. Here we are dealing with an inference to

D. Scott, *Education Systems and Learners*,
DOI 10.1057/978-1-137-59884-4_5

the best possible explanation. These four strategies are all nomological in kind in that they seek to identify laws or make propositional rule-bound claims to knowledge, which persist over time and/or place; whereas practical knowledge makes no such claims, or so the argument goes.

Another way of framing this argument is contrasting abstract knowledge with concrete knowledge (i.e. knowledge of particulars); an abstraction being understood as a mental construct in which new ideas are formed if a number of these ideas are analysed together and those features that are different are then omitted. If we consider a range of so called blue objects, we can abstract from them their different qualia and thereby come to a notion of blueness. The object itself is initially conceptualised in its concrete form. The claim is then made that practical forms of knowledge do not engage with these processes of abstraction.

A third way of framing the argument is to invoke a notion of generalisation. Its defining property is that the knowledge claim being made can accommodate more than one instance of a concrete event. There are two problems here. How do we identify, and in the process come to understand, the boundaries of an object, a concrete event or happening in the world. And secondly, how do we reconcile this identification of the object with it being manifested in a number of ways. For example, in order for the object to be manifested quantitatively, i.e. that there are a number of instances of it, there has to be some measure of generality already present in the object itself; the words, concepts and ideas used can then embrace a large number of instances or manifestations. The intention however, may not be to accommodate a number of the object's manifestations, but to give a detailed account of a mechanism and how it might work in the world. In both cases knowledge of the object is not isomorphic with the object itself.

Another attempt at distinguishing between the two forms of knowledge is that scientific knowledge is knowledge that is not tainted by values, interests, preconceptions and so forth, whereas practical knowledge is ontologically valued knowledge. Generally, knowledge is said to be objective when it is not influenced by personal values and emotions, whereas subjectivity refers to knowledge that is based on personal opinions, feelings and interpretations. However, as I have suggested elsewhere (cf. Scott 2011), the concept of objectivity (as it is used in the world) contains multiple rather than singular meanings. It is possible to give six different meanings to objectivity and thus correspondingly to subjectivity, namely ontological objectivity (i.e. something can exist with or without it being perceived by human beings), truth conditional objectivity (i.e. if something meets a set of truth

conditions, it is objective), positional objectivity (i.e. something is objective when the relevant knowers' traces such as values and interests are excluded), extrinsic objectivity (i.e. something is objective if it can be directly accessed through observation; matters such as inner states are not directly accessible and therefore can be thought of as being subjective), method objectivity (i.e. something is objective if its mode of application to the world is correct) and warranted objectivity (i.e. something is objective when more than one knower agree on its truthfulness). The distinction between value-free and valued knowledge cannot be directly read into the distinction being made here between scientific and practical forms of knowledge.

A further justification for scientific knowledge is that it is produced in specialised places or locations for the production of knowledge (i.e. in most cases the disciplines). The opposing view is that those places are either interdisciplinary and/or transdisciplinary. The argument for interdisciplinarity starts from the premise that a multiplicity of causes and theories is always involved in the explanation of any event or concrete phenomenon. However, in order to move from a plurality of mechanisms to interdisciplinarity and then to transdisciplinarity, it is necessary to add a notion of emergence to that of complexity. An emergent level of reality is dependent on a more basic one; irreducible to the more basic one; and additionally, causally irreducible in the domain in which the basic one operates (Bhaskar 2010). If such emergence is involved, then the characteristic plethora of mechanisms in open systems needs to be studied through a multiplicity of disciplines. Furthermore, if in addition to an emergent level, a qualitatively new outcome is involved in the causal nexus at work, then the knowledge required can no longer be generated by the additive pooling of the knowledges of the various disciplines concerned, but requires a whole integration, or genuine transdisciplinarity.

A number of suggestions have been made above, which would allow us to distinguish between scientific and practical knowledge: abstraction, nomothetic extension, generalisation, disciplinarity and normativity. Each of them in turn, as concepts, has been shown to be problematic, though they do point to some differences between the two types of knowledge.

Everyday Practical Knowledge

Up to this point I have tried to identify those necessary constituents of scientific or theoretical knowledge, in order to show whether or not there are differences between this form of knowledge and everyday

practical knowledge. To sustain the general argument in this chapter, I now need to develop a theory of practical knowledge, knowledge that allows us to go on in life. Andrew Collier (2003) gives an example of repair work (a form of practical knowledge), so that if we are riding a bicycle and the bicycle breaks down we stop. Then, as he puts it, in order to repair the bicycle explanatory knowledge, and not just how to ride the bike, is needed. However, in order to effect that repair, we don't need to understand the physics of stability given that there is enough forward velocity, the two parameters of stability (the lean angle and the steering angle) that describe the orientation of a bicycle as it travels in a forward direction, the role played by gyroscopic effects, leaning orientations to compensate for the effects of centripetal acceleration and the degree of force that propels the bike forward and especially when going up a hill. What we in fact do is look at the various parts: chain, gears, handlebars, saddle, riding capacities, etc. and compare them with a norm that seemed to operate when the bicycle was functioning properly and then we try to adjust the one so that it looks more like the other. And no doubt we also use methods of trial and error, always bearing in mind that we have a template in our heads about a functioning bicycle. This is a very different process from starting from first principles (what I have been calling scientific knowledge), then working out from these principles that the concrete application of them in the form of a damaged bicycle does not conform to them in some specified way, translating these deficiencies in the theoretical model into concrete actions of repair, and then effecting the repair. In fact we don't need first principle knowledge to diagnose the problem and effect the repair; in some cases it may be positively harmful as in training to be and acting as a teacher, where too much theory may actual impede in various ways both learning to be and performing as a teacher.

However, Collier (2003) maintains that theoretical knowledge is necessary because it can act as a repair to breakdowns in practical knowledge. Theoretical or first principle knowledge allows us to replenish the store of practical knowledge we hold. The issue then becomes whether practical knowledge is always in this symbiotic relationship with theoretical knowledge so that practical knowledge grows, even tacitly, in line with theoretical knowledge. Or whether practical knowledge grows and becomes more sophisticated in response to experience, practice and learning (the pedagogical element). The question then becomes: can we separate out theoretical and practical forms of knowledge and ascribe to them separate developmental pathways?

A second claim made by Collier is that all practical knowledge emanates and has emanated from theoretical knowledge. Much of our technical, going-on-in-the-practice, sometimes but not always tacit, knowledge was once what could be called theoretical knowledge, though its previous articulation fulfils as we suggested above only one criterion for theoretical knowledge. Collier is suggesting that theoretical knowledge precedes practical knowledge in every case. However, and this is where the argument I am making diverges with Collier's, most practical knowledge, it can be safely assumed, never goes through processes of abstracting, generalising or nomothetic extension (i.e. first principle knowledge). Much practical knowledge, whether tacit or otherwise, is learnt in the practice itself, through trial and error, or imitation or through other means, and therefore, as I suggested in Chapter 4, always has a pedagogical element. The suggestion then, is that theoretical knowledge is not just an addendum to practical knowledge, appropriate for thinkers, theoreticians and academics, but is essential to the development of practical knowledge and in turn is partly generated by it; that practical knowledge as a concept would be in some sense attenuated if it didn't have a logical and causal relationship with theoretical knowledge.

Furthermore, it is now possible to accept that theoretical knowledge for solving a problem in the practical realm has been developed but cannot be used because the practical technologies for incorporating theoretical knowledge into practical knowledge are not yet available. Margaret Archer (2004) gives the example of celestial navigation continuing to be used long after at least two necessary theoretical components had been developed: the notion of a spherical earth and the development of spherical trigonometry. What was missing were productive technologies and mechanisms for allowing the theoretical developments specified above to be realised in the practical domain.

An example of a difference between theoretical and practical knowledge relates to computers. We can work a computer and word-process without having to learn a programming language or indeed how that programming language allows us to word-process. And yet the development of that programming language at a theoretical level (abstracting, nomologising or generalising) has allowed the learning of practical steps for its use. Indeed the theoretical practice is on going and continues to influence the practical operation of the system. However, much theoretical knowledge has no practical implications, though we can never be sure of this.

What then is the relationship between practical and theoretical knowledge? Practical knowledge or knowledge of how to go on in life, I am suggesting, is not as different from theoretical or scientific knowledge as is generally imagined, though there are elements that certainly seem to make it so. The central question then becomes: do these differences allow us to determine (in a deontological or consequentialist way) that one of these types of knowledge, and specifically scientific or theoretical knowledge, can be shown to be of greater worth than the other, insofar as acquiring it is better in some specific way than not acquiring it. This would require a fuller answer than space allows for here, and in part would require an empirical investigation. However, what it is possible to suggest is that those differentiating principles (nomothetic extension, generalisation, abstraction and formal pedagogisation) if translated into forms of knowledge held by significant numbers of people can in principle contribute to the eudaimonistic society. As Roy Bhaskar (2010: 15) suggested: 'I should make it explicit that I do not see science as a supreme or overriding value, but only as one amongst others to be balanced (in a balance that cannot be wholly judged by science) in ergonic, emancipatory and eudaimonistic activity'. This is both a conceptual and a practical problem, and it has implications for how we form and reform teaching and learning practices in the modern academy or university, since the contents of learning we are dealing with here is *scientific*, however poorly understood this idea is.

Teaching and Learning in the Modern Academy

Writing about teaching and learning in the modern academy is always a difficult enterprise. At one end of the spectrum are all the initiatives to improve the student experience: the drive to make higher education teachers professionally qualified; the mushrooming of teaching awards at institutional and at national levels; the development of specialist teaching and learning units; the emergence of specialist journals; the adoption of feedback and student satisfaction surveys; and the political drive for accountability for quality and intensity of teaching inputs and so on. At the other end of the spectrum there is the growing claim that careers, institutional reputations and above all success in access to competitive funding are all that counts; that, in the case of the UK, the periodic audits of research volume, quality, impact and environment are all that matters.

Broadly, seven major pedagogical styles and techniques can be identified. They flex and overlap with each other. The first is dogmatic instruction. This

is fundamentally organised around a holy book or books and the associated commentary and exegesis. The modal inspiration is perhaps the educational parts of the sixth century Rule of St Benedict, based as it is on humility and unhesitating obedience. The curriculum is holy reading and prayer. Later on such discipline could be adapted as a style for secular purposes, as in Marxist-Leninist orthodoxy, or even some curricula developed in the wake of claims made by scholarly prophets or leaders.

The second style was also present at the creation of the modern university and points to members of an expert group or profession, whether or not they act as Adam Smith's 'conspiracy against the public'. In the modern era this leads to expert credentialism, as in a licence to practice or to charge for services. The contemporary guardians of this arena are generally outside the academy, in the professional and statutory bodies.

Meanwhile, as an essential part of the liberal, emancipatory, theory of higher education, a pedagogical approach has been developed which could be called individual self-discovery. The goal here is for the individual learner to achieve an independent point of view, and a personal voice. For a long time the key here lay in a close personal reading of the classics (religious and secular), of great books in general, and the construction of both canons of literature and idiosyncratic interdisciplinary collections of study like Oxford University's Politics, Philosophy and Economics (PPE) course (so influential with the current set of politicians at the top of UK governments).

The Socratic method and the use of the tutorial method are a common pedagogy at the UK's oldest two universities. Both Cambridge and Oxford Universities have built a promotional strategy around one-to-one (or at least very small group) teaching, directed by academics. Historically, the modern system began as a form of cramming (by private tutors, usually away from the College) to allow ill-educated middle- and upper-class students to pass examinations, including those set for the Indian Civil Service. What really seems to count for students in this pedagogical context is personal feedback on written and other work. This is something around which the Open University has structured both its teacher-training and its learning strategy, with the communication now being technologically mediated.

A more organised form of external engagement reaches its height of popularity in the North American enthusiasm for service learning, or using the resources of the surrounding community for learning scenarios. At one end of the spectrum lies volunteering (whether or not from an expert base),

as well as for course credit; at the other lies the educational goal of deep but temporary immersion in the dilemmas of particular groups in civil society.

Service learning can, however, be less structured than another long-standing approach, much favoured by the philosopher, John Dewey: learning by doing. The practicum has a long and honourable tradition in professional higher education in particular, often involving supervised but live practice, and sometimes overlapping with periods of probationary service, after graduation but before full qualification. Sandwich courses, with periods in industry, or what is called in the USA, cooperative learning, play a distinctive part here. Each of these so far incorporates a mix of methods of inquiry, which can often be elevated to the level of research apprenticeship, whether in the care functions of the sciences, social sciences or arts and humanities.

Finally, for many, especially in the modern world, graduation is not the sole target, or the final outcome. Post-compulsory education and training has become a much more flexible and messy affair, achieving its goals for many through complex patterns of life-long learning. Here, qualifications and part-qualifications need not be sequential or connected, in subject or level. They can be chosen, or prescribed for tactical, strategic or entirely serendipitous reasons.

It should be noted that these pedagogical interventions (i.e. dogmatic instruction, expert credentialism, self-discovery, service learning, the practicum, research apprenticeship and life-long learning), as well as their curricular content, do not map directly onto the developing array of instructional environments and teaching techniques. This is especially true of the use of information and communications technologies. What began as basically the use of new technologies (like correspondence, broadcast and virtuality) to attract new types of students has shifted to become a mainstream mode of delivery for conventional and non-conventional higher education institutions. In effect then, a decision has to be made between these pedagogic forms. Basil Bernstein (2002) argued that this decision should be made on the grounds that learning is either pedagogised or educative, with him favouring the latter over the former, though the impression is given that he is merely describing what is and not judging between them.

The 'Totally Pedagogised Society'

What Bernstein is doing here is identifying the characteristics of a particular form of learning, being, and relating to the environment, comparing it with a different form, and then suggesting that one of them is superior

to the other. Pedagogisation is understood as an infantilising process (Rancière 1991: 133), as the development of processes of social and symbolic control (Bernstein 2002) and as interchangeable with a notion of training:

> The concept of trainability places the emphasis upon 'something' the actor must possess in order for the actor to be appropriately formed and reformed according to technological, organizational and market contingencies. This 'something', the key to trainability, which is now crucial to the survival of the actor, crucial for the economy, and crucial for society, is the ability to be taught, the ability to respond effectively to concurrent, subsequent or intermittent pedagogies. Cognitive and social processes are to be especially developed in the actor for such a pedagogised future. (Bernstein 2002: 366)

It is also understood as a performance activity rather than as a competency. The performance model clearly emphasises marked subject boundaries, traditional forms of knowledge, explicit realisation and recognition rules for pedagogic practice and the designation and establishment of strong boundaries between different types of students. Bernstein then compares this with a competence model, in which the acquirer has some control over the selection, pacing and sequencing of their curriculum. For Bernstein (1990: 65), performance modes are seen as the norm, whereas competence modes are understood as 'interrupts or resistances to this normality'. Regardless of whether this is so or not, I want to suggest that these basic categories (i.e. competence, performance, trainability and pedagogisation) are not well formulated and thus are unable to perform the roles assigned to them.

