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Exploring learning in critical realism

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Critical realism is a philosophy of science, and not exclusively a theory of learning. However, because philosophic and scientific practice can be considered types of learning, a philosophy of science is likely either to have an implicit theory of learning or to have implications for learning theory, or both. In addition, as a philosophy of science, critical realism can provide general recommendations about how to carry out research on learning. This chapter is therefore an investigation into learning from various critical realist perspectives.

Introduction to critical realism

The term 'critical realism' refers to various philosophies. In this chapter, it is the critical realism first developed by the British-Indian philosopher Roy Bhaskar (1944–2014) which is discussed. Other 'critical realisms' are found in the philosophy of perception (for example, Maurice Mandelbaum's phenomenological approach)[1] and theology (for example, John Polkinghorne's theological critical realism).[2] Donald Campbell, an influential voice on the methodology of systematic reviews and evidence-based research, considered his philosophy of science to be a 'post-positivist critical realism' (see Pawson, 2006: 19). Unsurprisingly, these varieties have several differences, and they have to a large extent operated without reference to each other. The overlapping elements are a certain optimism about the possibility of acquiring knowledge of a mind-

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1   See Mandelbaum (1984).
2   See Polkinghorne (2011).

independent reality and the possibility for societal improvement. Bhaskar developed his version of critical realism into what he called dialectical critical realism (Bhaskar, 1993) and, later, metaReality (Bhaskar and Hartwig, 2016). In this chapter, I will focus on the first version of critical realism, for the sake of brevity and because later versions are in any case developed from this. I first want to explore Bhaskar's arguments for a critical realism.

Revindication of ontology and realism

Bhaskar initially developed his philosophy of science in the 1960s and 1970s at the University of Oxford, first starting on a doctorate in economics, before moving to philosophy (Bhaskar and Hartwig, 2010). He started his doctorate on the question of whether economic theories that had been developed in the West could or should be applied to newly decolonised economies. The trouble he experienced was that economic theory at the time (and still today within mainstream economic theory, it could be argued) presumed certain axioms about people and society, such as 'the rational man', which it was not permitted to question. Bhaskar was told that asking questions about what the world was like was not within the purview of economics. When he moved to the philosophy of science department, he was similarly met with claims that one cannot talk about what the world is like. Ontology was not permitted, only epistemology. Bhaskar came to argue that the lack of ontology in the work of, for example, the logical positivists and Popper, went back to Kant and Hume (Bhaskar, 2008). Later, he drew the line back to Descartes. Bhaskar did not refer to Heidegger in his early work, but his interest in a revindication of ontology was not dissimilar.

Bhaskar's initial argument against an epistemology-only philosophy of science was constructed using a version of Kant's transcendental method. This was used to demonstrate that philosophers of science who believed, implicitly or explicitly, that doing ontology was unintelligible, while at the same time accepting that experimentation was central to giving science its superior epistemic validity, were carrying out a performative contradiction, what in critical realist terms is called a theory–practice inconsistency. Bhaskar's transcendental argument here is 'what the world must be like for science to be possible' (Bhaskar, 2008: 36). Drawing on the philosophy of action of Danto (1981) and Von Wright (1993), Bhaskar argued that the epistemic qualities of experimentation make most sense when it is understood as a process by which the

researcher interacts with a mind-independent reality which exists prior to, and independently of, the researcher. A classic example here is that of a feather in a glass tube. When the air is removed from the tube, the feather falls with the same velocity as an iron ball. Researchers successfully carrying out experiments in the natural sciences do not *create* empirical events. Rather, they block certain causal mechanisms so as to observe the effects of other causal mechanisms functioning uninterruptedly. Even without the researcher's intervention, gravity was always influencing the feather exactly as it affects the iron ball. This was Bhaskar's positive argument for a realist theory of science. In addition, he argued that *any* epistemology will have an implied ontology:

> [Hume] has not really succeeded in banishing ontology from his account of science. Rather he has replaced a Lockean ontology of real essences, powers and atomic constitutions with his own ontology of impressions … And it is this ontology which subsequent philosophers have uncritically taken over. For whether they have agreed with Hume's epistemology or not, they have accepted his critique of ontology, which contains its own implicit ontology, as valid. (Bhaskar, 2008: 40)

A relativist epistemology with the possibility of rational judgement

Bhaskar (2008: 260) later clarified that this argument is situated, that is, it is directed towards those who accept that scientific experimentation has a unique epistemic value and is of central importance to science and scientific method: 'someone who denies that our knowledge is experimentally established and practically applied, and that science develops in time need be bound by none of the results of this book'. Where Kant's transcendental argument took a presumed human universal as its minor premise, Bhaskar's took a historically local and situated one. Where Kant's was a foundationalist approach to knowledge, Bhaskar's was an immanent one. (See below for how this relates to a cultural-historical activity theory of learning.) Later, Bhaskar developed immanent critiques of other philosophies and belief systems to further demonstrate his argument for ontology, and specifically of a mind-independent reality and causal mechanisms (for example, Bhaskar, 2009; Collier, 2007; Laclau and Bhaskar, 1998). As I have suggested elsewhere (Isaksen, 2016), this

means that Bhaskar argued that critical realism was better relative to its competitors while still being situated, not unlike Lakatos's historical argument for his concept of research programmes (Murphy, 1993). Immanent critiques may allow for universal claims, but these are to be understood as tentative and open to revision.

Critical realism has a realist conception of ontology, and a relativist conception of epistemology *because* of realism, and, in addition, the possibility of rational theory comparison *because* of some connection with reality. The epistemic criterion for theory choice is that which provides 'greater explanatory power' than its competitors (Bhaskar, 2009: 73), with one of the criteria being that one explanation is more comprehensive than another (Bhaskar, 2009: 82), especially when it can be so on the competitors' own terms. There are, however, other meanings to 'explanatory power' which Bhaskar explicated; for example, that it may be understood as when one theory can explain more phenomena and synthesise more theories. Scott (2021: 66) puts the problem well when he asks: 'why one criterion should be given higher or lower value than another, and this applies even if all of the designated criteria are given equal values'. What should a researcher do if and when theory A has greater explanatory power than theory B on one understanding of the criterion, while theory B has greater explanatory power than theory A when understood another way? Scott argues further that the very inclusion of a criterion is itself a value judgement, and that each of these value judgements themselves require criteria for inclusion and exclusion, and so on ad infinitum. This is a serious challenge to the possibility of rational theory choice from the perspective of critical realism.[3] It is also worth noting that a critical realist ontology and epistemology have implications for the 'expressive-referential' theory of truth that Bhaskar (2009) conceived.[4]

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[3]   A possible way of dealing with this issue may be found in the fractal approach of Murphy (1993), as I have previously suggested (Isaksen, 2018b), and which I plan to delineate in greater detail in a forthcoming paper.

