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# Putting philosophy to work: developing the conceptual architecture of research projects

Adam J. Nichol [a], Catherine Hastings [b] and Dave Elder-Vass [c]

[a]Department of Sport, Exercise and Rehabilitation, Northumbria University, Newcastle upon Tyne, UK; [b]Law School, Faculty of Arts, Macquarie University, Sydney, Australia; [c]School of Social Sciences and Humanities, Loughborough University, Loughborough, UK

**ABSTRACT**

Research necessarily entails the close interrelation of concepts and arguments, including solutions to a range of meta-questions, whether acknowledged explicitly or not. Despite this, few detailed accounts currently exist that support researchers to develop their complex conceptual architectures, especially in critical realist spheres. Indeed, many published accounts often omit much of this 'messiness' that sits behind, yet is foundational to, research projects. Those accounts that do seek to portray how/why researchers have made decisions (e.g. about connections between research philosophy, methodology, methods, theory and empirical evidence) tend to focus on one set of meta-questions, or occasionally on the relationships between two sets, at a time. Therefore, this paper presents a flexible framework – supported by specific examples from studies – that we hope will be useful in supporting researchers from all traditions, but especially critical realists, to carefully think through and develop more holistic connections in their conceptual architecture.

**KEYWORDS**

Critical realism; ontology; social theory; methodology; research design; methods

## 1. Introduction

All research requires the researcher to develop a coherent complex of interrelated concepts and arguments, including solutions to a substantial range of meta-questions (Tamminen and Poucher 2020). Learning how to navigate this process is challenging for all researchers, but it may also be part of what lies behind the common complaint that there is not enough guidance available on how to 'apply' CR in empirical research (Fletcher 2017). The initial steps of engaging with critical realism as a philosophy can be daunting enough. Maisuria and Banfield (2022, 1) in their edited volume of scholars talking about critical realist research find that 'one thing all our stories tell is of a steep intellectual climb that critical realism demands'. Having come to grips with the philosophy, the next move is to make a significant leap from abstract and conceptual ideas

**CONTACT** Adam J. Nichol adam.j.nichol@northumbria.ac.uk Department of Sport, Exercise and Rehabilitation, Northumbria University, Newcastle upon Tyne NE1 8ST, UK @AdamNichol14

This article has been corrected with minor changes. These changes do not impact the academic content of the article.

to practical project design in an environment with few examples to follow and multiple possibilities and choices to be made when operationalizing critical realism in research.

Our objective in this paper is to offer a framework for thinking about how to address meta-questions in and through a research project. We do not offer a step-by-step guide or a rigid method, because we believe that the work needed to build a coherent complex of ideas, and even the order in which different elements of the complex should be approached, is different in every project. These depend not only on the research topic and research questions but also on where the researcher is starting from in terms of their existing beliefs about the research process and related meta-questions. What is more useful, therefore, and what this paper aims to provide, is a framework that seeks to clarify the issues involved in navigating and resolving these questions, supported with some partial illustrations of how earlier researchers have done so. The paper is intended to help researchers think about these questions rather than telling them exactly how to do it.

We hope that this will prove useful for researchers in general, regardless of their existing theoretical and philosophical orientation, because all researchers need to navigate these issues. It will perhaps be most useful for researchers attempting to apply a critical realist approach for the first time because this perspective sensitizes researchers to the need to address the kinds of meta-questions covered in the paper. Given that all three authors are affiliated with critical realism, our approach also inevitably leans towards particular meta-questions given preferential attention in the critical realist tradition and towards the kinds of answers offered to those questions by critical realists. In places this will, we hope, demonstrate that critical realism provides a fruitful set of resources for addressing these issues. Nevertheless, we have sought to make the paper accessible and useful to researchers from all traditions. We also believe that more experienced researchers who have already found their own ways of dealing with these issues might find the paper suggestive of useful new angles.

We approach the task in two stages. First, we develop a framework for thinking about the conceptual architecture of research projects and translate this into a map of the types of meta-questions that generally need to be addressed and the connections between them. Second, we look at examples of how researchers have grappled with these meta-questions and connections in practice. We draw particularly on our own experience because we have personal insight into the processes we have followed whereas much of this grappling is frequently smoothed out from published accounts of projects. Nevertheless, we also draw on other researchers' experience where this is evidenced in the literature.