As I suggested in Chapter 4, knowledge and knowledge development always have a pedagogic form. Knowledge is transformed at the pedagogic site, and this could be a formal classroom in a school, an informal meeting between friends or an inadvertent and barely noticed encounter with an object in nature. The difference between these pedagogic sites is not that they do or do not contain pedagogising influences, but that their qualia are differently realised as conditions for learning. To reiterate, these are: the simulation of the learning object, the representational mode of the object, its degree and type of amplification, control in the pedagogic relationship, progression or its relations with other learning objects (i.e. curriculum integration), the type of pedagogic text, relations with other people in the learning process, the organisation of time (temporal

relations) and types of feedback mechanism and they are fundamental components of this pedagogic transformation. What this means is that in the learning process the learning object takes a new form as a result of changes to its properties: simulation, representation, amplification, control, integration, textual form, relations with other people, time and feedback. Or, in other words, these properties are more or less influential in the pedagogic exchange or learning sequence; that is, in all and every pedagogic exchange or learning sequence. Bernstein's notion of a totally pedagogised society does not and cannot take this into account.

The second problem with the notion of a totally pedagogised society is its totality. This is an attempt by Bernstein to suggest that at certain historical moments, it is the only pedagogic form being used. However, trainability is one manifestation of pedagogic relations, but only one, and therefore, as I have suggested in this chapter with regards to higher education pedagogic modalities it competes with and operates alongside other forms of pedagogy. It is therefore difficult to argue that Bernstein's notion of a totally pedagogised society is firstly, a useful concept and secondly, as total as it is made out to be. The next chapter examines the notions of globalisation, vernacularisation, and internal and external forms of change.

CHAPTER 6

Global Education and Educational Reform

This brief chapter (barely more than a footnote) about external influences on education systems is both a necessary and an important part of the argument that I have been making in this book. This book is a theoretical and empirical (in so far as a plurality of instances are considered) account of the social dimension to knowledge, and this chapter is about knowledge development and how knowledge of educational systems and their practices are formed in relation to external influences. As I suggested in Chapter 1, research, which is the principal mechanism for knowledge-development, is both descriptive *and* developmental and prescriptive, that is, it both gives an account of reality and in the process changes the nature of that reality. It re-describes and reformulates the object of the investigation.

Education systems and their curriculum arrangements round the world are in a constant state of reform and change. The impetus for reform emanates from many sources, such as governments developing political agendas to win elections or responses to unforeseen events in the world. Reforms may reflect the growing importance of global education policies, where national governments seek to improve their rankings on international comparative assessments such as the OECD's Programme for International Student Assessment (PISA). National concerns reflecting local economic and cultural priorities may also be influential.

Policy researchers, such as Steven Ball (2008), have described educational reform and policy-making as a 'messy', complex and contested

D. Scott, *Education Systems and Learners*,
DOI 10.1057/978-1-137-59884-4_6

business. Ball goes onto suggest that policy is an object of contest and struggle between competing ideologies, education visions, personal interests and political or organisational positions. Understanding education reforms therefore requires us to interrogate policy cycles, policy discourses, policy actors, policy arenas and contexts. Policy is produced through a series of struggles involving many actors and agencies. In addition, local policy cannot be understood without making reference to the global impact of transnational agencies such as the Organization for Economic Cooperation and Development (OECD), the United Nations Educational Scientific and Cultural Organization (UNESCO), the United Nations Children's Fund (UNICEF), the World Bank, not for profit and for profit organisations and so forth.

The central issue that concerns us in this chapter is the way education systems are and can be reformed, though this begs the question as to whether they need to be reformed in the first place. It is possible to categorise reform effect and history in five ways: point of entry into the system and direction of flow, sustainability of the integrity of the reform, intensity of the reform or capacity to effect change, malleability of the system or capacity to change and institutionalisation.

With regards to the first of these, point of entry and direction of flow, there are a number of possible scenarios. There are different points of entry and these may be characterised as: at the top of the system where this is understood either as the progenitor of policy or as the apex of a power structure, however diffuse it is or becomes; at the bottom of the system so that the point of entry is not at the political, policy-making, bureaucratic or official levels but at the level of teacher and classroom; or at a variety of entry points in the system. Broadly three models depicting direction of flow can be identified: a centrally controlled policy process where the direction is unidirectional, and downward oriented; a pluralist model where the direction of flow is still unidirectional, however, the developmental flow is to all parts of the system and the orientation is pluralist; and a fragmented and multidirectional model where new policy (which represents the reform) is always in a state of flux as policy texts are received and interpreted at different points in the system and the process is understood as fragmented, non-linear, contested and as a place where original intentions are rarely fulfilled in practice. In other words, without a consistent flow that is distributed throughout the system, there will always be an element of risk involved that the reform will result in unintended outcomes.

The second of these elements is the sustainability of the integrity of the reform over time. What I mean by this is the capacity of the reform to retain its original shape, form and content as it is disseminated through the system. A curriculum reform is embedded in what already exists. Most obviously, the reform itself as it was originally conceived (in its pure state) undergoes processes of amendment, modification, correction and revision, and it does this at different points in the process. These different points can be described as: exploration and development, recontextualisation, implementation, re-implementation and institutionalisation. A reform or an intervention in a system is always an amalgam of different ideas and prescriptions that is never completely coherent. However, it is possible to suggest that in the long process of formulation of the reform to application, to implementation and thence to institutionalisation, the original integrity of the reform is either strongly or weakly maintained.

The third feature is the intensity of the reform (or intervention) or its capacity to effect change. This refers to the structure of the reform or the way it is constituted. Some reforms are focused on relations within the system that are likely to have a minimal impact on the system as a whole; others aim to influence the whole workings of the system. Examples of the former include labour market reforms, which though they usually come within a package of other reforms, are designed to impact on one part of the system and not the whole. On the other hand reforms which focus on the curriculum and the way it is delivered, as in the 1988 Education Reform Act in the UK, which changed the whole tenor and orientation of education in that country, can be thought of as whole system reforms or interventions. Furthermore, some of these reforms are crafted so that, even given the state of the system into which they are being introduced, they have a more fundamental impact than other reforms. This in turn points to the degree of resilience of the system or capacity to resist a reform. And, indeed, any educational system has a limited capacity to resist being reformed, not least because those elements that allow it to resist may be the objective of the reform; systems therefore have a greater or lesser capacity to resist reforms. Equally, a reform itself has a greater or lesser capacity to impact and change the structures and environments into which it is being introduced, and in part this refers to how it is going to be introduced, but also to the structures and constitution of the reform package itself. Its penetrative power (though this may not be realised) or capacity to effect change is different with different reforms. This is the intensity of the reform or intervention, and clearly its obverse is the

resilience or otherwise of the current arrangements within the system. This is the malleability of that system.

Then there are institutionalising elements in the system. The first of these refers to the longevity and sustainability of: resource arrangements, allocations of particular people to positions of responsibility, particular roles and arrangements of power and authority, the capacity of key people in the system, new policy discourses, new policies and new priorities. And the second element is the capacity to adapt to changes to them. An example of an institutionalised mechanism set up to allow this to happen is a formal curriculum review at a set point in time, though most educational processes of review, development and implementation round the world are conducted on an ad hoc basis; when, where and how are decided by political imperatives.

It would be a mistake to think that globalisation acts as the sole driver of policy and practice within an individual country. Bob Lingard (2000) has developed a notion of vernacular globalisation and what he means by it is that homogenising and standardising global forces are always mediated by conditions, priorities, policy agendas and preoccupations at the national and local levels. It would therefore be a mistake to understand the process of globalisation as deterministic, linear, inevitable and all-embracing, and to argue that global influences are always more powerful than national interests and agendas. The global educational agenda is mapped onto what already exists at the national or local level, resulting in contingent, unpredictable and contested situations.

Globalising Processes

Globalising processes, in so far as they have real effects (we also have to take account of vernacular pressures in the delivery of these reforms), work in two ways: firstly, national governments operate within global markets and therefore fashion their policies to fit this agenda or to exploit it; and secondly, national governments are subject to pressure from forces outside their jurisdiction which influence their policies and practices. Further to this, the success of any intervention or experiment (by the state or another body operating outside the state), or at least the path it takes, is not just determined by the system into which it is being introduced but also by the type of intervention that is being made. Interventions and experiments are time sequenced, so that they are likely to have different effects at different moments in the history of education systems.

This takes place against a background of an apparently growing commitment to improving and, in part standardising, educational institutions and practices, seen as important in the light of dominant market-based theories, and against a backdrop of neoliberal ideas. The most widely predicted response to the global financial crisis of 2008 was a return to a more measured Keynesian approach, and yet capitalism, markets and neoliberal economics still seem to be in the ascendancy, and this has direct consequences for education systems round the world.

Globalisation works in a number of distinctive ways, and this means that social objects and social mechanisms operate in open systems and therefore have particular properties, including generative causal powers. McLaren and Farahmandpur (2001), for example, have suggested that globalisation is a cultural phenomenon and can only be recognised by changes to the forms these cultural phenomena take. So that instead of distinct national forms and identities, there is a cross-fertilisation of ideas, a creation of hybrid cultural forms, a homogenisation of culture and a standardisation of cultural products. This leads to a sense of cultural sameness or conformism. Globalisation also points to the establishment of globalised markets and global consumer identities.

A second manifestation of globalisation refers to the nation state and the ways its powers have declined as a result of various forces of globalisation, in particular the way global capital has now broken free from national boundaries. Again, drawing on the work of McLaren and Farahmandpur (2001: 4), the essence of this globalisation perspective is that it focuses on the state and 'explores the relationship between the local and the global and whether globalisation means the reorganisation or disappearance of the nation-state'. McLaren and Farahmandpur (ibid.) further suggest that, 'local legal codes, local currencies and local habits and customs that enable the rise of capitalism now serve as constraints on capital, so that now the new transnational institutions more suitable to the new phase of capitalism are developing'. Examples of these new transnational organisations are the World Trade Organization (WTO), the International Monetary Fund (IMF) and the World Bank, which are increasingly taking on world governmental roles in support of the interests of capital in general and transnational corporations in particular.

A third manifestation is that of the expanding nature of capitalisation. This can take a number of forms. For example, it may be spatial as capital seeks to fill all the possible social, geographical and physical spaces available to it. Capitalisation may also expand through the invention of new

types of commodity. And the third form it might take is where capital expands through what might be called intensification; it deepens and develops its influence in the world.

Globalisation's fourth manifestation is the way the labour process is constituted and reconstituted, and in particular, how all the activities involved in work are commodified, and as a result given a value so that a profit can be made in relation to any surplus that can be created. Traditional modes of working, notions of public service and sets of professional ethics give way to the need to make a profit, as educational systems, institutions and people reconfigure themselves and in turn are reconfigured by global forces.

For example, in the UK, a significant change to the professional status of teachers has taken place. The teaching profession in the UK since 1988, when the Education Reform Act was passed, provides an example of an occupation that has experienced changing relations with the state, professional fragmentation and a reconceptualisation of its ideological ethos. Before 1988 the occupational group had a degree of autonomy from the state, and this meant that it was able to shape its future direction. This referred to the particular ideal of service it subscribed to, the degree and extent to which it focused on common activities, the specific nature of the discourse community that was established, the distinctive epistemology of practice to which it worked and the control it exercised over the development and maintenance of its specialised body of knowledge. If these five infrastructural elements are reformed in response to the needs of the state, global institutions and through the policy cycle in which the state takes a dominant role, then this constitutes a diminution of control that the occupational group can exercise over its core business. Indeed, the decline of the professional authority of the teaching profession in England since 1988 has been extensively documented (e.g. Smyth 2001).

Bonefeld (1999) has identified a number of trends associated with globalisation. The first of these is the increasing importance and significance of the financial structure and the global creation of credit, leading to the dominance of finance over production. Secondly, knowledge and knowledge-development are now treated, he argues, as significant factors in production. Thirdly, he suggests that there has been an increase in the transnationalisation of technology. Fourthly, there has been a rise of global oligopolies in the form of multinational corporations; and these multinational corporations appear to operate outside the boundaries of the nation state and their economies, including their tax-collecting

processes. In addition, new forms of global authority structures have been created, such as the United Nations, the G7 group of industrial powers, the International Monetary Fund (IMF) and the World Bank. Finally, Bonefeld suggests that all of this results in a new freedom for capital as it floats free from national regulative control and democratic accountability.

These new forms of globalisation coalesce round notions of commercialisation, privatisation and capitalisation of education. Commercialisation describes the ways that educational institutions, their curricula, the types of pedagogy that are employed and even the forms of assessment that are used become marketable properties. Privatisation involves the takeover (either directly or indirectly) of schools, colleges and universities for the purposes of generating profits. Capitalisation entails labour taking on a new form, so that profits can be made from any surplus value. It also involves the erosion of public service values. It changes the nature of labour (its motivation, its purposes and its organisation and management) in educational institutions.

This chapter has focused on policies and practices in education systems round the world and how they were influenced and as a result changed by globalisation processes. In the last chapter of this book I examine some important discursive constructions in the field of education.

CHAPTER 7

Conclusions – Educational Discourses

A discourse is a set of propositions about the world joined together by a set of connectives and relations (some inferential, some logical, others retroductive) that offers an account of an object or objects in the world, and may even act in a developmental capacity. It can have a material form, that is, it can be written, orally presented or stored electronically as text, and is usually mediated through a language or languages. In Chapter 4, borrowing from Robert Brandom's philosophy of conceptual pragmatism, I developed a view of propositional knowledge. This was that propositional knowledge-development activities can be understood as processes that involve assertings, claimings, judgings and believings, and these are of the same order as procedural and embodied forms of knowledge-development. So, for example, making a table, painting a house, cleaning a room or going for a walk are similar in form to asserting that two and two make four, claiming that the earth is ellipsoid (it almost is), judging that this university is better at research than another university and believing that there is extra-terrestrial life. In order to make a claim of knowing, therefore, we are not providing a description of an experience, but making a claim about it in what Sellars (1997) has described as 'a space of reasons'. This involves the giving and asking for reasons, with a reason being understood as an inferential act, so that if one makes a claim of knowledge, the contents of that claim consist of inferential commitments to and in the world. This constitutes an approach to learning and understanding, which does not compel the person interpolated in the discursive construction to

D. Scott, *Education Systems and Learners*,
DOI 10.1057/978-1-137-59884-4_7

behave, be or understand in a particular way, but does suggest a means of framing an account of an object in the world for that person, and therefore may have material effects.