[4]   'Expression (as representation or description) is not identity and only metaphorically correspondence. Speaking of "expression" reminds us that there are different (and better and worse) ways of expressing something – i.e. it reminds us of the connections between ontological realism, epistemic relativity and judgemental rationality' (Bhaskar, 2009: 100).

Powers-based etiology, multi-causality and emergence

Based on an ontological examination of scientific experimentation, Bhaskar (2008) developed a powers-based understanding of causality, where it is to be understood primarily as the property of things rather than as a Humean constant conjunctions of events. He argued for a three-layered understanding of observable events and causal mechanisms. Bhaskar and Hartwig's (2016) terminology was the *real*, the *actual*, and the *empirical* or *phenomenal*. However, many find this complicated, as the *actual* and *empirical* are also *real*, and the most important distinction is between *mechanisms* and *events*. Consequently, I prefer to refer to these as the level of mechanisms and the level of events. There is, in turn, a subsection of all events which are observed. It is at the level of mechanisms that causality is found, according to Bhaskar's version of critical realism. An important part of research, therefore, is to use a form of inference termed 'retroduction', which in Bhaskar's terms is a form of transcendental argument. It is about asking 'what kind of causal mechanism(s) would need to exist to produce the events we observe?'

Being is understood as an open system with a multitude of interacting and often counteracting causal mechanisms (represented in Figure 6.1 by the two arrows); for example, a gust of wind counteracting Earth's gravitational pull on a leaf. In the natural sciences, it is considered possible to create 'closed systems' via experiments where only one causal mechanism affects the observed events, thereby producing constant conjunctions between events, whereas in the human sciences, this is considered problematic. As just one reason for this, what research subjects
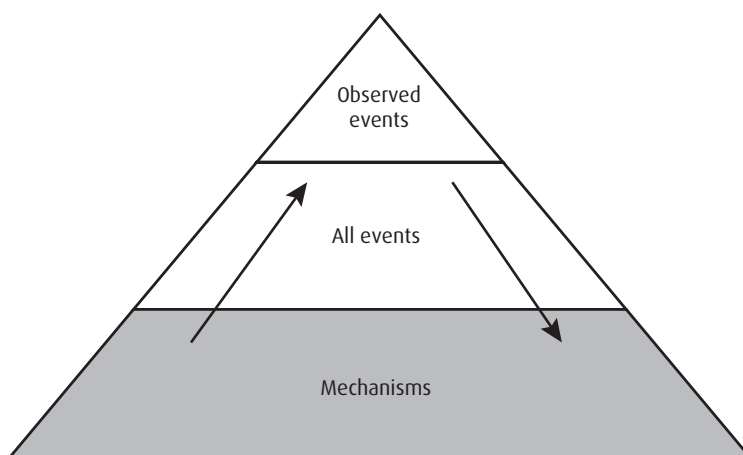

Figure 6.1 Open systems (Source: Author)

do within an experimental setting cannot be assumed to occur in the same way in a non-experimental social context. However, not all of the natural sciences find their greatest methodological value in experimentation, for example, meteorology (Lawson, 1998). Because of the accepted open-systemic nature of reality, and, in particular, of social reality, critical realism is often aligned with a multidisciplinary and interdisciplinary approach (Bhaskar and Danermark, 2006; Bhaskar and Hartwig, 2016; Danermark, 2019; and Chapter 2 in Scott, 2021).

Another reason for the importance of interdisciplinarity comes from the concept of emergence, where an entity is understood as being qualitatively different from its constituent parts (see Figure 6.2). An example of this is that a water molecule is made of one oxygen atom and two hydrogen atoms when they are connected in a particular configuration (Elder-Vass, 2005). When oxygen atoms are not connected in this way, they do not have the features of water, and they are highly flammable rather than flame retardant. For critical realism, a mind is similarly understood as the emergent feature of a biological body and brain (which, in turn, is an emergent feature of atoms, which, in turn, are emergent features of subatomic particles). A mind is made up of these constituent parts, but it is qualitatively different from them. This view provides the means to a non-reductionist and non-dual conception of mind and consciousness (Morgan, 2007).

The argument is that those who wish to reduce mind and conscious experience (including aspects of learning) to biology, such as neuroscientists, cannot explain why a further reduction to atoms should not occur, and then to subatomic particles, and so on ad infinitum.[5]
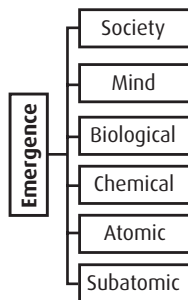
Figure 6.2 Emergence (Source: Author)

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5   The role of interdisciplinarity is discussed below, in relation to both critical realist theories of learning and approaches to empirical research on learning.

The natural and social sciences

The epistemological idea that there is a necessary social and philosophical background which people draw from and develop is related to what Bhaskar (1998) called the transformational model of social activity, or TMSA. The TMSA argues for determined (but not overdetermined) agency because of structures, which agency, in turn, may reproduce or transform in society. This model was Bhaskar's attempt to overcome the structure–agency dualism in sociology. Bhaskar presented four archetypes of the structure–agency discussion in sociology, and he related these to prominent sociological theorists: Weber,[6] conceiving of multiple individuals constituting society; Durkheim,[7] considering a reified society which determines individuals; Berger and Luckmann,[8] viewing individuals and society as dialectically related, where society is an idealisation which at the same time determines individuals; and Marx,[9] seeing society as enabling and constraining individuals who, in turn, may reproduce or transform society (Bhaskar, 1998: 31–7; 2009: 122–7). Bhaskar appropriated Marx's approach here, and in general was, in many ways, inspired by Marx's approach to social research and philosophy (Bhaskar and Hartwig, 2010).

   Bhaskar (1998) has argued that the social sciences have an analogue to experimentation in the form of crises, such as neuroses and financial upheavals, which bring together causal mechanisms that were in many cases present but not as easily observed. It has also been argued that experimentation in the social sciences may have some value when the experiments are relatively similar to real-world contexts, such as with student assessments (Isaksen, 2018b). The social sciences may also use the superclass of contrast explanation (Pratten, 2007), for example, in noting tendential differences between incomes of women and men. One important difference for critical realists between the natural and the social sciences is the claim that in the social sciences a person's reasons can be causes for beliefs and actions (Bhaskar, 1998). Bhaskar argued that this allows both interpretation and explanation in the social sciences. The argument is that empiricists have a deficient conception of causality, which is found lacking in both the natural sciences and the social sciences.