The paper does not include an explicit literature review. After comments from our reviewers, we concluded that it would be more useful to engage in depth with a few specific examples from the literature in the main body of the paper than to attempt a summary of a larger selection, given that length constraints would make such a summary relatively superficial. We believe that the paper addresses a gap in the literature. Providing evidence for an absence is notoriously difficult, and no doubt many readers will object that there is already considerable literature addressing the relationships between some of the meta-questions included in our framework, both in the social sciences generally and within critical realist scholarship more specifically. We suggest, however, that whilst this work is often very valuable, it tends to focus on one set of meta-questions,

or occasionally on the relationship between two sets, at a time. Elsewhere, the work of addressing these meta-questions is tackled in particular qualitative methodologies, but from a predominately epistemological standpoint, rather than engaging with other sets of philosophical principles such as ontology or axiology. Such approaches fail to develop an integrated and coherent set of concepts across the full range of meta-questions, and the significance of the web of interrelations and iterations between them. In addressing this absence, we hope to present a framework that can be used by researchers – who may start at different points of the framework – allowing them to strengthen the quality, rigour and emancipatory potential of their work.

## 2. The conceptual architecture of research

In pursuing any research project, the researcher develops a mosaic or network of interrelated concepts and arguments. The researcher unavoidably begins with a pre-existing mosaic, including a range of interests, questions, (pretheoretical) dispositions or assumptions, and perhaps some pre-established explicit beliefs about some aspects of the research process (Patton 2002). The process of conducting research then introduces new pieces into the mosaic, both as a result of interactions with research participants and data, and as a result of exposure to other conceptual material drawn from reading the literature or from interactions with other researchers and critical friends. Whenever a new piece is introduced, there are necessarily questions about how and if it fits into the mosaic, which might lead the researcher to perceive inconsistencies between the new piece and their existing network of beliefs (Sayer 1992, 80). These cognitive dissonances tend to generate reflection and reflexivity, whether conscious or subconscious, and revisions to one or more parts of the framework, which therefore evolves through, and can significantly impact, the course of the project. One part of the desired result is generally that at the end of the research process (or at any point marked as a partial end by the production of an output for publication) the researcher will have generated an expanded and improved conceptual network that she considers coherent and useful (Sayer 1992, 58).

Project outputs, such as books and papers, provide a 'snapshot' of selected highlights of that network at the current stage of its development. Beyond the published material lie other parts of the mosaic. Some of these will have been thought through explicitly and decided upon consciously, while others may be more vaguely understood and/or may have been taken for granted without consciously reviewing their coherence with other parts of the picture (Tracy 2020).

The scope of this conceptual network varies from project to project along multiple dimensions, of which the most obvious is the 'what' dimension – the broad topic of the research. But in addition to topic-related material, the complex of ideas developed in a project also varies across at least one further dimension: the 'how' dimension. We can approach this through the common observation that empirical claims are necessarily theory-laden (Sayer 1992). Any claim to have evidence of some empirical fact, for example, rests on beliefs about appropriate methods for generating empirical data; or any claim to have produced an explanation of something, for another example, rests on beliefs about what kind of form an explanation should take (Lincoln, Lynham, and Guba 2011). The result is that the complex of ideas generated

by any research project necessarily relies upon, regardless of whether it explicitly includes, ideas about what we will call meta-questions as well as ideas about empirical findings. For us, research that fails to explicitly engage with and critically consider these issues is poorer as a result.

This paper sets out a framework (summarized in Figure 1) for making sense of the range of meta-questions that are necessarily implicitly, and preferably explicitly, addressed by research projects, and discusses some of the connections and interdependencies between different meta-questions that researchers may have to explore. For clarity, Figure 1 divides these meta-questions into clusters (most of which will be reasonably familiar to most researchers), each represented by an oval on the diagram. Each cluster 'contains' a range of alternative answers to a related set of meta-questions, and the researcher will need to select alternatives from each of the clusters (or occasionally manufacture her own) in order to assemble the mosaic of concepts that will become the central product of her project (Figures 2–4).

We acknowledge that the boundaries of our clusters are somewhat arbitrary. We could have divided some of them into two or more clusters (or indeed combined some of them into larger clusters). For example, our 'philosophical principles' cluster includes ontology, epistemology and ethical principles. We chose to avoid subdividing this cluster, and other possible divisions, to keep the overall picture reasonably simple, but the reader should be aware that this means there are further potential connections *within* these groupings that might be relevant to their projects, e.g. between their ontology and their epistemology. Furthermore, the ovals should not be thought of as a hierarchy – none is more important than any of the others, since each has its own particular role and all are interdependent. Nor is there any set order in which they should be approached.