It would be a mistake to treat these particular framings of educational and social objects as logocentric and therefore underpinned by originary knowledge structures. To think in this way would be to fall into the trap of what Michel Foucault (1972) has argued is 'the illusion of formalisation', in which the analyst, researcher or indeed observer of the world, seeks to explain knowledge and knowledge development in terms of a formal logic that transcends their concrete manifestations. In addition, Foucault argues that we should avoid the illusion of doxa, as he called it, where appearances in relation to power are treated as opportunities to unmask them and replace them with more truthful versions of reality. This is a viewpoint expressed by Foucault. However, it self-evidently fails to resolve the problem of the status as a knowledge development activity of the metatheory itself.

Norman Fairclough (2001) presents a three-dimensional conceptual framework of discourse: discourse-as-text, discourse-as-discursive-practice and discourse-as-social-practice. The first dimension, discourse-as-text, focuses on the linguistic features of texts, such as: vocabulary, grammar, cohesion and text structure. Texts, in this dimension, are understood both as a linguistic form and semantically. In relation to vocabulary, the focus is on word ordering, word meaning and metaphor. The analysis of grammar focuses on functional elements of using language, such as ideational, interpersonal (identity and relations) and textual features. The notion of cohesion refers to how the linkage of clauses is achieved in order to produce sentences and how sentences are connected, for example, by using conjunctions, to constitute larger units. Finally, text structure refers to the design features of different text types, including turn-taking systems, in what ways conversations open and close, and their orderings and so forth, in order to gain insights into social relations and identities represented in conventions of different text types. It should be noted here that gaining insight into a practice in the world is not the same as having to act in the world because the text demands compliance.

The second dimension, discourse-as-discursive-practice, is concerned with the production, distribution and consumption of discourse in society and in relation to particular discursive communities. This refers to dimensions such as the force of utterances (i.e. speech acts: promises, requests, threats, etc.), the coherence of texts and the intertextuality of texts. The

third dimension, discourse-as-social-practice, focuses on the influence of ideology and hegemony. Fairclough's (2001) boundary setting for the notion of discourse is of some help in understanding the concept in use, a key concern in this book.

There are two reasons as to why one shouldn't make the claim that an educational and social discourse can be all-enveloping and hegemonic. The first of these is that the individual is confronted with a vast array of discursive constructions, many of which are either irrelevant to their needs or in conflict with each other, and therefore cannot be embraced in their entirety by any single person. The second is that the individual may not accept all the inferential, retroductive and logical relations that make up the discourse. This of course doesn't mean that they are acting irrationally, and this is because there isn't and cannot be a standard marker for rationality.

Implicit within every discursive formation, as in always to be found in, are: a propositional account of a person, including their emergent capacities and affordances, and the environment within which they are situated; a propositional account of the relationship between a person and their environment; propositional knowledge about understanding, learning and change, with regard to the person and the environments in which they are located; inferences from these premises and conclusions about appropriate representations, media for representations and learning environments; and a set of practical actions that emanate from these claims. However, what needs to be said time and time again is that a discursive construction can never be a simple determinant of identity, behaviour or action.

An example of an epistemology that fails the test set out above is articulated by Tom Popkiewitz (1997), where an attempt is made to argue that knowledge development is a social activity, but this still leaves open, floating around in the miasma, the status of the metatheory itself. The focus for Popkiewitz's (1997: 131) remarks is the curriculum:

> I first seek an understanding of history as an activity that does not merely construct interpretations from the data examined. I argue that history is a theoretical activity, which constructs its object of research through its distinctions and categories of historical phenomena. Our scientific training often fails to include discussions of how reasoning of science consists of historically constructed principles of classification and ordering. I then proceed to discuss the study of curriculum. I view curriculum as a particular,

> historically formed knowledge that inscribes rules and standards by which we 'reason' about the world and our 'self' as a productive member of that world. The rules for 'telling the truth' in curriculum, however, are not only about the construction of objects for our scrutiny and observation. Curriculum is a disciplining technology that directs how the individual is to act, feel, talk and 'see' the world and 'self'. As such, curriculum is a form of social regulation.

The second way that this statement fails semantically is in its assertion that the curriculum as a discourse directs, in an unbending way, the actions, feelings, articulations and visions of the individual both about the world and with regard to their sense of self. This is what Charles Taylor (1985) describes as a weak evaluation, with the self now understood as consisting exclusively of fragmented, situational incidents and this results in a conceptual flatness or depthlessness. In addition, there is a stubborn insistence here that agency has to be understood either as essentialist and foundationalist (a Cartesian subjectivity) or as baseless and imaginary, a reduction that serves to simplify a complex discursive and material construction.

This formulation of discourse (as concepts-in-use) will become clearer in the accounts of discursive formations that I offer below. This formulation is agency-driven, though this does not signify an essentialist or fundamentalist form that the human being takes, and is in part focused on the nature, role and position that the individual can assume (but isn't necessarily assumed for them) in relation to a discursive construction. Below I foreground (and critically analyse) some important discursive constructions in the field of education, such as theory-to-practice relations, effectiveness, equalities, new public management, field construction, examinations and the notion of the gifted and talented child, and therefore logically the notion of the untalented and far from gifted child.

Theory-Practice Relationships

For those concerned to provide accounts of educational practice, conceptualising the relationship between the theory they produce and the practice that they are describing is central to their activities. In short, how this relationship is understood is important both because it affects the type of account produced and because it impacts upon the improvement of practices of and by itself. There are five possible discursive positions that can be taken, with proponents of each adopting different viewpoints as to

how theory about educational practices is constructed and how it relates to those self-same educational practices.

The first of these is what Jurgen Habermas calls *scientistic*. This means, for him, 'science's belief in itself: that is, the conviction that we can no longer understand science as one form of possible knowledge, but rather must identify knowledge with science' (Habermas 1981: 4). There is a correct method for collecting data about educational activities. This method, if properly adhered to, leads to the creation of objective, value-free and authoritative knowledge about how educators should behave. Practitioners therefore need to 'bracket out' their own values, experiences and preconceptions because these are partial, incomplete and subjective and follow the precepts of researchers whose sole purpose is to develop knowledge that transcends the local and the contextual.

Scientific theory is designated as theory because relations between educational phenomena are being expressed at a general level; that is, they apply to a variety of situations both in the present and in the future. It therefore allows prediction, not, it should be noted, because the expression of that theory influences what will happen but because the knowledge itself is propositional, generalisable, non-particularistic and operates outside the realm of actual practice. The criteria which determine good practice in scientific research comprise in part a particular relationship to practitioner knowledge: that the former is superior to the latter, and that appropriate behaviours on the part of the practitioner consist of correcting and amending errors to their own knowledge domain in the light of what is being asserted as a result of the correct scientific procedures being followed. Practice is conceived of as the following of rules that have been systematically researched and formalised as theory. This has been described as the technical-rationality model of the theory-practice relationship in which practice is understood as the practical application of a body of theoretical knowledge. Worthwhile knowledge is understood as being located in the field of generalised propositions; practice is not conceived of as knowledge at all but as the application of theory in practical situations.

Proponents of this view make a number of assumptions: first and foremost, that theoretical knowledge can give us insights into reality; that is, it can provide adequate and meaningful descriptions of how the world works. As a result it is underpinned by a naive realist perspective, which downgrades actors' perceptions of how the world works because these may be partial, inaccurate, ideologically motivated or falsely conceived.

Second, practice itself or practical knowledge is not in itself sufficiently robust to qualify as knowledge, i.e. the criteria we apply for something to qualify as knowledge (e.g. consistency, coherence, validity, reliability or generalisability) cannot be applied to practical deliberation. This privileging of theoretical knowledge over practical knowledge has to be understood as a consequence of history and not as an a priori theoretical truth.

The second perspective has some similarities to the scientistic viewpoint, but understands the creation of objectified knowledge in a different way. Proponents of this viewpoint would want to adopt a realist perspective but would understand that realist perspective in a different way; they might want to adopt a generative rather than successionist theory of causal relations or they might want to reconceptualise the researcher-researched relationship so that the value perspectives of the researcher are centrally implicated in the act of doing research (Usher 1997). However, the educational text that is produced is still treated in the same way as with the first perspective and the relationship between theory and practice is understood as being consistent with the technical-rationality model referred to above. This involves the solving of technical problems through rational decision-making based on knowledge that allows us to predict the future. It is the means to achieve ends where the assumption is that the ends to which practice is directed can always be predefined and are always knowable. The condition of practice is the learning of a body of theoretical knowledge, and practice therefore becomes the application of this body of knowledge in repeated and predictable ways to achieve predefined ends (cf. Usher et al. 1996). Both of these first two perspectives, therefore, different though they are, are concerned with determining a measure of technical efficiency which will inevitably lead to the achievement of ends which are separate from the determination of means regarded as necessary to their realisation.

The third type of theory-practice relationship is multi-perspectival and multi-methodological. If there is no correct method, but only a set of methods that produce texts of various kinds and these can be read in different ways, then the practitioner has to make a series of decisions about whether a text is appropriate or not. Theory and practice are here being uncoupled. Whether or not the practitioner works to the prescriptive framework of the theorist will depend on a number of factors, such as the fit between the values of the theorist and the practitioner, whether they share a common epistemological framework, and, fundamentally, whether solutions are being provided by the theorist to practical problems encountered during the practitioner's everyday activity. The practitioner is

here being treated as a self-sufficient producer and user of knowledge. However, there is still a sense with this perspective that the outside theorist can produce broadly accurate prescriptive knowledge, which because of the contingencies of life in educational institutions then needs to be adapted to the settings in which the practitioner works. The theorist produces general knowledge, the practitioner supplies the fine-grained detail, but in all essential respects still follows precepts developed by outside theorists.

A fourth position that can be taken is an extension of the position expressed above. Walsh (1993: 43) describes it as an interpretation of the theory-practice relationship which 'turns on the perception that deliberated, thoughtful practice is not just the target, but is the major source (perhaps the specifying source) of educational theory'. What should be noted here is the rejection of a role in practice for the theorist, because they operate outside of the practice. Various forms of action research fit this perspective, which understands practice as deliberative action concerned with the making of appropriate decisions about practical problems in situ. This cannot mean that there is no theoretical activity involved in the making of these decisions. What it does suggest is that theoretical activity doesn't only apply to technical decisions about how to implement theory developed by outsiders. In addition to practitioners needing to deliberate about the most efficient means to achieve certain pre-defined ends, they also need to deliberate about the ends themselves. Practice situations are not only particularistic, they may also be understood as complex and uncertain, and therefore actively resist routinisation. Understandings of them need to be continually formulated and reformulated by practitioners working in situ. In short, such knowledge is not propositional, which means that it always involves action and deliberation.

This standpoint leaves us with a number of problems. Adopting it has certain consequences, one of which is the difficulty of conceptualising it without resorting to timeless truths about its nature. Operating in a non-technicist way demands that practitioners do not behave as objective theorists say they should. But this reconceptualising of the relationship between theory and practice is itself theoretical and moreover theoretical in a normative sense.

This leads to a fifth position, which is that the theorist and the practitioner are actually engaged in different activities. This more closely fits with Walsh's view when he argues that the nature of theorising practice demands the identification of four different discourses, each of which has

implicit within it a distinctive way of understanding a practical field such as education and each of which is a legitimate activity. Walsh (1993: 44) suggests that there are four mutually supporting kinds of discourse, which he designates as:

> deliberation in the strict sense of weighing alternatives and prescribing action in some concrete here and now . . . evaluation, also concrete, and at once closely related to deliberation and semi-independent of it . . . science, which has a much less direct relationship to practice . . . and utopianism, being the form of discourse in which ideal visions and abstract principles are formulated and argued over.

For him, discourses may be symbiotic with other types of discourses and thus logically can be clustered. The utopian discourse is understood as prescriptive and general; the deliberative as prescriptive and particularistic; the scientific as general and descriptive; and the evaluative as particularistic and descriptive. The consequence of this is that the theorist and the practitioner are operating in different ways and with different criteria as to what constitutes knowledge. These five discursive formations then offer alternative perspectives on an important aspect of social life. What has become a commonplace in public policy over the last twenty years is the sense in which there has to be a binding relationship between theory and practice (so much rhetorical energy is given up to this); but in reality practice in the educational and social spheres is the outcome of political deliberations and unforeseen events and occurrences.

School Effectiveness

One of the most influential educational discursive framings of the 1990s and 2000s in the UK (and perhaps even continuing beyond that, cf. James and Pollard 2012) became known as the school effectiveness/school improvement discourse. It is important to keep the two parts of this discourse separate, though attempts were made to draw them closer together. School effectiveness research had its origins in a general dissatisfaction with the deterministic and pessimistic view of schooling that suggested that schools, teachers and education generally have little effect on the different ways students perform in schools. Other background factors are more influential and there is little schools can do to counteract their effects. Though it was accepted by some that school effectiveness

findings could not provide a blueprint for school improvement, they argued that they might provide useful insights. Though this assertion seems to offer a way forward, it is important to note here that it operates in a purely polemical sense, and this is partly because the nature of the relationship is not made sufficiently explicit for any reader to act on it so as to produce any useful outcomes. What is needed is an understanding of the relationship between sets of precepts about educational effectiveness developed by non-practitioners and practical knowledge or phronesis to guide the actions of practitioners. Furthermore, we may also need to surface the implicit power relations that operate between researchers making claims about what an effective school is and practitioners concerned to modify and improve their practice in the light of specifications about how they should behave.