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6   Max Weber (1864–1920) – an example of his work is 'Objectivity in social science and social policy' (Weber, 1949).
7   Emile Durkheim (1858–1917) – an example of his work is *The Rules of Sociological Method* (Durkheim, 2014).
8   See Berger and Luckmann (1966).
9   Karl Marx (1818–1883) – an example of his work is *Das Kapital* (Marx, 1867).

The argument continues that hermeneutics has also mistakenly accepted the empiricist conception of causality for the natural sciences, while claiming that the social sciences cannot be understood in the same causal way because of the unique nature of interpretive understanding. With a powers-based conception of causality, Bhaskar argued that both the natural and social sciences are dealing with the same fundamental form of causality, but that in the social sciences – because of emergence – agents' reasons are an additional and important form of causation.[10]

Explanatory critique

Bhaskar has explained that the 'critical' in critical realism has various meanings, one of which is its defence of the possibility of a type of 'factually grounded critique'. This is called explanatory critique, and it is seen as supporting the possibility of critical social science (Lacey, 2007). The possibility of this comes from an engagement with Hume's claim that it is not possible to derive an 'ought' from an 'is'. Bhaskar's (2009) argument is that *inherent* in the 'is' as part of Hume's guillotine[11] is the value of knowing what is, that is, there is already a value commitment to truth internal to wanting to know what it 'is'. From this, it can be argued that all science is evaluative and critical, even if researchers themselves do not recognise this. If science did not value knowing what is, there would be no reason for carrying out research. As an immanent argument, it may not hold sway against those who claim that truth is not important. Bhaskar (2009: 183) retorted that any intentional activity (for example, writing that text does not exist) assumes a commitment to truth.

Hume's claim is therefore placed on its head in critical realism, with the immanent argument that an ought is already inherent in it, and that, therefore, all things being equal, we should critique falsehood and elevate truth. What is argued further is that causal mechanisms such as social structures, ideologies and detrimental material conditions that contribute to belief in less than the most explanatory knowledge should also, all things being equal, be removed or transformed, so that truth can better be served. An example of this could be a critique of how pharmaceutical corporations negatively influence the truthfulness of medical research.

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10 The methodological implications of reasons being causes are discussed later in this chapter, and in Chapter 3 of this book.

11 Hume's law, or Hume's guillotine, argues that if a reasoner only has access to non-ethical and non-evaluative factual premises, he or she cannot logically infer the truth of valorised statements.

What will be noticed is the *ceteris paribus* clause, and Bhaskar (2009: 169–94) explained that a critique at the level of philosophy of Hume's guillotine does not equal automatic recommendations at the level of social science methodology and praxis, and cautioned against unreflective applications of explanatory critiques.

Meta-methodology and learning

A meta-methodology is to philosophy what a research methodology is to research. In short, a meta-methodology is the means by which philosophical knowledge is produced. A meta-methodology need not only be understood as the form of argumentation and justification for philosophical conclusions; it can just as well be understood as a means for learning in philosophy. The point of this section is not to suggest a perfect fit between a critical realist meta-methodology and a theory of learning. Such a fit would be surprising, to say the least. The purpose of this section is rather to explore the idea that a theory of learning could have affinities with a critical realist meta-methodology. I will suggest below that the cultural-historical activity theories of Lev Vygotsky, Alexei Leont'ev and Yrjö Engeström, different as these are, have such affinities with a critical realist meta-methodology.

Drawing on a Marxist understanding of the person and society, Vygotsky (1978) argued that the individualist and behaviourist approaches found in psychology were too simplistic, and should rather be understood as necessarily occurring within a social context, and especially through mediation. In a rebuttal to the behaviourists, Vygotsky suggested that the social context affects what may be understood as a stimulus, and what can be understood as an appropriate response. According to Vygotsky, individuals necessarily learn in a social context, and can develop faster when actively supported by others in this process. The role of educators is therefore to place learners in situations that are within what he termed their zone of proximal development, and to provide support there. Although Vygotsky's work was outlawed by Stalin, Leont'ev (1978) brought the Marxist understanding of Vygotsky to the fore, in addition to providing even greater emphasis for the social context and its materiality. Engeström (2018) has built on this with the understanding that there is not just one activity system with which learners engage, but several, and that these activity systems are competing and clashing. One of Engeström's central arguments about learning is that it occurs through contradictions that are both internal to and between activity systems. This point about contradiction brings us back to a critical realist meta-methodology.

Development of knowledge

The philosophical method of Bhaskar's critical realism takes an avowedly immanent approach. There is no explicit mention of a zone of proximal development in which to learn. However, an immanent critique in the same way takes the 'other' and their current knowledge and beliefs as its focus on developing knowledge (Bhaskar and Hartwig, 2016; Isaksen, 2018a). In the case of the learning theorist, the question would be: how can I guide this person from where they currently are to greater knowledge? In the case of the philosopher, it would be: how can I develop this field from where it currently is to greater knowledge? When interpreted this way, the praxeology is strikingly similar. Where 'supporting in the zone of proximal development' is understood as helping others, an immanent critique could be interpreted as more antagonistic. However, when the critical realist notion of epistemic relativity is applied self-referentially, and a humbler epistemic stance is taken, an immanent critique will in many cases adopt a similar approach. In both cases, learning is understood as being based on prior knowledge, which has and will develop in a historical and social context. Again, even though cultural-historical activity theorists have focused on learning, and critical realists have focused on justification, the approaches can be seen as two sides of the same epistemic coin. Both positions also have a tendency (but not a necessity) to assume greater knowledge with the one who guides, an assumption which can and has been questioned. The similar degrees of importance of cultural-historical activity theory and critical realism in the role of social structures for both enabling and constraining possible knowledge and action are apparent, and likely derive from similar Marxian genealogies.