One of the most contentious aspects of the discourse is the definition of effectiveness. Peter Mortimore, back in 1992, suggested that an effective school is one 'in which students progress further than might be expected from consideration of its intake'; and conversely 'in an ineffective school students make less progress than expected given their characteristics at intake' (Mortimore 1992: 43). (The latest manifestation of which is Progress 8, which is likely to be replaced sooner or later by another attempt to reconcile the irreconcilable – the learning and accountability functions of an educational mechanism.) This definition attempts to do two things. First, it suggests that it is possible to determine (I will leave aside for the moment the question of whether it is possible to measure these characteristics) what those ends are which shape students' pathways. Second, it assumes a monolinear view of the relationship between learning and student characteristics at entry to either the school or the school system; the suggestion is that a student's progress is determined in a straightforward linear fashion by a range of factors, albeit that those factors and the relations between them operate within a framework of probability.

The claim is now made that it is possible to plot the different ways those background variables impact on the learning experiences of children. Despite advances in statistical techniques, mathematical modelling is only able to deal with those background influences by processing them in particular ways. (The problem lies with how the *variable*, as a conceptual framing device, is understood and used. We have here an example of the discursive atomisation of reality in so far as the variable works as a representational device and this leads to an illegitimate projection that this in fact is how reality is constituted.) An example of this is the effects of

one-family parenthood on children's development and this is assumed to be the same for all children of one-parent families. Though it is now possible to plot changes in family status over time, what it is not possible to do is to model mathematically the different ways family status impacts on individual children at different points in their lives. The relationship has to be expressed in a linear fashion to meet the methodological demands of such modelling. Third, it suggests that values are not an important dimension of understanding what happens in schools. Ideas such as gender, social class, styles of teaching, management strategies are all value-rich concepts; that is, they do not function purely as descriptive terms, but operate to impose a particular way of ordering on the world. They are ideological constructions, even if they do not compel the recipient, and need to be understood as such.

We now come to the core of the matter, which is whether school effectiveness researchers have successfully defined their task so as to preclude accusations that they are simply imposing a particular value position on the study of schools. Mathematical modelling, for example, a favoured research strategy of school effectiveness researchers, does in fact carry with it a good measure of ideological baggage. Indeed, it is important to address whether from the outset school effectiveness researchers have failed to satisfy their self-professed desire for value-free knowledge of schooling by using the notion of effectiveness. White (1997) suggests that they have not. His argument is that the notion of effectiveness carries with it two meanings. The first is a purely instrumental function; that is, regardless of what we seek to do, effectiveness refers to whether we have achieved our purpose. The second meaning is more significant. This is that we cannot separate out means and ends in any simplistic way, especially with regard to education. Now, it is perfectly logical to suggest that a school could be effective and yet still produce outcomes that may be considered to be undesirable. Indeed, there is an absence of any philosophical discussion of what schools ought to be doing and an uncritical acceptance of high achievement test scores as the education system's only goal.

School effectiveness researchers would therefore still want to argue that effectiveness is something that we would want our schools to be concerned with, but they would add the rider that we have to make sure that our ends are ethically justifiable. After all, it would hardly make sense to suggest that educators would want to meet their aims ineffectually, thus rendering the subsequent educational programme inadequate.

White (1997: 42–43), however, argues that 'the fact that measures to make less effective schools more effective are labelled "school improvement" blurs the distinction still further between "good as a means" and "good more generally"'. He goes on to suggest that 'while both "improvement" and "progress" could be understood in a value-neutral, means-end sense, as implying getting closer to the ends in question, however good or bad they were, they usually have more global connotations' (1997: 42–43). What does he mean by the phrase 'global connotations'? He means that while specific aims may be achieved by the adoption of a neutral and value-free mechanism, the operation of that mechanism may indeed have other consequences, both easily foreseen but also unpredictable.

An example will bring out the force of the argument. If the goal is simply the teaching of the ten times table, then though with the majority of children this can be achieved using benign and humane methods, in some cases it may be necessary (as it was considered to be in the past) to employ coercive measures. The end is now efficiently achieved, but the use of these coercive measures with some pupils may have far-reaching consequences for their development. So we can see here that the means-end distinction inherent in the definition of school effectiveness is not quite as simple as it seems. It is the relationship between a variety of ends and ends which as educators we may not foresee, which determines the precise means we employ. Furthermore, the means we employ embody particular value perspectives. It is not just that we have to decide about appropriate means for value-impregnated ends, we also have to decide about the appropriate balance, as we understand it, between ends and means, and this can only be determined by our conception of how society should be organised and this of course is an ideological or value-laden activity.

Brown et al. (1995) suggest another way in which values seep in, almost unnoticed. The methods employed by school effectiveness researchers assume a hierarchically stratified model of a school comprising nested layers of systems within systems. Classrooms are nested within subject departments, which in turn are nested within schools. The implication of this is that the conceptualisation of the relations between different phenomena, which is methodologically central to school effectiveness research strategies, does in fact comprise a view of how a school should be organised. In short, those strategies are informed by a set of values that are distinctively normative in character.

Furthermore, it is important to address the issue of school effectiveness characteristics. Here are ten principles of effective pedagogy that emanated

from the work of the Teaching, Learning and Research Programme in the UK (TLRP 2010):

> PRINCIPLE 1: Effective pedagogy equips learners for life in its broadest sense. Learning should aim to help individuals and groups to develop the intellectual, personal and social resources that will enable them to participate as active citizens, contribute to economic development and flourish as individuals in a diverse and changing society. This means adopting a broad conception of worthwhile learning outcomes and taking seriously issues of equity and social justice for all.
>
> PRINCIPLE 2: Effective pedagogy engages with valued forms of knowledge. Pedagogy should engage learners with the big ideas, key processes, modes of discourse, ways of thinking and practising, attitudes and relationships, which are the most valued learning processes and outcomes in particular contexts. They need to understand what constitutes quality, standards and expertise in different settings.
>
> PRINCIPLE 3: Effective pedagogy recognises the importance of prior experience and learning. Pedagogy should take account of what the learner knows already in order for them, and those who support their learning, to plan their next steps. This includes building on prior learning but also taking account of the personal and cultural experiences of different groups of learners.
>
> PRINCIPLE 4: Effective pedagogy requires learning to be scaffolded. Teachers, trainers and all those, including peers, who support the learning of others, should provide activities and structures of intellectual, social and emotional support to help learners to move forward in their learning. When these supports are removed the learning needs to be secure.
>
> PRINCIPLE 5: Effective pedagogy needs assessment to be congruent with learning. Assessment should be designed and implemented with the goal of achieving maximum validity both in terms of learning outcomes and learning processes. It should help to advance learning as well as determine whether learning has occurred.

[It is unclear here as to whether the same assessment can both contribute to the advancement of learning and determine whether learning has actually taken place, or whether different assessment episodes and types are required to perform these two functions. This has been the key dilemma for UK policy and practice over the last twenty years.]

> PRINCIPLE 6: Effective pedagogy promotes the active engagement of the learner. A chief goal of teaching and learning should be the promotion of

learners' independence and autonomy. This involves acquiring a repertoire of learning strategies and practices, developing positive learning dispositions, and having the will and confidence to become agents in their own learning.

PRINCIPLE 7: Effective pedagogy fosters both individual and social processes and outcomes. Learners should be encouraged and helped to build relationships and communication with others for learning purposes, in order to assist the mutual construction of knowledge and enhance the achievements of individuals and groups. Consulting learners about their learning and giving them a voice is both an expectation and a right.

PRNCIPLE 8: Effective pedagogy recognises the significance of informal learning. Informal learning, such as learning out of school or away from the workplace, should be recognised as at least as significant as formal learning and should therefore be valued and appropriately utilised in formal processes.

PRINCIPLE 9: Effective pedagogy depends on the learning of all those who support the learning of others. The need for lecturers, teachers, trainers and co-workers to learn continuously in order to develop their knowledge and skill, and adapt and develop their roles, especially through practice-based inquiry should be recognised and supported.

PRINCIPLE 10: Effective pedagogy demands consistent policy frameworks with support for learning as their primary focus. Organisational and system level policies need to recognise the fundamental importance of continual learning – for individual, team, organisational and system success – and be designed to create effective learning environments for all learners.

We need in the first place to acknowledge the obvious point that these effectiveness principles are both trivial and too general to be of much use. We also need to acknowledge that they are not exclusively derived from empirical research of a kind favoured by school effectiveness researchers. They also emanate from researchers applying particular views of educational practices to concepts as they think they are used in the world. What is really happening is that these features of effective pedagogy are allowed to float free from the real mechanisms that operate in schools. For example, schools are hierarchically organised; that is, some practitioners in schools have more power than others and furthermore those practitioners with less power make decisions about how they should behave in terms of their understanding of their position in these hierarchical structures.

The point is that the research strategies adopted are implicitly positioned within a model of schooling which denies the existence of these structural properties (indeed the strategies themselves are incapable of

addressing these issues); and though the language used is democratic, this acts to conceal the real relations within which teachers and students are embedded. In short, school effectiveness research is a normative model of educational knowledge that embraces research techniques for controlling the activities of teachers, whilst at the same time concealing its true identity. This has implications for and at the meta-theoretical level.

Roy Bhaskar (2010), as a critical realist, makes three claims about the world, and thus also about knowledge of it: there are important differences between the transitive realm of knowing and the intransitive realm of being; the social world is an open system; and reality has ontological depth. The first of these then, is a distinction between the intransitive world of being and the transitive world of knowing, with the consequence that if they are conflated, either upwards, resulting in the epistemic fallacy, or downwards, resulting in the ontic fallacy, some meaning is lost. There are two implications. Social objects, and the relations between them (i.e. networks, confluences and conjunctions), though real, are constantly changing, and it is therefore the changing object which endures, even if that object has been so utterly transformed that it is barely recognisable in relation to its former self. The second implication is that, in certain circumstances and within certain conditions, social objects from the transitive realm can penetrate the intransitive realm and be objectified.

This also suggests that the transitive and intransitive realms may become disconnected. He identifies four reasons for this: there are social objects in the world whether they are known or not; knowledge is fallible because any and every epistemic claim is refutable (both in the sense that errors can be made and subsequently corrected *and* in the sense that knowledge is essentially corrigible and relative to other circumstances and conditions); there are trans-phenomenalist truths which refer to the empirical world and discount deeper levels of social reality, i.e. the work of social mechanisms; and more importantly, there are counter-phenomenalist truths in which those deep structures may actually be in conflict with their appearances.

The second claim he makes is that the social world is an open system. Closed systems are characterised by two conditions: objects operate in consistent ways, and they do not change their essential nature. Neither of these conditions pertains to open systems. In closed systems measured regularities are synonymous with causal mechanisms. Experimentation is therefore unnecessary because experimental characteristics are naturally present. There are two alternatives: artificial

closure and the use of methods and strategies that fit with systemic openness, including, but not exclusively, inferential judgements from the analysis of evidence. The first of these alternatives, artificial closure, makes a number of unsubstantiated assumptions: transferences can be made even if the original knowledge is constructed in artificial conditions; and this original knowledge is correctly related to the constitution of the object. The second alternative is that we adopt methods and strategies that conform to the principle of systemic openness. This would seem to be the more appropriate option.

The third claim he makes is that social reality has ontological depth. Social objects are the real manifestations of the idealised types used in discourse and are the focus for any enquiry. They are structured in various ways, and because of this, they possess powers (cf. Brown et al. 2002). The powers that these structures (or mechanisms) exert can be one of three types. Powers can be possessed, exercised or actualised. Powers possessed are powers that objects have whether they are triggered by the circumstances or not. Their effect may not be evident in any observable phenomena. Powers exercised have been triggered and are having an effect in an open system, and as a result they are interacting with other powers of other mechanisms within their sphere of influence. These exercised powers may still not give rise to any observable phenomena as these other powers may be acting against them. Powers that have been actualised are generating their effects; within the open system they are working together with other powers, but in this case they have not been suppressed or counteracted. Embodied, institutional or discursive structures can be possessed and not exercised or actualised, possessed and exercised or possessed and actualised. As a result, a causal model based on constant conjunctions is rejected and replaced by a generative-productive one, and objects and relations between objects have emergent properties.

Three propositions follow from this perspective. The first is that any descriptions we make of human agency and learning practices are dependent upon 'intentional causality or the causality of reason' (Bhaskar 2010: 14). Second, these descriptions need to take account of 'synchronic emergent powers materialism' (Bhaskar 2010: 14), that is, time-sequenced and stratificational changes to the powers of objects, whether discursive or embodied; and thirdly, there is a need to acknowledge 'the *evaluative* and *critical* implication(s) of factual discourse' (Bhaskar 2010: 14, my italics). However, as I suggested in Chapter 2, critical realism is an indirect realist theory and therefore employs processes of

modelling and retroduction to provide accounts of learning and other practices and the relations between them over time.

Equity Debates

A third discourse, or rather, plethora of discursive formations focusing on a social object, revolves round a notion of equity, and to illustrate this we can examine this issue in relation to the discourse of school effectiveness that was referred to above. School effectiveness researchers make two claims that on the surface seem to be entirely plausible, but on closer inspection do not stand up to detailed scrutiny. The first of these is that they are committed to a vision of equity. The second claim they make is that they cannot be responsible for policy-makers cherry-picking from their findings and assertions in order to give legitimacy to their policy agendas. These two charges are in fact related.

The first charge is that school effectiveness research is committed to a distorted view of the equity debate, one moreover which emphasises equality of opportunity at the expense of equality of outcome. There are a number of positions that can be taken on this issue. The first position is underpinned by a belief that people are unequally talented because of their genetic predispositions. Improving social and educational conditions cannot ameliorate or change this state of affairs. Resources should therefore be targeted at the more talented, because in order for the less talented to be able to enjoy some measure of esteem in society, that society has to be organised in the most efficient way possible. Furthermore, because the most talented are the driving force behind the provision of esteem for the less talented, then they should be better rewarded, not least to motivate them to work harder so that the less talented are provided with the means to achieve that measure of self-esteem. The consequences of this viewpoint are a differentiated system of schooling and the targeting of different teaching programmes for different types of children (i.e. the more talented and the less talented). Since the measure is a genetic one, various safety devices (i.e. later rather than earlier assessment of ability) need to be set in place to ensure that talent is both recognised and rewarded. Furthermore, if it is deemed that recognition by those less talented of their talentless status does not contribute to the maintenance of their self-esteem, then this should be concealed from them. It should be noted here that this attribution is ontological, since it rests on a perception that human beings have fixed and innate intellectual dispositions.

The second position is underpinned by a similar belief, i.e. people are unequally talented because of their genetic predispositions, but should be educated to their highest possible level. Even if that educational provision is effective, and in theory it is possible to make it so, this will not then lead to an equality of outcome, because that is an ontological impossibility. Furthermore, since we are dealing with two sets of conditions: social influences and educational provisions, in order to maximise the education of talent to its fullest degree, both issues have to be addressed. Because social and genetic influences act to produce an inequality of learning dispositions, unequal provision or at least differentiated provision needs to be provided for children with different levels of talent and more importantly different levels of cultural capital. Meanwhile, social programmes are required to even out the different levels of cultural capital acquired by children outside the school, even though this will have only a limited effect. There are two reasons for this. The first is genetic predisposition (children therefore learn at different rates) and the second is that however successful the meliorative programmes in society are, they will never produce equality of cultural capital and thus some children's needs will always be different from others.

The third position introduces a new principle, that of merit. People are equally talented and therefore equally capable of benefiting from education, but some make less effort than others, and therefore abiding by the principle of natural justice, they deserve to be less well rewarded. A distinction needs to be made here between those dispositions that are in the control of the individual and those outside her control. This is a difficult distinction to make. However, advocates of this strategy need to make it because it provides a justification for the unequal distribution of goods. What tends to happen with this position is that an assumption is made that it is possible to distinguish between the two and that schooling is understood as a testing ground for this strategy, so that those who work hard, regardless of the social conditions which structure their learning and their lives outside school, succeed at school and therefore deserve to be better rewarded than those who do not. As an essential precondition for the successful implementation of this strategy is a need to adopt programmes that allow the successful flowering of those dispositions such as effort, diligence, hard work and so forth. A meritocracy requires that the means for the effective exercise of these virtues is not constrained by social and educational factors. Furthermore, although it acknowledges that schools have a part to play in this equalising of life chances, it also

understands schooling as a testing bed for these virtues. At this point it is perhaps pertinent to suggest that the second role for educational institutions, that is their role as providers of opportunities for the exercise of the virtues mentioned above, needs to be equally resourced for all children.

The final position takes a different form. Poverty and other types of social disadvantage may have an effect on dispositions to learn, not just because resources at home are likely to be limited, but also because poverty may lead to the adoption of short-term goals (i.e. acquiring the basic necessities of life) which may limit educational aspirations. Again, two consequences follow from this. The first is that educational provision should be both differentiated and unequally resourced in favour of those children who are less advantaged. Second, proponents of this position argue that equality of outcome is theoretically possible and that what prevents this happening is the way society is organised. Institutional reform (with regard to schools, families, communities) is therefore needed.

School effectiveness researchers tend to operate, albeit implicitly, within a framework which emphasises the third position. Because the school is identified as the prime mover in educational achievement and because little attention is paid to the socially constructed nature of the curriculum taught in schools, then schools are understood as operating outside of those networks of power which act to produce certain types of children and which are socially and culturally located. By sanctioning a model of schooling that allows comparisons to be made between schools, and by implicitly downgrading the effects of communities and society at large, we are left with an impoverished model of the relationship between schools and society, and an inadequate position in relation to the equity debate.

The claim that school effectiveness researchers cannot be held responsible for the thrust of government policy is one repeatedly made. On the surface at least, it is clear that they cannot be held responsible for government officials, i.e. politicians, civil servants and the like, misusing their findings and misrepresenting their arguments. However, this is to miss the point of the argument, which is three-fold. First, school effectiveness research has at its heart the desire to compare schools with each other in terms of a notion of hierarchy and normalisation. This is achieved by the application of a reductionist methodology that seeks through statistical methods to isolate a particular element of social life, i.e. the school, in order to then compare one with another. If a notion of comparison is therefore sanctioned and this notion logically has attached to it a notion of hierarchy, i.e. one school is better or worse than another, however

sophisticated the means for making that judgement, then what follows and is given credence is the idea that the reason for one school being worse than another is the responsibility of the teachers within it. This contributes to a culture of blame. There is, in other words, no proper systemic analysis of the relationship between schooling and society in school effectiveness research.

The second part of the argument comprises the idea that it incorporates a reductionist methodology which determines how it is viewed and how the discourse is constructed, and which in the process marginalises debates about the aims and objectives of education. What is at issue in short is that a method from within an internally flawed positivist/empiricist framework cannot help but provide support for an agenda that emphasises control, prediction and the rejection of a holistic view of education.

The third part of the argument is that school effectiveness researchers by the adoption of the methodology they favour, ignore the contextual, the historical and the social; the preoccupation with what works ignores the question of whose interests shape the nature and process of the work. There is no recognition of the problematic nature of curriculum or of the possibility that schooling may be organised in the interests of, for example, dominant ethnic groups, males or the ruling classes. Indeed, the socially situated nature of the discourse, which at the same time seeks to conceal its sociality, is deficient with regard to how knowledge of self and others is constructed by society and through schools. Discourses can be fractured, full of contradictions, internally incoherent, but still hold together. This is because their internal relations are not only logical, but also refer inferentially and retroductively to other social, political and epistemological discourses and practices in the world.

Discourses frame political agendas. Fairclough (2000), for example, suggests that the new UK Labour Government between 1997 and 2010 developed an educational agenda that was underpinned by a combination of a social integrationist discourse, with the focus on shifting people from welfare to work, and a moral underclass discourse. He argues that there are three possible ways of framing notions of equality as a political discourse. The first of these is a redistributionist discourse, which focuses on reducing poverty by redistributing wealth. A second discourse is socially integrationist in form and here exclusion is primarily caused by unemployment and other social problems, with the solution being to reduce these high levels of unemployment and get people into work; and the third discourse, a moral underclass discourse, is perhaps more foundational, in so far as deficiencies

are identified as existing in the culture and experiences of those who are excluded, with the solution to this being cultural change and the imposition of education programmes to facilitate inclusion. This last is therefore very much a deficit model, which focuses on the right ways of behaving in society, rather than on specific outcomes from particular socioeconomic arrangements. The new Labour governments of the late twentieth and early twenty-first centuries were also attracted by communitarian thinking which attempted to link three themes: economic efficiency, social cohesion and morality. Driver and Martell (1997: 34), for example, suggest that these three themes are interwoven: 'economic success – particularly more jobs – will bring greater social cohesion, which is further strengthened by a more dutiful and responsible citizenry, and more social cohesion will in turn help to create a more viable market economy'. It is important to highlight, especially in relation to political discourses, the ephemeral and non-binding nature of discursive constructions.

UK Conservative government policy after 2010 was more concerned with issues surrounding the erosion of responsibility in society, caused, as their political representatives repeatedly stressed, by an overwhelming paternalistic state. The prime minister at this time, David Cameron, argued for a collective culture of responsibility and an ethos of self-betterment. The state in this vision has two principal roles: the efficient delivery of public services and early life interventions, achieved through paternalistic nudges to the populace, described by others as guided choice strategies. If this doesn't work then the state is forced to mobilise its repressive resources to ensure the good order of society, and these punitive measures can take the form of either the withdrawal of goods usually provided by the state or restrictions on people's freedom.

New Public Management Discourses

A fourth discursive formation, new public management, has had significant effects on the governance of UK higher education institutions and elsewhere. The major goals of this discourse are to improve the effectiveness and efficiency of the public sector, enhance the responsiveness of public agencies to their clients and customers, reduce public expenditure and improve managerial accountability. And this has resulted in the development of a set of policy discourses and practices involving notions of commercialisation, corporatisation and privatisation; movement from input controls to outcome measures; tighter performance specifications;

and more extensive contracting-out. This is both discursive and a set of practices, and the two are different and should not be conflated.

In addition, it has resulted in the creation of a new cadre of managers, sometimes called professional staff, though the inappropriateness of this title is self-evident, who have authority over the academic staff. This new cadre of managers consumes resources, which could have been spent elsewhere, though the argument is made that they produce efficiencies. These efficiencies are achieved in a number of ways: by making staff (academic and administrative) work harder and in more productive ways; by constructing and using a particular type of knowledge, broadly thought of as technicist and bureaucratic; and by injecting into the system as much competition as is possible (this involves a reconstitution of the notion of academic identity, so that loyalty is towards the institution rather than to the discipline.) And new hierarchies are established so that old hierarchies constructed round a notion of academic capacities (i.e. expertise in the core activities of academic life, such as researching, writing and teaching) are replaced with hierarchies that give credence to bureaucratic forms of knowledge. The way signs are interpreted and judgements are made is reconstituted by the bureaucratic model of organisation (this is the bureaucratic discourse acting in a causally efficacious way). Furthermore, these acts of interpretation and judgement are reduced to binary choices and this affects how we can understand the object and how we can interact with it. Professional loyalties are marginalised, rewards and sanctions are tailored to fit this model, so that knowledge construction within the academy assumes a new form, and this relates to both the behaviour of the academic within the institution and their academic work. (For example, annual reviews and other bureaucratic processes form and reform the work of the academic; and the development of research student annual reviews and written accounts of supervisory practices changes the nature of the pedagogy being employed and changes the types of knowledge that can be produced.)

Max Weber (1964: 219) argued that bureaucracies are 'the most rational known means of carrying out imperative control over human beings' and that a bureaucratic administration achieves its purpose by 'domination through knowledge'. He suggested that a bureaucracy has six features. The first of these is that the area of life that forms the bureaucracy should be delimited and fixed, and governed above all by rules. This entails a clear division of labour (a hierarchical division of labour prevents duplication of role, allows people to specialise and develop expertise in that area) and standard operating procedures. Secondly, a

hierarchy of roles has to be set up with clear responsibilities and statuses, designations of power and authority and chains of command. Power flows in a downward direction. Thirdly, any actions performed by members of the bureaucracy need to be written down and preserved so that a permanent record can be kept to allow accountability mechanisms to operate in the most effective way. Fourthly, expert training for its members is a prerequisite so that the knowledge the bureaucrat possesses is formed and reformed in accord with technological, organisational and market imperatives. The final two precepts are that members of the bureaucracy should devote their full attention to their work, and more importantly, they should become accustomed to learning, following and enforcing rules, that can be unequivocally interpreted. The overall effect is to increase efficiency and predictability. Finally, these rules and regulations and the administrative procedures that accompany them are designed to limit personal favouritism and promote fairness and equity for the benefit of the organisation as a whole. The bureaucratic discourse is extremely powerful and has had powerful effects.

Field Construction

A fifth discursive construction is the field. Field formation in the first place is a discursive activity. Values are central to the activity of research, that is, both the values of the researcher and the values of those being researched. These values, or conceptual frameworks, are located within historical contexts or 'traditions of knowledge' (Macintyre 1988). The production of knowledge, therefore, has a close relationship with the way society is organised. However, to conceptualise knowledge and power as inseparable is to erect too rigid a straightjacket on the relationship between social arrangements and knowledge (both about them and other matters). This argument can be extended to the realm of curricula or to the way knowledge is produced and reproduced in educational institutions by examining one aspect of the process, the way knowledge is organised (its boundary definitions). The argument is that how we divide up knowledge has an effect on the way we can and do understand the world.

Each discursive field has a history, is composed of individuals with different projects who form and reform them in different alliances at different moments. (I am using this term to describe a specific demarcation or boundary point between domains of knowledge.) There are therefore, micro-political struggles within the history of each field. But, more

importantly, at the level of the academy, those struggles involve the establishment of various organs of dissemination and of criteria by which the knowledge-producing activity is judged. In the first place, a new field needs to produce books and articles in academic journals; new journals which reflect the epistemological assumptions of the field; positions of office in universities; access to the popular media; the development of a cadre of taught and research students; research funding for projects; and the establishment of a coterie of loyal referees for journals and research projects. The paraphernalia of field formation is often hard-won, frequently involves excursions down blind alleys and is a risk-taking business.

An example in the field of education is the development and maintenance of its professional association, the British Educational Research Association (BERA) and its principal organ of dissemination, the British Educational Research Journal (BERJ). It understands its primary function as supporting a particular view of education and ultimately of its practices, though these do not emanate in a straightforward manner from the discursive construction. This is that it is possible to support all the different epistemologies currently and in the future that swirl around in the allocated discursive space; that the issue of the differences between them can be resolved by focusing on perceived commonalities at the strategic and method levels, rather than at the levels of ontology and epistemology (the issue of truth is attended to but only in a decontextualised and reductionist form, e.g. cf. Moss 2015); that it is possible to collect evidence which allows one to make unequivocal claims about how educational systems and people actually work and that these claims are in some sense ahistorical (this takes the form of a commitment to both qualitative and quantitative research approaches (cf. BERJ 2016) and the empty dichotomy that sustains this epistemology); and that the collection of people that make up the particular community can come together and agree about educational judgements of institutions, texts and persons and how they can be made. Indeed, the recent emphasis on awarding prizes for the best of this or that is evidence firstly of a particular approach to knowledge-development and secondly of a commitment to current social practices rather than to critical evaluations of them.

But more importantly, the field needs to establish three sets of criteria before it can be considered to be fully formed: first, it has to have created a set of criteria by which its knowledge can be evaluated; second, it needs to have formalised a set of definitional criteria which includes and excludes what is considered proper knowledge; third, it needs to be able to offer a set of methodological criteria with which an initiate may operate, a set of

procedures which delineate a practitioner from a non-practitioner. Whilst some of these moves are more successful than others, they are, as Macintyre (1988) points out, always subject to decay, argument, dispute and change. The field itself always has to operate with and between other discursive fields, for example, the wider field of policy. Macro-political influences, therefore, have an influence on the way the field comes into being, and indeed practitioners (especially in the field of education) may deliberately shape their thinking to chime with policy moves, either actually in existence or projected.

Two examples will suffice. The first is ethnography, not understood as a field in its own right, but as a subset of the wider field of methodology. Forty years ago, this would not have been considered appropriate as a knowledge-producing activity. It is now acceptable in the academy, as its organs of dissemination are now well enough established to sustain it as a serious activity. However, it is not acceptable within wider contexts such as policy-making forums, and practitioners are therefore weakened by their inability to participate in macro-political processes. Furthermore, resources are now being channelled to research projects that favour particular methodological approaches, usually described as randomised control trials (cf. The Education Endowment Foundation), with a subsequent diminution of ethnographic studies. This is not because randomised control trials are likely to produce more truthful accounts of educational processes and activities, but because they produce accounts that better fit the ideological framings of governments.