Several researchers drawing on critical realism have noted affinities between critical realism and cultural-historical activity theory, and have, for example, critiqued more individualist theories of learning, such as behaviourist and cognitivist perspectives (for example, Mukute and Lotz-Sisitka, 2012; Simeonova, 2017), whereas Ellery (2011) has applied critical realism to ontologically connect cultural-historical activity theory and cognitivism. Kahn et al. (2012) have argued that Vygotsky was too focused on structures to the detriment of agency, and that a critical realist conception of structure and agency in learning is required. Nunez (2013), Mukute and Lotz-Sisitka (2012) and Simeonova (2017) argue that critical realism can provide the necessary ontological support for activity theory, whereas Brown (2009) has suggested that ontology is a dimension

that this learning theory and critical realism already have in common. Nunez (2013) interestingly provided immanent critiques (she sought to demonstrate internal contradictions, in Engeströmian terms) to argue for the necessity of a critical realist activity theory to build on developments from Vygotsky to Leont'ev to Engeström, arguing that critical realism can provide an activity theory without the current dualisms, such as individualism and collectivism, explanation and understanding, and reasons and causes.

Among critical realist thinkers and researchers, there are clearly diverging opinions on the affinity between critical realism and cultural-historical activity theory. The points of similarity that I have observed between critical realist meta-methodology and cultural-historical activity theory are: i) knowledge development is necessarily and fundamentally situated historically as well as socially, but agents are not overdetermined by history and society, and agents may in turn change society (although the exact weightings may differ); ii) knowledge development occurs through resolving contradictions (although how to resolve contradictions may be understood slightly differently); and iii) there is some ontological referent in knowledge development (although this may be more or less explicit, and analysed to a greater or lesser degree).

Philosophy of science and learning

As David Scott (2000: 2) has argued in *Realism and Educational Research*, 'Educational research is itself educational. The researcher is as much a learner as those who form the subject matter of the research.' As with the previous claim that meta-methodology can be seen as the approach for producing philosophical knowledge, and thus learning, so it is suggested here that scientific research can also be seen as a subset of learning, because critical realist scientific research is understood as the active involvement of the researcher(s) in the world. The learning theory that is perhaps most often related to a learner being actively involved is that of John Dewey and his version of pragmatism.

For Dewey (2007), learning that was removed from practice was not only a misuse of educational resources, but also a logical impossibility. For him, the dualism of subject and object was necessarily an illusion, and not related in any way to our actual being in the world, either phenomenologically or practically. Dewey paid particular attention to the aesthetic and emotive aspect of problems. Problems do not merely appear; they are felt as much as they are thought, and that is what motivates

learning. As part of a learner's experience, or practice (Elkjær, 2009), they reflect on their experience. This reflection is not necessarily something that occurs *after* an experience, but is just as much a part of that very experience. Dewey's theory of the person and learning has been interpreted as a recommendation for a student-centred pedagogy, where the learner is given free rein in the learning process. However, Dewey (1938) himself argued against such 'progressive pedagogies'. While wanting to move past educator-centric teaching, he still saw the value of those with greater experience and knowledge teaching and guiding would-be learners.

One might assume that a Deweyan theory of learning would be appropriate in drawing out the implicit theory of learning in Bhaskar's analysis of scientific inquiry. Although critical realists in many cases endorse pragmatist approaches on grounds of praxis and relevance, there are ontological, epistemological and etiological differences that create difficulties. Critical realists argue, on grounds mentioned previously, for a mind-independent reality, an ontological realism, while pragmatists stay in principle agnostic on this topic, as it is not deemed necessary for action. Bhaskar argued for an immanent, 'other-focused', form of justification, while pragmatists take an individualist approach to justification (Isaksen, 2018a). Both agree that knowledge is fallible, but the concept of truth is different. Bhaskar (2009) argued that truth is understood as being expressive-referential, meaning that linguistic claims refer to something other than themselves and may be true to a greater or lesser extent. A pragmatist notion of truth, however, especially for Dewey, is a question of what works and provides practical utility, and leaves out explicit metaphysical postulates (McDermid, 2022). For critical realists, causality is powers-based, while for pragmatists, it is empiricist. For all these reasons, in particular the latter, critical realism cannot easily incorporate a pragmatist theory of learning. It can still engage with pragmatism, however. For example, Dewey's analysis of the importance of emotion and aesthetics to what is experienced as a problem, and which may drive a learner's personal engagement, is relevant to research and education alike, and finds similarities in the social realism of Margaret Archer (2003; 2007) and Bhaskar's later developments in dialectical critical realism.

Although cultural-historical activity theory has usually been understood as focusing on the zone of proximal development, and on the central role of discourse and mediation, the material activity of the learner is also theorised as being of central importance. Leont'ev (1978), in particular, drew attention to this aspect of learning, and to a Marxist conception of human activity as central to research. Again, we find a genealogical connection in Marx between cultural-historical activity

theory and critical realist philosophy, and one which can ground the importance, and the necessity, of the material activity of the learner. Although Jean Piaget[12] and embodied cognitivists (Shapiro and Spaulding, 2021) also argue for the importance of active engagement in the world to learn, there is again less affinity because of their positivist leanings, such that there are also here ontological, epistemological and etiological hurdles to connect these understandings of research and learning with those of critical realism.

Critical realist-inspired theories of learning

Critical realism has been applied to study learning in curricula and learning environments (for example, Schudel, 2014; Wheelahan, 2015; Withell and Haigh, 2018), organisational learning (for example, Kringelum and Brix, 2020; Simeonova, 2017), self-regulated learning (for example, Jakešová and Kalenda, 2015), leadership learning (for example, Willis, 2019), learning to teach (for example, Cochran-Smith et al., 2014), learner agency (for example, Manyukhina and Wyse, 2019), social learning (for example, Lotz-Sisitka, 2012), practice learning (for example, Coleman, 2020), e-learning (for example, Li, 2013), learning disabilities (for example, Warner, 1993), assessment for learning (for example, Roberts et al., 2021), constructing learning (for example, Boughey and McKenna, 2017), transformative learning (for example, Jakobsen, 2018; Kimura, 2020), and student engagement (for example, Kahn, 2014; Kahu, 2013). There have also been some critical realist-inspired theories of learning – in addition to Nunez (2013).

In a series of interviews on critical realism and education with David Scott, Bhaskar explained its relationship to learning theory (Scott and Bhaskar, 2015: 32):

> Although I didn't refer very much specifically to education in the phases of basic and [dialectical] critical realism, nevertheless a lot of critical realism is about or depends on changing consciousness. And there is a resonance with themes and issues in education and in the philosophy of education. But in the philosophy of metaReality, I did sketch a model of learning, which is called the unfolding of the enfolded.

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12 Jean Piaget (1896–1980) – an example of his work is *The Construction of Reality in the Child* (Piaget, 1954).

Bhaskar went on to explain that this model is about the learning of skills, and possibly dispositions, and may be related to learning cognitive knowledge insofar as this is dependent upon skills and dispositions. It is a model where each learner already has the skill or disposition prior to it being unfolded. It is a view that learning skills and possibly dispositions does not fundamentally come about by internalising knowledge from without, but is rather understood as involving qualities that people already have that 'merely' need to be actualised: 'A good example of this would be learning a language. We all have the potential to learn any language when we are born – the Chomskian[13] thesis' (Scott and Bhaskar, 2015: 32). Scott commented that this has been criticised, which Bhaskar acknowledged, explaining that such a theory of learning also needs to pay attention to external elements, such as educators and the learning context.

As Bhaskar suggested above, he did not much discuss learning before working on metaReality and, as this chapter is focused on the first development of critical realism, I will not provide a more fine-grained exposition of this theory of learning. There are, however, a couple of general points related to learning discussed in the interview, for example, that Bhaskar saw a connection between Vygotsky's arguments about mediation and his own philosophy of science (Scott and Bhaskar, 2015: 31), and that he criticised Vygotsky for his empirical realism (Scott and Bhaskar, 2015: 40). This criticism is in line with, and likely informed by, Nunez's work, with which Bhaskar was acquainted. He argued for distance from complexity and post-humanist theories of learning, on the grounds that they both lack a clear distinction between different components at the ontological level (Scott and Bhaskar, 2015: 39–40). Emergence and stratification are central to critical realism.

The relation of structure and agency to learning

Peter Kahn et al. (2012) propose a critical realist theory of learning, and apply this to understanding why academics to varying degrees are able to reflect on their practice as teachers in higher education. The theoretical problem to which they are responding is the claim by Ashwin (2008) that in theories of learning in higher education, there is a lack of conceptualisation of the interplay between agency and structure. Kahn et

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13   This refers to Noam Chomsky (1928–). An example of his work is *Syntactic Structures* (Chomsky, 1957).

al. (2012: 859) claim that there is usually a focus on *either* agency *or* structure, and that this is because research in higher education tends to draw on *either* psychology *or* sociology:

> The theory of approaches to learning (Marton and Säljö, 1976), for instance, is particularly well established. It addresses the role that a learner's intention plays in shaping the resultant learning. By contrast, social constructivist theories of learning, as with Bruner (1996) and Vygotsky (1962), posit that learning is dependent upon social structures.

Kahn et al. (2012) propose a 'third way', between the extremes of too great a focus on either agency or structure.

These authors draw on the work of Margaret Archer, a critical realist, who has expanded Bhaskar's TMSA through a sociological lens. In short, Archer (2003; 2007) adds the concept of 'the internal conversation' to what she considers a normal capacity for reflexive deliberation in people. She argues that this plays the necessary mediating role between agency and structure, without which these could not be related as they are. For Archer, the individual chooses actions by reflecting on the structures in which they find themselves, as they interpret them, and, in conjunction with the individual's own configurations of concerns, they choose a course of actions. The configurations of concerns are deeply individual, although they may have similarities to those of other people.

Kahn et al. (2012: 868) argue that the theory of learning they propose provides a more comprehensive understanding of learning:

> Our account of learning in the given context is more comprehensive than that provided either by social constructivist theories or by psychological theories such as approaches to learning. Valsiner and van der Veer (2005: 82), for instance, argue that Vygotsky held the postulate 'The social nature of human cognition emerges in the process of internalization of external social experiences by individuals in the process of socialization' (ibid.: 82). We have similarly been able to see how the development of capacity to engage in reflection on academic practice emerges in part from social interaction, also recognising the way in which this feeds into the development of practice. But at the same time we have also explored ways in which capacity to engage in reflection emerges also in relation to the concerns of the individuals involved, and to their own characteristic patterns of reflexive deliberation.

Kahn and colleagues later applied this theory of learning to an understanding of student engagement (Kahn, 2014; Kahn et al., 2017).

Kevin Williams (2012) has, in a similar way, applied Bhaskar's TMSA, with Archer's reflexive addition, to provide a theory of learning that is seen as an improvement upon earlier theories. Whereas Kahn et al. (2012) proposed their critical realist-informed understanding of learning as a happy third way between two extremes, Williams instead builds on Alan Jarvis's (2018) theory of learning. A comparison between Jarvis's and Williams's theories of learning is therefore useful (see Table 6.1).

The two principal differences are that Williams emphasises how changed agents may in turn affect society, and broadens the category of experiences beyond Jarvis's social focus. Specifically, he argues on immanent grounds that Jarvis's learning theory does not include his own claims about learning: 'Jarvis's answers, however, do not appear congruent with the strong sense of agency he calls for [see Table 6.1], for persons are left as gifts of society through society's conversation(s)' (Williams, 2012: 304), and 'If learning is life-wide [as Jarvis claims] it is therefore social-plus: learning also includes our relations with the natural and practical realms, something that Jarvis's socially-dependent self does not acknowledge' (Williams, 2012: 304). Li (2013: 287) has similarly

Table 6.1 A comparison between Jarvis and Williams (Source: Author)

Jarvis	Williams
Learning is the combination of processes throughout a lifetime whereby the whole person – body (genetic, physical and biological) and mind (knowledge, skills, attitudes, emotions, meaning, beliefs and senses) – experiences social situations, the content of which is then transformed cognitively, emotively or practically (or through any combination) and integrated into the individual person's biography, resulting in a continually changing (or more experienced) person.	Learning is the combination of processes throughout a lifetime whereby the whole person *experiences situations involving one or any combination of three orders of reality (natural, practical and social)*, and the content of such experiences is then transformed cognitively, emotively or practically (or through any combination) and integrated into the person's biography, resulting in a continually changing (or more experienced) person and *impacting on the elaboration of society*.

drawn on Archer to argue that learning is a central part of being human, and that learning therefore affects the trajectory of individuals' identities, and that this can explain why the process of learning is 'intensely emotionally charged'.

The move from an application of Bhaskar's work on structure and agency to a more interdisciplinary conception of learning is exemplified through the lens of learning for sustainable development. The TMSA has been applied by Chikamori et al. (2019) to provide a model for education for sustainable development. The argument is that it is important to understand the temporal nature of sustainability issues, in particular, that what we do today affects the next generation(s), and that a temporal understanding of agency and structure is therefore important. However, it could be argued that the relation between materiality and the social, and their interactions, are missing. As Agbedahin and Lotz-Sisitka (2019) emphasise in their study on education for sustainable development, Bhaskar further developed the TMSA from a focus on structure and agency exclusively to also include smaller and larger scales, such as the biological and the supranational. It is to this type of 'laminated' (Bhaskar and Danermark, 2006) theory of learning that I now turn.