The second example is the school effectiveness/school improvement discourse that I have made reference to in this chapter already. The creation of such a discourse has come about as a result of a number of moves made by important players in universities: for example, the marginalisation of existing forms of knowledge, such as the sociology of education, the philosophy of education and curriculum studies. This process has been accomplished by the cementing of alliances between policy-making bodies such as the Department of Education and the academic community; and more importantly, the setting in place by governments of a number of apparatuses (e.g. Ofsted Inspection, national league tables, etc.) that better facilitate the successful operation of the discourse, and which at the same time act to circumscribe, and set boundaries to, the field. In addition, the movement has sought to market itself and thus establish a bridgehead to the world of practitioners, i.e. by the use of marketing devices and by sustaining close relationships with knowledge users.

These two examples, incomplete as they are as histories, suggest that knowledge in the academy represents a fluid configuration, which is always in a state of flux. Subsequent reconfigurations that may or may not be influenced by older typifications of knowledge merely confirm the flexible and changing nature of knowledge typifications. However, as Foucault (2004) argues, these moves have material effects: that is, they open and close discursive possibilities, and limit and delimit what can be said about education, and therefore subsequently about how educational discourses and practices are formed.

The Examination

A sixth discursive formation is the examination, and attached to this is the idea of intelligence as an innate capacity. Michel Foucault provides an example of the construction of a pedagogic formation in relation to the use and development of examinations. In *Discipline and Punish: The Birth of the Prison* (Foucault 1979), he shows how the common sense discourse of examinations can be understood in a different way. Previously, the examination was thought of as a mechanism for combating nepotism, favouritism and arbitrariness and for contributing to the more efficient workings of society. As part of the procedure a whole apparatus or technology was developed and this was intended to legitimise it. This psychometric framework, though in a state of continuous development, has served as a means of support for significant educational programmes in the twentieth century, i.e. the establishment of the tripartite system in the UK after the Second World War, and continues to underpin educational reforms since the passing of the Education Reform Act for England and Wales in 1988. The theory itself is buttressed by a number of unexamined principles: an essentialist view of competence, a notion of hierarchy, a naïve realist perspective and a correspondence notion of truth. Furthermore, the idea of the examination is construed as progressive: society is becoming a better place because scientific understanding gives us a more accurate picture of how the world works.

In contrast, for Foucault (1979: 184) the examination: 'combines the techniques of an observing hierarchy and those of a normalising judgement. It is a normalising gaze, a surveillance that makes it possible to qualify, to classify and to punish. It establishes over individuals a visibility through which one differentiates them and judges them.' The examination therefore enables society to construct individuals in particular ways. Knowledge of

persons is created which has the effect of binding individuals to each other, embedding those individuals in networks of power and sustaining mechanisms of surveillance, which are all the more powerful because they work by allowing individuals to govern themselves. The examination introduced a whole new mechanism that in effect both contributed to a new type of knowledge formation and constructed a new network of power, all the more persuasive once it had become established throughout society.

This mechanism works in three ways: firstly, by transforming 'the economy of visibility into the exercise of power' (1979: 187); secondly, by introducing 'individuality into the field of documentation' (1979: 189); and thirdly, by making 'each individual a "case"' (1979: 191). In the first instance, disciplinary power is exercised invisibly and this contrasts with the way power networks in the past operated visibly, through the explicit exercise of force. This invisibility works by imposing on subjects a notion of objectivity that acts to bind them to a truth about that examination, a truth that is hard to resist. The examined person understands themself in terms of criteria that underpin that process, not least that they are successful or unsuccessful. The examination therefore works by 'arranging objects' (1979: 187) or people in society.

In the second instance, the examination allows the individual to be archived by being inscribed textually. As we were able to observe in Chapter 1 with the Pisafication process (i.e. the Programme for International Student Assessment), an attempt is made to position these knowledge-development activities as contributing to better and more progressive framings of society. Over the last twenty years in English schools, the proliferation and extension of assessment through such devices as key stage tests, records of achievement, examined course work, education certificates and school reports, and evaluation through such devices as school inspection, teacher appraisal, profiles and the like, means that teachers and students are increasingly subject to disciplinary regimes of individual measurement and assessment which have the further effect of determining them as cases.

The third of Foucault's modalities then is when the individual becomes an object for a branch of knowledge:

> The case is no longer, as in casuistry or jurisprudence, a set of circumstances, defining an act and capable of modifying the application of a rule; it is the individual as he (sic.) may be described, judged, measured, compared with others, in his very individuality; and it is also the individual who has to be trained or corrected, classified, normalized, excluded, etc. (1979: 191)

One final point needs to be made about the examination, and this is that for the first time the individual could be scientifically and objectively categorised and characterised through a modality of power where difference becomes the most relevant factor. Hierarchical normalisation becomes the dominant way of organising society. Foucault is suggesting here that the examination itself, on the surface a neutral device, acts to position the person being examined in a discourse of normality, so that for them to understand themselves in any other way is to understand themselves as abnormal and even as unnatural. This positioning works to close off the possibility of the persons being examined of seeing themselves in any other way, though it may not be successful.

Learners have been constructed pedagogically. (This is an historical claim.) An example of this process is the application of the notion of intelligence, and in particular, the use of the idea of a fixed innate quality in human beings which can be measured and remains relatively stable throughout an individual's life. This has come to be known as an intelligence quotient and is measured by various forms of testing, e.g. the 11+ test. The 11+ had a significant influence on the formation of the tripartite system of formal education in the UK as it was used to classify children as appropriate for grammar schools (those who passed the 11+), technical schools (those who passed the 11+ but were considered to be better suited to receive a technical education), and secondary moderns (the vast majority who failed the 11+ and in the early days of the tripartite system left school without any formal qualifications). This system of education was largely replaced by a comprehensive system of schooling. At the time of writing this book, the new Conservative government in the UK looks set to reintroduce the 11+ examination, grammar schools and secondary moderns into the system.

This illustrates one of the problems with an approach to the relationship between mind and reality that is technicist, scientistic and reductionist. What was considered to be a natural kind, i.e. innate qualities of intelligence in human beings, has been shown to have undeniably social or constructed dimensions to it. Powerful people had constructed a tool or apparatus for organising educational provision, and given it credibility by suggesting that it was natural and thus had legitimacy. One manifestation of this discourse is the gifted and talented programmes that have been introduced into schools in the UK over the last twenty years. Gifted and talented is a term defined by the Department of Education to describe children who 'have the potential' to develop significantly beyond what is expected for their age. The suggestion by the Department of Education

and elsewhere is that some children have this potential and others do not. It is also closely allied to processes of individualisation and personalisation that are becoming commonplace in UK educational settings, and has contributed to a sterility and impoverishment of learning approaches and outcomes in schools.

Higher Education Pedagogy

The recently published government White Paper on higher education sets out a range of reforms to the higher education and research system in the UK. At the time of writing, it is the government's intention that as many as possible of these reforms will be implemented through primary legislation, indeed, some of them may already have achieved this status. Some of the suggestions for reform in this White Paper are set out below.

Market Entry, Quality and Risk-Based Regulation

- We will replace multiple overlapping HE systems with a single regulator and route into the sector.
- We will move to risk-based regulation, which will reduce the regulatory burden across the sector, except for those providers where additional monitoring is needed.
- New high quality institutions will be able to compete on equal terms with quicker entry to the sector.
- We will continue to set a high bar on quality to ensure that providers are delivering value for money for students and taxpayers.
- Student number controls will continue to be lifted for all providers that can meet our high quality bar, including rigorous outcome measures, but will otherwise remain an important tool to ensure students and taxpayers are protected.
- We will open up access for providers to be able to award their own degrees by introducing greater flexibility to degree awarding powers (DAPs): new probationary foundation and taught DAPs (FDAPs/TDAPs); time-limited granting of DAPs for all new holders in the first instance with scope for indefinite DAPs for all following successful renewal; options for bachelors only and subject-specific DAPs; reduced and more flexible track record requirement for full DAPs.
- We will remove the minimum student numbers criterion for university title (UT), whilst retaining the requirement that when taking

account of ownership structures more than 55% of full time equivalent students are studying higher education. This will enable wider access to UT for indefinite holders of bachelor level DAPs, and bring together DAPs and UT processes. We will retain university college title for those who prefer it.

- We will simplify the granting of DAPs and UT for English institutions by transferring responsibility for the process from the Privy Council to the Office for Students (OfS).
- We will encourage providers to improve validation arrangements, and take a power enabling the OfS to designate a validation service if validation services remain restrictive.
- Following a recommendation from the OfS, the Secretary of State will have a power to designate sector-owned organisations to carry out specific quality assurance and data publication functions, enabling the principle of co-regulation to continue.
- We will remove the requirement for higher education providers to submit any changes to their governing documents to the Privy Council for approval, and remove the unnecessary statutory requirements on Higher Education Corporations.
- We will extend the remit of the Office of the Independent Adjudicator for Higher Education (OIA) to cover all higher education providers on the register.
- We will for the first time require providers to have a student protection plan in place, in the event that the provider is unable to deliver their course of study.

Success as a Knowledge Economy: Teaching Excellence, Social Mobility and Student Choice

- We will enhance teaching in our universities by implementing the Teaching Excellence Framework (TEF), using a phased approach.
- TEF judgements will be made against agreed criteria by an expert peer review panel including employers and students, and based on a combination of core metrics and short institutional submissions.
- We will ensure that the TEF assessment framework explicitly takes into account outcomes for disadvantaged groups.
- As announced in the July 2015 Budget, successful TEF performance will allow providers to maintain their fees and access to loans within

the rate of inflation and up to the maximum fee cap, which will continue to be set under the same Parliamentary procedure as now.
- Alongside this White Paper, we will publish a Technical Consultation to help design the second year of TEF.
- We will hold a call to evidence on credit transfer to encourage more students to transfer between institutions, which can significantly improve their life chances.
- We will promote transparency by opening up data held by the sector, informing choice and promoting social mobility, by putting a duty on institutions to publish application, offer, acceptance and progression rates broken down by gender, ethnicity and disadvantage.
- We intend to legislate to require those organisations that provide shared central admissions services (such as UCAS) to share relevant data they hold with Government and researchers in order to help improve policies designed to increase social mobility, while also ensuring all appropriate data protection safeguards are in place.
- We will increase choice and flexibility in the sector by putting a duty on the OfS to have regard to promoting choice in the interests of students, employers and taxpayers.
- We will merge the functions of the Director of Fair access (DFA) into the OfS.
- We will include a requirement for a specific OfS Board member, the Director for Fair Access and Participation, appointed by the Secretary of State, with responsibility for these functions within the OfS.
- We will give OfS a statutory duty to cover equality of opportunity across the whole lifecycle for disadvantaged students, not just access.
- We will introduce an alternative finance system to support the participation of students who, for religious reasons, might feel unable to take on interest-bearing loans.

Higher Education, Research and Innovation Architecture

- We will create the Office for Students (OfS), a new market regulator, in place of HEFCE. For the first time, completion, choice and the student interest will be at the regulator's heart.
- The OfS will be a non-departmental public body. Ministers will be responsible for appointing the Chair, Chief Executive and non-executive Board members of the OfS.

- The OfS will primarily be funded by registration fees from HE providers, varied in part on the size of the provider and the type of Government support they are eligible to access. We will come forward with a consultation on how the registration fee will be developed ahead of it being introduced.

Success as a Knowledge Economy: Teaching Excellence, Social Mobility and Student Choice

- The OfS will be responsible for allocating teaching grant funding and for monitoring the financial sustainability, efficiency and overall health of the sector.
- The OfS will be given a statutory duty to ensure compliance with the conditions of regulation.
- The OfS and BIS will have the power to enter and inspect providers (with a court warrant) if there is suspicion of serious breaches, such as fraud or malpractice, to safeguard the interests of students, the taxpayer and protect the reputation of the sector.
- We will also create UK Research and Innovation (UKRI), a new research and innovation funding body that will allocate funding for research and innovation and act as a champion for the UK's world class system. The creation of UKRI will ensure that our research and innovation system is sufficiently strategic and agile to deliver national capability for the future that drives discovery and growth.
- UKRI will incorporate the functions of the seven Research Councils, Innovate UK and HEFCE's research funding functions. The names and brands of the Research Councils and Innovate UK will be retained.
- UKRI will have a strong board with responsibility for leading on overall strategic direction, cross-cutting decision making and advising the Secretary of State on the balance of funding between research disciplines. The board will manage funds with cross-disciplinary impact and a 'common research fund' as proposed by Paul Nurse.
- There would a legislative requirement for the Secretary of State to consider the need for both academic and business representation and expertise on the Board.
- We will retain and strengthen leadership in specific research discipline areas, innovation and England only research funding by

establishing nine Councils within UKRI with delegated autonomy and authority.
- The councils will be responsible for the strategic leadership of their disciplines and on scientific research and innovation matters. The Secretary of State will set budgets for each of the nine Councils through an annual grant letter.
- There would be a new legislative protection for the duel support system in England and we are formally restating the Government's commitment to the Haldane principle.

(UK Government White Paper 2016: 23–26)

Many of these prescriptions and preferred courses of action are underpinned by the interplay between, and intermingling of, some of the discourses that I have discussed above. Some are openly acknowledged, such as the injection of elements of competition and choice into higher education practices of teaching and learning and the adoption of a technical rationality model of the theory-practice relation. Others are concealed as in essentialist notions of intelligence and ability, a binding relationship between skill development and economic performance, and the favouring of reductive and technicist forms of knowledge development both as ways of describing those practices that the reforms will set in place and as forms of knowledge that students should acquire. In addition, these prescriptions and recommendations constitute a rearrangement of the forms of governance for higher education in the UK, and represent an extension of the top-down relations between the funder (UK governments) and the provider (UK institutions of higher education), all the while concealed within a particular discursive framing of the notion of accountability.

An Educational Theory

This book is about knowledge and the way it is and can be formed, that is, given shape and meaning. Instances of knowledge development that I have examined in this book are the Research Excellence Framework (REF) for UK higher education institutions and its proposed complementary framework for teaching and learning in these higher education institutions, the Teaching Excellence Framework (TEF); curricular, teaching and learning practices in schools in England and in higher education institutions; disciplinary knowledge within higher education; and

international comparative assessment systems such as the Programme for International Student Assessment (PISA); amongst others.