The relation of emergence and stratification to learning

Gordon Brown (2009) has argued for a critical realist understanding of the learning environment based on a stratified understanding of being. He claims that 'in critical realism it is the ontology that enables and constrains the acquisition of knowledge, that is, learning' (Brown, 2009: 14), and that:

> If the possibilities for knowledge are enabled and constrained by the ontology, the possibilities for students acquiring knowledge in a particular environment are enabled and constrained by the total ontology of that environment. Thus, the learning environment is more than merely the location of learning as it is commonly construed. It is the total set of circumstances that enable and constrain learning. (Brown, 2009: 20)

For Brown, this whole ontology includes the students themselves as part of the learning environment, and he argues that the learning environment is 'laminar or layered, having at least physical, biological, psychological, social and curricular dimensions' (Brown, 2009: 31) (see Figure 6.3).
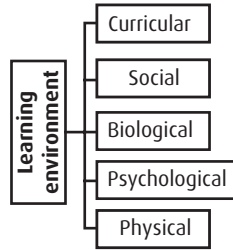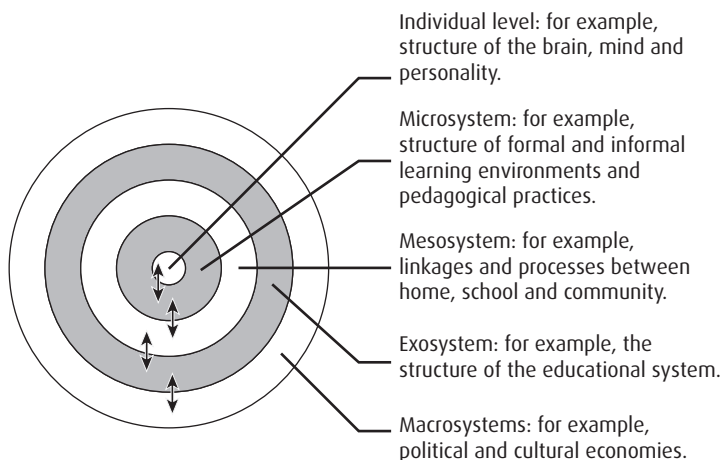
Figure 6.3 Learning environments (Source: Author)

Although Brown's focus is on a theory of the learning environment and not on learning per se, he claims that, 'various properties emerge from different levels, where the critical emergent property of the learning environment is learning' (Brown, 2009: 31). Leon Tikly (2015) and Frode Restad (2019) have, in their different ways, sought to develop a more precise understanding of learning, while drawing on Brown's ontological and laminated understanding of the learning environment.

Tikly's (2015) primary interest is in how to research the topic of learning. Since the object of study in this case is learning, he sees it as relevant to what counts as an appropriate methodology to propose a theory of learning (see Figure 6.4). In typical critical realist fashion, each level is understood as emergent from the lower level, and as including non-deterministic two-way interactions, as the arrows represent. It is the whole which Tikly (2015) suggests represents learning and its possibility. He explains how he reworked an empiricist-based model so that it became a critical realist one:

> Whereas Broffenbrenner's work can be seen to focus on statistical correlations between factors at different levels (i.e. the relationship between parental occupation in the 'exosystem' and the 'microsystem' of child development), the emphasis in the model presented here [see Figure 6.4] is more on the interaction of causal structures and mechanisms at each level that in Bhaskar's terms are more 'intransitive' in nature. (Tikly, 2015: 244)

Restad (2019) examines learning within a Norwegian context, and seeks to synthesise the two traditions which have come to hold most sway. These are the Germanic tradition of *Bildung*, and the Anglo-American-inspired *competency* approach. *Bildung* has a long and varied history (see Chapter 5). In English, it is translated as *formation* and, as such, it is understood as interested in more than how to help students learn content, and as

Individual level: for example, structure of the brain, mind and personality.

Microsystem: for example, structure of formal and informal learning environments and pedagogical practices.

Mesosystem: for example, linkages and processes between home, school and community.

Exosystem: for example, the structure of the educational system.

Macrosystems: for example, political and cultural economies.

Figure 6.4 Stratification (Source: Author)

including, more fundamentally, the unfolding and socialisation of students. *Competence* has, in contrast, a much shorter history, and is focused on issues such as learning, student retention, and relevance for employment and international competition: 'Each tradition serves as a critique of the other, with the competency-based argument highlighting the lack of policy relevance in the Bildung tradition, and the Bildung tradition criticizing the competence for its reduction of the complex phenomena of students learning to meet measurable outcomes' (Restad, 2019: 409).

Restad notes that these critiques are also accepted by thinkers internal to each tradition. Some scholars seek to develop potential syntheses of these approaches to overcome the bi-directional criticisms, but Restad (2019: 413) argues that these attempts do not pay sufficient attention to ontology:

> I take issue with the proposition of Deng and Willbergh that the contradictions between competence and Bildung can be resolved by merely developing new theories of knowledge, without also dealing with issues at the ontological level. Rather, I contend, these traditions need an ontological platform in critical realism before any coherent theory can be devised to bridge these concepts.

Restad then suggests that, even though it is not explicitly critical realist, 'Illeris' model of learning [see Figure 6.5] coincides with Brown's model of the learning environment in a number of ways. It recognises the interaction of factors at the psychological (cognition/emotion), curricular (learning

Content   Incentive
────────────────────────────────────
Individual
|
Environment
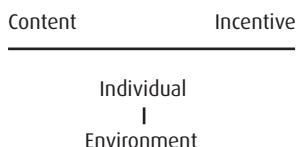
Figure 6.5 Illeris's theory of learning (Source: Author)

content) and sociocultural (environment) levels' (Restad, 2019: 415). Illeris considers a close interaction between the individual and their social and material environments, and emphasises the importance of both emotion and the acquisition of knowledge for learning, in a similar fashion to several of the other critical realist theories of learning.

Restad therefore unites Brown's (2009) ontological understanding of the learning environment and Knud Illeris's (2018) general theory of learning for a more ontologically comprehensive theory of learning. It is argued that such an ontologically comprehensive theory of learning can hold in tension the strengths of both *Bildung* and competence, and can therefore be of value to policymakers and educators alike:

> … an understanding of learning grounded in a critical realist ontology can cater to both empiricists, who want to measure competence as an outcome of learning, and those who want to support the autonomous meaning making of students through Bildung by recognizing that educational measurements do not capture all aspects of learning in an open system of education. (Restad, 2019: 417)

Methodological recommendations for studying learning

In a desire to make the abstract philosophy of science as relevant as possible to research practice, some researchers[14] inspired by critical realist

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14   Tikly (2015: 237) explains the importance of the philosophy of science for the study of learning: 'Governments and donors are in the process of investing millions of dollars in research programmes aimed at finding out "what works" in raising learning outcomes for disadvantaged learners in low- and middle-income countries. Yet the philosophical and methodological assumptions underlying much of the current discourse including what learning is (the ontology of learning) and how we come to know what learning is (the epistemology of learning) are rarely made explicit. This is despite the fact that these assumptions have profound implications for education policy and practice including pedagogy, the curriculum, assessment, teacher training and investments in learning materials.'

principles have sought to provide general critical realist research methodologies. The problem with this is that any such methodology will necessarily be piecemeal. There is not, and cannot be, a critical realist methodology as such, not even for a singular topic. A methodology is contextual, whereas a philosophy of science, especially one such as critical realism, is much more expansive. I will therefore not seek to provide 'the' critical realist methodology for studying learning, but rather demonstrate the variety of approaches which have used critical realist perspectives.

Unsurprisingly, it is not uncommon for critical realists to argue for the importance of explicitly including an ontological dimension. Indeed, the attention to a realist ontology seems to be one of the main reasons researchers turn to or apply critical realism – they want to say something about the world, and they find greater support for this in critical realism than in positions such as positivism or social constructivism. Critical realists, or those taking some inspiration from critical realism, want to argue that learning is in some way about reality, and more than sensations or constructions *only*. We have seen how this ontological drive has been applied to the learning environment (Brown, 2009), the learner (Williams, 2012) and learning itself (Tikly, 2015). To this can be added the content to be learned, with examples such as environmental learning: 'with emphasis on ontological realism, it maintains that nature and the environment are real, rather than socially constructed, which supports the argument for sustainability, education for sustainability and the restriction of human activity, so as to reduce harm to people and our planet from climate change' (Khazem, 2018: 132).

Corson (1991a: 197) has argued that: 'Like Popper's account, the critical realist account is epistemologically tentative … But unlike Popper's account, Bhaskar's is ontologically daring: he allows for the actual existence of generative mechanisms which explain social events in the past and in the present.' It varies as to how epistemologically tentative critical realist research on learning has been. The focus of most studies has been ontological and causal, although there are some who argue for the importance of reflexivity because of the situatedness of the researcher (for example, Clegg and Stevenson, 2013; Kahn, 2015), others who have argued only or primarily on immanent grounds (for example, Scott, 2005; Warner, 1993; Williams, 2012), and others who have focused on the importance of comparison generally (for example, Tikly, 2015; Withell and Haigh, 2018).

Withell and Haigh (2018) describe some of the difficulties with seeking to uncover causal mechanisms in a learning context when taking seriously the problem of a mind-independent reality. Their research sought to look at potential causal mechanisms at several strata, through

three cycles of action research, and to attempt comparative explanations of potential causal explanations. This led to an abundance of potentially competing and/or interacting causal mechanisms. Were the events they observed best explained by potential mechanism A, or were the phenomena best explained by potential mechanism B, or C? Or were the observed phenomena best explained by some interaction of A, B and/or C? If so, what kind of interaction would provide the best explanation? How might a lack of knowledge of certain disciplines, and insufficient time, affect these judgements? Together with their critical epistemological reflections, Withell and Haigh (2018) do end up providing some tentative conclusions, plans for future research, and a hopeful outlook.

Perhaps the most common methodological implication from critical realism applied in research on learning is the addition of the mode of inference known as retroduction, and because it is so common in critical realist research, and to a critical realist philosophy of science, it is presented as a *necessary* condition for critical realist research. I argue that this is not the case. It is perfectly legitimate to hold a critical realist ontology, epistemology and etiology without seeking to uncover causal mechanisms in every research endeavour. There will be times when explorations of statistical tendencies, or the documentation and publicity of under-represented voices, is more than sufficient to count as research, also from a critical realist perspective. What critical realism allows for and invites is a deeper exploration of observable phenomena, if and when this is deemed relevant.

By drawing on Bhaskar's understanding of the logic of scientific discovery, Corson (1991a; 1991b) has explained in detail how retroduction can function as one element of educational research, and Huckle (2004) provides an example of how a student may use this in their learning. Kringelum and Brix (2020) suggest a research methodology for organisational learning based on critical realism, with retroduction having a prominent place. Reimann et al. (2014) do the same for e-research, with a focus on quantitative methods. Willis (2019) and Tikly (2015) both suggest that retroduction is centrally important to research on learning and, in addition, provide examples from their own research about how they applied it. Willis (2019) demonstrates this within a setting of leadership learning and qualitative interviews, while Tikly (2015) uses multi-level modelling of cross-national data and cycles of participatory action research. For both researchers, the interest is to better understand the causal mechanisms driving the empirical observations. Tikly (2015) further notes the importance of comparison when proposing causal mechanisms, and the tentative nature of such conclusions. Fryer (2021) provides an interesting use of retroduction to

demonstrate that what are usually understood as graduate outcomes in policy documents, with their econometric and empiricist stance, would in a critical realist account rather be conceptualised as graduate functionings (that is, what graduates do). It is the mechanisms (that is, the *causes* of what graduates do after graduation) that are the graduate outcomes from higher education. He argues further that the critical realist focus on graduate outcomes at the level of the mechanism should therefore be the primary interest of researchers and policymakers alike.

An increasingly common research approach to learning is the randomised control trial and systematic review. Both, it is argued, are based on a flawed empiricist notion of causality. Clegg (2005: 422–3) provides an example of the issue:

> Gough *et al.* have produced a meticulous account of their methodology whereby they used a systematic review to seek an answer to the question 'What evidence is there that processes involving reflection, planning and action improve students' learning?' … a meticulous documented procedure was followed so that all the choices were 'objective', in the sense that other researchers applying the same criteria could be expected to reach the same results. The questions are, however, what does this tell us about PDP [personal development planning], and what use is this knowledge to researchers and practitioners? Gough *et al.* (2003) were clear at the launch that it was not possible to know 'how or why' PDP was producing those effects reported … Because the issue of the underlying mechanisms was not addressed in setting up the review, the final list of studies cannot be seen to be related to one another in any systematic way. We do not know whether the reported outcomes were produced by the same or different mechanisms, or even if the term reflection is being used with any consistency. Indeed, given the cultural variation Gough *et al.* (2003) note, it appears extremely unlikely that this is the case.