The key idea that I have sought to convey is that contrary to materialist and deterministic views of learning and knowledge development (cf. Chapter 4), there is a need to reposition the agent in the social environment, though this agent is far from essentialist or foundational. Charles Taylor (1985) offers a view of agency and the person as non-representational, anti-Cartesian and hermeneutic. Throughout I have highlighted both the non-binding nature of structure(s) and the need to conceptualise action in non-Cartesian terms. For a committed Cartesian what exclusively distinguishes a human being from a non-human being is their capacity to represent the world in abstract terms, as in making and using signs that represent something outside of those signs. A hermeneuticist, such as Taylor, argues that, in contrast, what constitutes a human being and thus human agency is the capacity to respond to 'particular human concerns' (Taylor 1985: 104) and this moves the whole notion of consciousness away from the idea of abstract representation. This means that human beings can engage in strong evaluations as opposed to weak evaluations, and he means by this that they can reason about 'the qualitative worth of different desires' (Taylor 1985: 104) and not just rank alternative desires by preference. I have already suggested that the dominant mode of reasoning used in educational research entails weak evaluating (see Chapter 2 for examples of this) *and* restricted and reductionist forms of empirical enquiry (both about concepts and social objects). Taylor refers to this in the following way:

> To characterize one's desire or inclination as worthier, or nobler, or more integrated, etc. than others is to speak of it in terms of the kind of quality of life which it expresses and sustains. . . . Whereas for the simple weigher what is at stake is the desirability of different consummations, those defined by his (sic.) *de facto* desires, for the strong evaluator reflection also examines the different possible modes of being of the agent. (Taylor 1985: 25)

And this in turn means that in all the human activities discussed above a notion of moral responsibility needs to be retained. This raises a number of questions about moral responsibility. Does the person qualify as a moral agent? Does she possess the general capacity to perform as a moral agent, where this refers to an ability to evaluate her reasons for doing this rather than that? Are the conditions in place in the setting where the evaluation is

taking place that allow the agent to perform in a way that conforms to their sense of moral accountability, i.e. has she performed it freely and was she allowed to exercise her moral culpability? And finally, is sufficient account taken of the conditional nature of any decision-making she might want to engage in?

This conditionality has four elements: social actors are relatively unaware of some of the conditions for their actions; that is, every action has a set of conditions that underpin it, for example, a speech act requires a language, vocabulary and grammar; they are unlikely to be able to predict all the consequences of their actions, so there are going to be unintended consequences; social actors may not be aware of much of their own knowledge and expertise, in other words, much of their knowledge is tacit, and thus they cannot, except with the greatest of difficulty, surface it in their accounts of their actions; and equally they may be motivated by unconscious forces and impulsions which they find great difficulty in articulating. A distinction can be drawn between attributability and responsibility as accountability, and this distinction rests on the difference between ascribing moral responsibility to a person because they are formally responsible for their actions and only making someone responsible if they were in a position to do something about it and thus effectively make a difference. This last involves a judgement about what is reasonable in attributing praise or blame to a person in the actual circumstances in which it happened.

What then is required for a theory of education and the person? What characterises such a theory? What are its features and the relations between these features? These are, I suggest, a language for understanding the educative process, a capacity for analysing this process (identifying and separating out the various elements and the relations between them), an ontology and an epistemology and the relations between them, a way of turning all these into a coherent whole which prescribes what is needed for an educational setting, and a set of educational values.

This means that a theory of education has a view on the following important matters: intentionality, agential capacity, structures of agency, materialism, reflexivity, the possibility of describing and changing the world, progression, education and the life course, essentialism and human nature, pedagogy, knowledge and knowledge-development, truth criteria, the formation of the self, curricular aims and objectives, being with other people, learning, the self in the learning process, the relationship between the self (or agency) and the environment, stratification, emergence, representation and its different modes, structures and mechanisms. In short, what is

necessary for a theory of education is a set of characteristics that constitutes a learning environment and the relations between them.

Judgemental Rationality

My purpose in this book then has been to develop and articulate a critical viewpoint about knowledge and knowledge development. What this entails is the provision of a binding, sufficient and salient reason (or reasons) as to why the viewpoint that I have expressed here is better than other viewpoints (about the same social object) that other people have produced. Why is this important? Philosophers (indeed, authors of books such as this one) have developed theories about social objects (e.g. knowledge-construction), which may be, and frequently are, contradictory, antithetical, incompatible or even irreconcilable, in relation to each other. All these words are being used here to suggest that a comparison can be made between the different theories, that differences between them can be identified, and that a judgement can be made as to why one of them is superior to the other; that is, all these theories cannot be subscribed to by an individual at any one moment in time who also wishes to be consistent about the various beliefs they hold (and this of course includes their actions as well).

The criterion of consistency can of course be critiqued and placed in suspension ('Do I contradict myself? Very well, then, I contradict myself; I am large – I contain multitudes', the opening lines of *Song of Myself* by Walt Whitman (1995)). However, what cannot be denied is that if one seeks consistency, then theories that are contradictory or show differences cannot all be held at the same time. And this applies to a state of being where an individual can reconcile what on the surface seems to be an inconsistency because the different theories are actually referring to different stages of apprehending the object. These might be the retroductive stage (where underlying structures and mechanisms are being disclosed), or the use stage (where the theory becomes a part of the discourse-in-action), or the discursive stage (where the theory is placed in the array of existing theories and constructs), or the interpretive stage (where a determination is made that one interpretation is better than another). The problem is that knowledge of the object comprises all these stages, and thus reference to different stages of its development cannot help us in reconciling different versions of the same object. And again if we are committed to some notion of truth (alethic truth, for example), then we

are also committing ourselves to some notion of better or worse forms of knowledge.

A number of arguments have been put forward, which attempt to explain why $Theory_1$ is better than $Theory_2$, and indeed whether this judgement in principle can be made. The first of these is that there are real issues which impact on our lives and it is these real issues that determine the truthfulness of particular theories. This is an argument in support of ontological realism but it doesn't take us very far in establishing whether it is possible to determine that one theory is better than another. However, what it does do is indicate that one of our criteria for this determination is the referent of knowledge (indeed that knowledge does have a referent). This is an important step in the argument for judgemental rationality (our ability to decide that one theory is better than another when they are both focused on the same area of social life), but it is not sufficient in itself to establish categorically that it is possible.

The most promising argument in favour of judgemental rationality is that once it has been established that ontological realism is a truthful claim, then what follows from this is that there has to be a relation/connection between knowledge development and the world (not of course in a correspondence or representational sense). This argument rests on the foundational claim that knowledge is not the same as and is different in some important respects from what it claims to be about, i.e. its referent. This means that it then becomes possible to produce knowledge of this connection/relation and of the world itself, even if it is indirect. If it becomes possible to show how the process might work, then we can initiate the activity of grounding our theories in the world as it is and thus establishing in part the truth-capacity of claiming that T_1 is better than T_2. This is the epistemic claim, where accounts of the world are more truthful because they have a better relationship with and to the world. And this points to Bhaskar's (1989: 214) notion of alethic truth, which he understands as relating to the real mechanisms in society and not to propositions:

> A species of ontological truth constituting and following on the truth of, or real reason(s) for, or dialectical ground of, things, as distinct from propositions, possible in virtue of the ontological stratification of the world and attainable in virtue of the dynamic character of science.

Groff (2004) suggests that this is a deeply flawed notion for three reasons. The first is ontological. She argues that there is a category error here in so

far as truth, which is an epistemological construction, is being construed in ontological terms, insofar as it refers exclusively to generative mechanisms in the world. The second reason is epistemological. Bhaskar treats it as foundational and it therefore operates as a criterion for determining the validity of propositions. And yet he had previously ruled out the possibility of foundational knowledge. The third reason is that alethic truth does not fit with a fallibilist view of knowledge, in which it is acknowledged that knowledge and knowledge-development is always work in progress. (What is not made clear is whether this refers to fallibilist notions of knowledge-development that are open to correction or that are incorrigible.) However, these objections to the notion of alethic truth do not and cannot rule out the possibility of establishing some form of understanding the referent. The retroductive process is designed to do just this.

Another argument is that if one theory can explain more significant phenomena than another can, then it is a superior theory. Explanatory power is understood as relative to the disciplines or fields within which the object of the investigation is situated. However, this doesn't mean that this can amount to the discovery of an ultimate truth. Clearly, if there are anomalies, contradictions or inadequacies in T_1, then it becomes possible for us to argue that this theory is inadequate or insufficient. So in trying to determine whether it is possible to establish that T_1 is superior to T_2 then we also (in addition to our epistemic criterion) have to build in a notion of rational adequacy. And what this implies is that the use of an imminent critique to establish the possibility of deciding that T_1 is superior to T_2 means that the judgemental process is always internal to a tradition, disciplinary form of knowledge or particular framework. Thus, this criterion is also concerned to establish adequacy as only possible within a discipline or field. However, once again this seems to rule out the possibility of any form of universal or foundational knowledge. Denying the possibility of universals seems to be a contradiction in itself, since the denial acts in all important respects as a universal. If we accept this argument then we are beginning the process of accepting the existence of what Strawson (1959) called universals of coherent thought, and even some universals relating to ontological relationships such as a mind-world distinction and consequently a connection between them.

A further argument refers to Jurgen Habermas' (1981) notion of communicative competence. The argument would then be that T_1 is superior to T_2 because in its production it better conforms to the rules for communicative competence. That is, any claim to theoretical

credibility must be able to make the following assertions: this work is intelligible and hence meaningful in the light of the structuring principles of its discourse community; what is being asserted propositionally is true; what is being explained can be justified; and the person who is making these claims is sincere about what they are asserting. These four conditions if they are fulfilled allow a theorist to say something meaningful about the world. However, since we are trying to establish whether it is possible to determine that T_1 is superior to T_2, then we cannot use the argument that T_1 is superior on the grounds that the supporter of T_1 is coming from a better or purer position than the supporter of T_2, because this assumes that the argument being made is necessarily right.

It is suggested that another way of determining whether T_1 is superior to T_2 is to make the claim that T_1 is more powerful and has more powerful effects than other theories, for example, T_2, T_3, through to T_n. Self-evidently, some theories are more powerful or have more powerful effects in the world than others; however, this cannot provide us with an argument that might suggest that it is possible to say that T_1 is a better theory qua its theoretical adequacy than T_2.

What are we left with? There are four ways of distinguishing between different theories or models. The first is epistemic: a theory is superior to another because it is more empirically adequate. (This is, as I have suggested throughout this book, a complex and contested matter.) The second is the converse, so that a version of reality is superior to another because it contains fewer contradictions, disjunctions and aporias. A third approach focuses on the giving of reasons, and concludes that some reasons and systems of rationality are superior to others, and therefore should be preferred. A fourth approach is pragmatic: a theory is better than another because it is more practically adequate or referenced to/part of extant frameworks of meaning. A combination of all four reasons is, I suggest, appropriate. What I have attempted to do then in this book is provide a reason or set of reasons as to why the theory of knowledge and knowledge-development articulated here is superior to other theories and framings that have been developed by other people.

References

Alhadeff-Jones, M. (2010). Three generations of complexity theories: Nuances and ambiguities. *Educational Philosophy and Theory*, *40*(1), 66–82.

Archer, M. (2004). Objectivity and the growth of knowledge. In M. Archer & W. Outhwaite (Eds.), *Defending objectivity: Essays in honour of Andrew Collier*. London and New York: Routledge.

Archer, M. (2007). *Making our way through the world*. Cambridge: Cambridge University Press.

Aubrey, B., & Cohen, P. (1995). *Working wisdom: Timeless skills and vanguard strategies for learning organizations*. San Francisco: Jossey Bass.

Bakhurst, D. (2009). Reflections on activity theory. *Education Review*, *61*(2), 197–210.

Ball, S. J. (2008). *The education debate*. Bristol: The Policy Press.

Bandura, A. (1977). *Social learning theory*. New York: General Learning Press.

Bernstein, B. (1985). On pedagogic discourse. In G. Richardson (Ed.), *Handbook of theory and research in the sociology of education*. London: Taylor and Francis.

Bernstein, B. (1990). *Class, codes and control. Volume IV: The structuring of pedagogic discourse*. London and New York: Routledge.

Bernstein, B. (2000). *Pedagogy, symbolic control and identity: Theory, research and critique* (Rev. edn.). London: Taylor and Francis.

Bernstein, B. (2002). From pedagogies to knowledges. In A. Morais, I. Neves, B. Davies, & H. Daniels (Eds.), *Towards a sociology of pedagogy: The contribution of Basil Bernstein to research*. New York: Peter Lang Publishing.

Bhaskar, R. (1989). *Reclaiming reality*. London: Verso.

Bhaskar, R. (1998). General introduction. In M. Archer, R. Bhaskar, A. Collier, T. Lawson, & A. Norrie (Eds.), *Critical realism: Essential readings* (pp. ix–xxiv). London: Routledge.

D. Scott, *Education Systems and Learners*,
DOI 10.1057/978-1-137-59884-4

Bhaskar, R. (2010). *Reclaiming reality* (2nd edn.). London and New York: Routledge.

Black, P., & Plowright, D. (2010). A multidimensional model of reflective learning for professional development. *Reflective Practice*, *11*(2), 245–258.

Black, P., & Wiliam, D. (1998). Inside the black box: Raising standards through classroom assessment. *Phi Delta Kappan*, *80*(2), 139–148.

Blatchford, P., Bassett, P., Goldstein, H., & Martin, C. (2003). Are class size differences related to pupils' educational progress and classroom processes? Findings from the institute of education class size study of children aged 5–7 years. *British Educational Research Journal*, *29*(5), 709–730.

Bolton, G. (2010). *Reflective practice*. London: Sage.

Bonefeld, W. (1999). The politics of change: Ideology and critique. *Common Sense: Journal of the Edinburgh Conference of Socialist Economists*, December, 24, 76–90.

Boud, D., & Falchikov, N. (2006). Aligning assessment with long-term learning. *Assessment and Evaluation in Higher Education*, *31*(4), 399–413.

Brandom, R. (1994). *Making it explicit: Reasoning, representing, and discursive commitment*. Cambridge, MA: Harvard University Press.

Brandom, R. (2000). *Articulating reasons: An introduction to inferentialism*. Cambridge, MA: Harvard University Press.

Brandom, R. (2004). The pragmatist enlightenment (and its problematic semantics). *European Journal of Philosophy*, *12*(1), 2.

Bridges, D. (1999). Educational research: Pursuit of truth or flight of fancy. *British Educational Research Journal*, *25*(5), 597–616.

British Educational Research Journal. (2016). *About this journal*. Website.

Brown, S., Duffield, J., & Riddell, S. (1995). School effectiveness research: The policy makers tool for school improvement. *European Educational Research Association Bulletin*, *1*(1), 6–15.