Critical realist researchers, or those of a critical realist persuasion, have sought to develop a more critical realist version of systematic reviews that does apply retroduction to causal mechanisms. In particular, the 'realist evaluation' of Ray Pawson (2006) has been important in this regard, with his context–mechanism–outcome configuration, although this has also been criticised, both for its lack of a critical dimension (Clegg, 2005) and for not acknowledging the breadth of possible mechanisms in open systems (Hinds and Dickson, 2021).

An example of interdisciplinarity in research on learning can be found in Agbedahin and Lotz-Sisitka (2019), who applied Danermark and Bhaskar's (2006) laminated model to analyse the possibility for mainstreaming the learning of, and for, sustainable development. Stylianou and Scott (2018) used the same model, together with Brown's (2009) interdisciplinary understanding of the learning environment, to study the disempowerment of teachers of ethnic minorities. Kahu (2013) developed a holistic framework for student engagement – seeing this not only as a means to learning, but also as an end in itself – by synthesising insights from several disciplines and perspectives (see Scott, 2021: chapter 2).

The question of quantitative research methods in the social sciences and educational research has been an area of some contention because of its empiricist genealogy (for example, Clegg, 2005; Scott, 2007; Tikly, 2015). First, variables are at the level of the event, and do not represent a systematic attempt to understand underlying causal powers. Observations of correlated variables (or constant conjunctions, in Hume's terms) do not therefore equate to an understanding of causality for critical realists. Second, quantitative methods assume closed systems which rarely, if ever, occur in social reality. Third, in enumerating social phenomena, quantitative studies can strip them of their unique qualitative and contextual differences. Despite these criticisms, there does seem to be a growing number of critical realists who accept the use of quantitative research methods in the social sciences (Downward, 2007). Some argue that this is valid when data from quantitative methods are understood as only providing general ideas of tendencies at the level of the event, which can be studied further with the use of more qualitative methods and via retroductive inferences.

Interpretation and action in social reality

Shipway (2010: 165) has argued that because reasons can be causes, 'the first step in educational research should be to seek the reasons and accounts of the agents who are involved in the situation under examination'. Whether this should always be the first step is an open question, but the importance of inclusion of people's accounts and explanations is generally agreed upon, because of human intentionality in learning and experience generally. This is one of the reasons that interviews are commonplace in social research inspired by critical realism. Scott (2021: 79), however, cautions against an unreflective acceptance of reports of reasons: 'We need to distinguish here between actual reasons

for an action and rationalisations of those reasons after the event or activity.' Similarly, even if individuals do provide accurate descriptions of their reasons, it need not be the case that they correctly understood their context when devising their reasons for courses of action, nor that they are able to accurately predict and interpret the consequences of their actions and beliefs (see Chapter 3).

These are issues that bring us to the relationship of structure and agency in learning research. Applications of the TMSA in learning research can be found in Manyukhina and Wyse (2019), Boughey and McKenna (2017), Chikamori et al. (2019) and Robert et al. (2021), among others. Burgoyne (2009) has, for example, applied the TMSA to add a social and material dimension to Kolb's (1984) learning circle. Kimura (2020) has similarly applied the TMSA to expand upon Mezirow's (2009) somewhat individualist concept of transformative learning. Kimura also drew on Freire's (1970) critical pedagogy in studying how Cambodian citizens could learn to better stand up to the land-grabbing of local government. An insufficient understanding of the relation of structure and agency may also be implicit in research methods on learning, such as in quantitative modelling (Scott, 2005) and in educational psychology (Kahn, 2015), and it is therefore argued that care must be taken when using these research methods.[15]

It will be remembered that the critical realist concept of explanatory critique builds on 'what it is' to make value claims about 'what should be'. Banfield (2016) supports a Marxist approach to the sociology of education, in large part through the application of an explanatory critique. Mingers (2015: 316) has argued for the importance of using explanatory critiques in business research and business schools, because:

> business and management organizations are clearly implicated in many of [the physical, social and political problems in the world]: global warming is largely caused by industrial production and fossil fuels; the financial crisis by executive greed and lack of control and foresight; and curable disease by a reluctance to sell medicines cheaply.

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15   In addition to the above research methodology recommendations, Poulshock (2011), Ariza et al. (2021), Schudel (2014) and Rafe et al. (2021) have suggested how critical realist principles may be applied directly in the curriculum and in the classroom. The interested reader can find in Bhaskar (2009: 104–68) arguments for many of the methodological recommendations and discussions above.

Potter (2010) provides an important example of an explanatory critique with regards to learning in formal education. He suggests that the meritocratic ideology of the ruling classes in educational systems has a causal efficacy which is detrimental to the working class, and, even though it would be beneficial for the working class to know and understand this ideology, it is not made available to them.

While educational systems are one of the most important sources for learning 'what is', and have this as their stated purpose, these systems also systematically obscure some of the most important 'what is' for certain groups, namely their domination by the ruling classes, a domination which also occurs within the educational system itself. Potter (2010) argues that the causal explanation for this comes from hierarchies in society (and he includes gender and ethnicity as examples, in addition to class), and that such theory–practice inconsistencies will continue in educational systems as long as social hierarchies exist, and he therefore invites changes to them. It is in regard to such *absences* of what is learned in formal education which brings in the relevance of a critique of curriculum as found in Wheelahan (2015), and the relevance of a self-reflexive attention to implicit values and actions as educators (Burt et al., 2018).

Concluding remarks

In this chapter, I have primarily been interested in representing as best as I could, and as space would allow, the breadth of perspectives that can and do exist about learning and the study of learning from critical realist perspectives. There is not one critical realist approach to studying learning, nor is there one critical realist theory of learning. Indeed, the picture I presented initially of a single critical realism is also misleading, as there are discussions and disagreements among self-proclaimed critical realists about most of the concepts discussed (as well as others not discussed). There are, however, also areas of overlap – tendencies, if you like – and it is my hope that this chapter has been able to demonstrate that some of these tendencies exist, as well as some of the value that critical realist approaches to learning can contribute.

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