Brown, A., Fleetwood, S., & Roberts, J. (2002). *Critical realism and Marxism*. London and New York: Routledge.

Bulmer, M. (1979). Concepts in the analysis of qualitative data. *Sociological Review*, *27*(4), 651–677.

Clutterbuck, D., & Megginson, D. (2005). *Making coaching work – creating a coaching culture*. London: Chartered Institute of Personnel and Development.

Collier, A. (2003). *In defence of objectivity*. London and New York: Routledge.

Collins, A., Brown, J., & Newman, S. (1989). Cognitive apprenticeship: Teaching the crafts of reading, writing, and mathematics. In L. B. Resnick (Ed.), *Knowing, learning, and instruction: Essays in honour of Robert Glaser* (pp. 453–494). Hillsdale, NJ: Lawrence Erlbaum Associates.

Corbin, J., & Strauss, A. (2007). *Basics of qualitative research: Techniques and procedures for developing grounded theory*. London: Sage Publications.

Davis, B., & Sumara, D. J. (2006). *Complexity and education: Inquiries into learning, teaching and research*. Mahwah, NJ: Lawrence Erlbaum.

Driver, S., & Martell, L. (1997). New labour's communitarianisms. *Critical Social Policy*, *17*(52), 27–46.

Edwards, R. (2015). The post-human and responsible experimentation in learning. In D. Scott & E. Hargreaves (Eds.), *The sage handbook of learning*. London: Sage.

Edwards, D., & Mercer, N. (2007). *Common knowledge: The development of understanding in the classroom*. London: Routledge.

Engeström, Y. (2001). Expansive learning at work: Toward an activity theoretical reconceptualization. *Journal of Education and Work*, *14*(1), 133–156.

Evans, C. (2013). Making sense of assessment feedback in higher education. *Review of Educational Research*, *83*(1), 70–120.

Fairclough, N. (2000). *New labour, new language*. London: Psychology Press.

Fairclough, N. (2001). Critical discourse analysis as a method in social scientific research. In R. Wodak & M. Meyer (Eds.), *Methods of critical discourse analysis* (pp. 121–138). London: Thousand Oaks.

Falchikov, N. (2001). *Learning together: Peer tutoring in higher education*. London: RoutledgeFalmer.

Fenwick, T., & Edwards, R. (2010). *Actor-network theory in education*. London and New York: Routledge.

Fodor, J., & Lepore, E. (2007). Brandom Beleaguered. *Philosophy and Phenomenological Research*, *74*(3), 677–691.

Fogarty, R. (1991). *The mindful school: How to integrate the curriculum*. Pallantine: Skylight Publishing.

Foucault, M. (1972). The discourse on language (Appendix). In M. Foucault (Ed.) *Discipline and punish: The birth of the prison*. New York: Random House.

Foucault, M. (1979). *Discipline and punish: The birth of the prison*. New York: Vintage.

Foucault, M. (2004). *Security, territory, population: Lectures at the Collège de France 1977–1978*. New York: Picador Edition.

Furlong, J., & Oancea, A. (2005). *Assessing quality in applied and practice-based research: A framework for discussion*. Oxford: Oxford University Department of Educational Studies.

Gadamer, H.-G. (1975). *Truth and method*. London: Sheed and Ward.

Gagné, R. (1985). *The conditions of learning*. New York: Holt Rinehart and Winston.

Giddens, A. (1986). *The constitution of society*. Cambridge: Polity Press.

Glaser, B., & Strauss, A. (1967). *The discovery of grounded theory: Strategies for qualitative research*. London: Weidenfeld and Nicolson.

Groff, R. (2004). *Critical realism, post-positivism and the possibility of knowledge*. London and New York: Routledge.

Guardian Newspaper. (2016). Editorial, 15 August.

Habermas, J. (1981). *The theory of communicative action, Volume 1*. Trans. T. McCarthy. Boston: Beacon Press.

Hacking, I. (1990). *The Taming of chance*. Cambridge, MA: Harvard University Press.

Hammersley, M. (2001). On Michael Bassey's concept of the Fuzzy generalisation. *Oxford Review of Education*, *27*(2), 45–56.

Hammersley, M. (2005). Should social science be critical? *Philosophy of the Social Sciences*, *35*(2), 175–195.

Hannafin, M. J., Hannafin, K. D., & Dalton, D. W. (1993). Feedback and emerging instructional technologies. In J. V. Dempsey & G. C. Sales (Eds.), *Interactive instruction and feedback* (pp. 263–286). Englewood Cliffs, NJ: Educational Technology Publications.

Harden, A., & Thomas, J. (2005). Methodological issues in combining diverse study types in systematic reviews. *International Journal of Social Research Methodology*, *8*(3), 257–271.

Harré, R. (2011). *Theories and things*. London: Sheed and Ward.

Harris, K., & Graham, S. (1999). Programmatic intervention research: Illustrations from the evolution of self-regulated strategy development. *Learning Disability Quarterly*, *22*, 251–262.

Hattie, J., & Timperley, H. (2007). The power of feedback. *Review of Educational Research*, *77*(1), 81–112.

Higher Education Funding Councils. (2006). *Criteria 2006RIDCIT0019*. London: HEFCE.

Higher Education Funding Council for England. (2008). *RAE 2008 accountability review*. London: PA Consulting Group.

James, M., & Pollard, A. (Eds.). (2012). *Principles for effective pedagogy: International responses to evidence from the UK teaching and learning research programme*. Abingdon: Routledge.

Kolb, D. A. (1984). *Experiential learning experience as a source of learning and development*. New Jersey: Prentice Hall.

Lather, P. (2007). Validity, qualitative. In G. Ritzer (Ed.), *The blackwell encyclopaedia of sociology* (pp. 5161–5165). Oxford: Blackwell Publisher.

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge: Cambridge University Press.

Leontiev, A. (1978). *Activity, consciousness and personality*. Englewood Cliffs, NJ: Prentice Hall.

Lingard, B. (2000). It is and it isn't: Vernacular globalisation. In N. Burbles & C. Torres (Eds.), *Globalisation and education: Critical perspectives* (pp. 275–296). London: Routledge.

Macintyre, A. (1988). *Whose justice? Whose rationality?* London: Duckworth.

MacLure, M. (2005). "Clarity bordering on stupidity": Where's the quality in systematic review. *Journal of Education Policy*, *20*(4), 393–416.

Marx, K. (2009). *Capital*, Vol. 1. Washington: Regnery Publishing.

Maton, K. (2014). *Knowledge and knowers: Towards a realist sociology of education*. London: Routledge.

Maturana, H., & Varela, F. (1987). *The tree of knowledge: The biological roots of human understanding*. Boston, MA: Shambhala.

McLaren, P., & Farahmandpur, R. (2001). The globalization of capitalism and the new imperialism: Notes towards a revolutionary critical pedagogy. *The Review of Education, Pedagogy and Cultural Studies*, *23*(3), 271–315.

Meece, J., Anderman, E., & Anderman, L. (2006). Classroom goal structure, student motivation, and academic achievement. *Annual Review of Psychology*, *57*(1), 487–503.

Merleau-Ponty, M. (1962 [1945]). *Phenomenology of perception*. Trans. C. Smith, New York and London: Humanities Press and Routledge.

Messick, S. (1989). Validity. In R. Linn (Ed.), *Educational measurement* (3rd edn.). Washington, DC: American Council on Education.

Mortimore, P. (1992). Issues in school effectiveness. In D. Reynolds & P. Cuttance (Eds.), *School effectiveness research, policy and practice*. London: Cassell.

Moss, G. (2015). *Lecture at the British educational research conference 2015*. Belfast: Queen's University, Belfast, Northern Ireland.

Mourshed, M., Chijioke, C., & Barber, M. (2010). *How the world's best performing systems come out on top*. London: McKinsey.

Nelson, M. M., & Schunn, C. D. (2009). The nature of feedback: How different types of peer feedback affect writing performance. *Instructional Science*, *27*(4), 375–401.

Office of Standards in Education, Children's Services and Skills (OFSTED). (2015). *School inspection handbook*. UK: Government.

Organisation for Economic Cooperation and Development (OECD). (2014). *PISA*. Paris: OECD Publications.

Osberg, D. (2015). Learning, complexity and emergent (irreversible) change. In D. Scott & E. Hargreaves (Eds.), *The sage handbook of learning*. London: Sage.

Osberg, D., & Biesta, G. (2007). Beyond presence: Epistemological and pedagogical implications of strong emergence. *Interchange*, *38*(1), 31–51.

Parsons, T. (1964). *Essays in sociological theory*. London: Free Press.

Parsons, T. (1970). *Social structure and personality*. New York: Free Press.

Piaget, J. (1962). *The language and thought of the child*. London: Routledge and Kegan Paul.

Piaget, J. (1970). *The science of education and the psychology of the child*. London: Routledge and Kegan Paul.

Popkiewitz, T. (1997). The production of reason and power: Curriculum history and intellectual traditions. *Curriculum Studies*, *29*(2), 131–164.

Popper, K. (2002). *Conjectures and refutations: The growth of scientific knowledge*. London: Routledge.

Pratten, S. (2007). Explanatory critique. In M. Hartwig (Ed.), *Dictionary of critical realism*. London and New York: Routledge.
Prigogine, I. (1980). *From being to becoming*. New York: Freeman.
Quine, W. V. O. (1951). Two Dogmas of empiricism. *The Philosophical Review*, *60*, 20–43.
Rancière, J. (1991). *The ignorant schoolmaster. Five lessons in intellectual emancipation*. California: Stanford University Press.
Research Excellence Framework (REF). (2014). *Assessment framework*. London: Higher Education Funding Council for England.
Research Excellence Framework (REF). (2015) *The research effectiveness framework*, Higher Education Funding Council for Wales, Higher Education Funding Council for England, Scottish Funding Council and Department for Employment and Learning.
Saevi, T. (2015). Learning and Pedagogic relations. In D. Scott & E. Hargreaves (Eds.), *The Sage handbook of learning*. London: Sage.
Schleicher, A. (2013). www.bbc.com/news/business-31087545.
Schutz, A. (1963). Common-sense and scientific interpretation of human action. In M. Natanson (Ed.), *Philosophy of social sciences*. New York: Random House.
Scott, D. (2011). *Education, Epistemology and critical realism*. London and New York: Routledge.
Sellars, W. (1997). *Empiricism and the Philosophy of mind*. Cambridge, MA: Harvard University Press.
Skinner, B. F. (1953). *Science and human behaviour*. Cambridge: The Free Press.
Smyth, J. (2001). Critical reflection: The antidote of being done to! In J. Smyth (Ed.), *Critical politics of teachers' work: An Australian perspective*. New York: Peter Lang.
Standish, P. (2016). The disenchantment of education and the re-enchantment of the world. *Journal of Philosophy of Education*, *50*(1), 98–116.
Stobart, G. (2008). *Testing times: The uses and abuses of assessment*. London: Routledge.
Strathern, M. (2000). The Tyranny of transparency. *British Educational Research Journal*, *26*(3), 309–391.
Strawson, P. (1959). *Individuals: An essay in descriptive metaphysics*. London: Methuen.
Taylor, C. (1985). *Human agency and language: Philosophical papers 1*. Chapter 1: What is human agency? and Chapter 3: Hegel's philosophy of mind. Cambridge: Cambridge University Press.
Taylor, C. (1998). *Sources of the self: The making of the modern identity*. Cambridge MA: Harvard University Press.
Taylor, C. (2011). *Dilemmas and connections*. Harvard, MA: Harvard University Press.
Teaching, Learning and Research Programme. (2010). *TLRP*. London: Economic and Social Research Council.

Tolman, E. C. (1932). *Purposive behavior in animals and men*. New York: Century.
Tooley, J., & Darby, D. (1998). *Educational research: A critique, a survey of published educational research*. London: Office for Standards in Education.
United Kingdom White Paper. (2016). *Higher education*. London: HMSO.
Usher, R. (1997). Telling a story about research and research as story-telling: Post-modern approaches to social research. In G. McKenzie, J. Powell, & R. Usher (Eds), *Understanding social research: Perspectives on Methodology and practice*. London: Falmer Press.
Usher, R., Bryant, I., & Johnstone, R. (1996). *Adult education and the post-modern challenge: Learning beyond the limits*. London: Routledge.
Vygotsky, L. (1978). *Mind in society: The development of higher Psychological processes*. Ed. M. Cole, V. John-Steirner, & S. Scribner. Cambridge, MA: Harvard University Press.
Walsh, P. (1993). *Education and meaning: Philosophy in practice*. London: Cassell.
Watson, J. (1930). *Behaviourism*. New York: W.W. Norton and Company Inc.
Weber, M. (1964). *The theory of social and economic organisation*. New York: Free Press.
Wenger, E. (1998). *Communities of practice: Learning, meaning, and identity*. Cambridge, MA: Harvard University Press.
Wenger, E. (2008). A social theory of learning. In K. Illeris (Ed.), *Contemporary theories of learning . . . in their own words*. London and New York: Routledge.
White, J. (1997). Philosophical perspectives on school effectiveness and school improvement. In J. White & M. Barber (Eds.), *Perspectives on school effectiveness and school improvement*, Bedford Way Paper. Institute of Education, University of London.
Whitman, W. (1995). *The complete poems of Walt Whitman*. London: Wordsworth Poetry Library.
Wiliam, D. (2011). *Embedded formative assessment*. New York: Solution Tree Press.
Wiliam, D., & Thompson, M. (2008). Integrating assessment with instruction: What will it take to make it work? In C. A. Dwyer (Ed.), *The future of assessment: Shaping teaching and learning* (pp. 53–82). Mahwah, NJ: Lawrence Erlbaum Associates.
Wilson, E., & Demetrio, H. (2007). New teacher learning: Substantive knowledge and contextual factors. *The Curriculum Journal*, *18*(3), 213–229.
Winogrand, T., & Flores, F. (1986). *Understanding computers and cognition*. Reading, MA: Addison-Wesley.
Wolff, J. (2015). Has the research excellence framework been drowned out by its own noise? *The Guardian*, January 2015.
Zimmerman, B., & Schunk, D. (2011). *Handbook of self-regulation of learning and performance*. New York: Routledge.

Author Index

D. Scott, *Education Systems and Learners*,
DOI 10.1057/978-1-137-59884-4

Subject Index

D. Scott, *Education Systems and Learners*,
DOI 10.1057/978-1-137-59884-4