Our clustering choices also highlight some connections rather than others. The need, for example, to consider the relation between the purpose of one's research, ethical questions, possible impacts of the research, and policy recommendations is not highlighted here though for many or most projects in the social sciences it should be considered (the 'why' dimension, as it were). No doubt there are also other connections of which we are unaware. The exposition here aims to sensitize researchers to the broad issues rather than to provide a comprehensive account of all of the types of connections between meta-questions that might be relevant to any given project. Such a comprehensive account would be impossible, perhaps at all, but certainly within the confines of a single journal article. We have therefore had to make choices about which connections to focus on for the purpose of illuminating the framework, which does not mean that we think other connections are unimportant. Nonetheless, we hope that the framework provides a more detailed and connected picture that can support the development of rigorous research with the potential to progress and influence knowledge, policy, and practice.

## 3. Framework

Figure 1 portrays the framework we are employing in this paper, which draws on Elder-Vass (2007a). The core concept is that research entails interrelated knowledge claims, whether implicit or explicit, that are distributed across a range of different conceptual types. Although we focus primarily on critical realist applications of it, this framework is potentially applicable regardless of the philosophical/methodological perspective

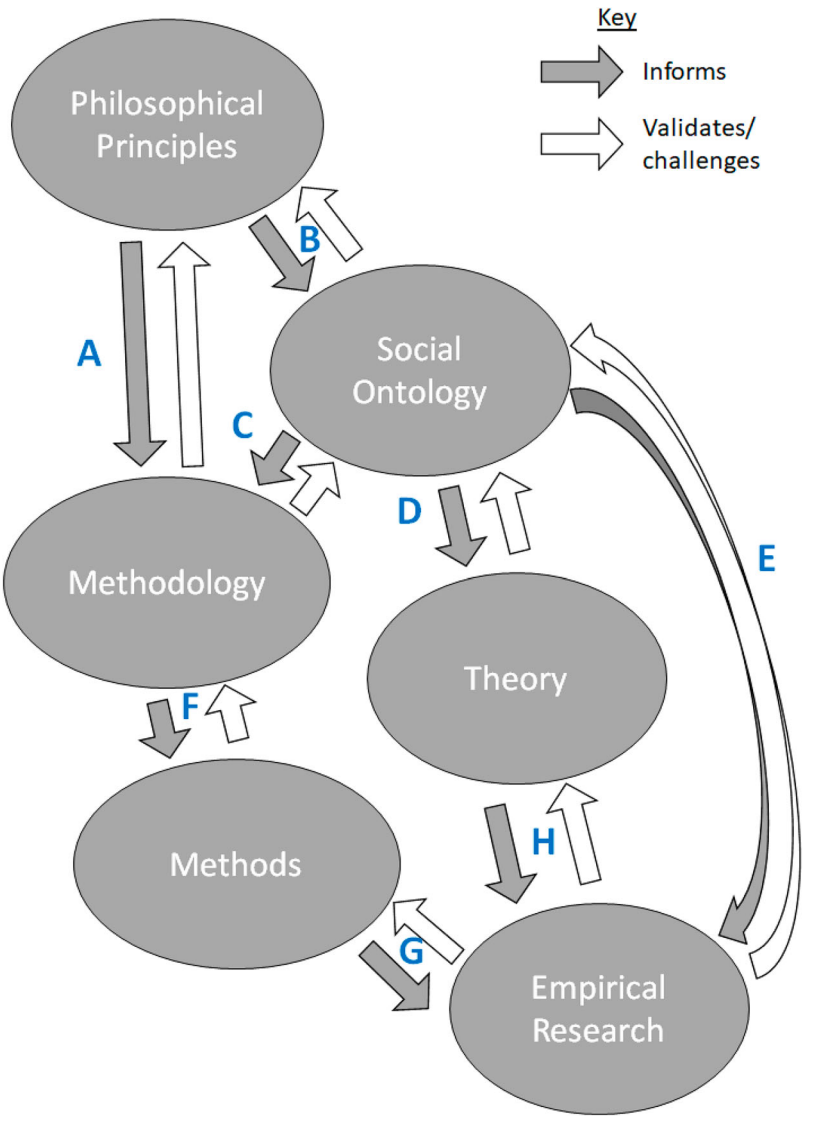


**Figure 1.** Conceptual framework.

adopted by the researcher. Each oval in the figure represents a cluster of alternative elements in the conceptual architecture of a project:

a. Philosophical Principles: including ontological principles such as a critical realist understanding of causality as the multiple determination of events by interacting causal powers (Bhaskar 1975), or a positivist commitment to law-based explanation on the basis of an empiricist understanding of causality as a constant conjunction of events (Hempel 1968), but also epistemological and ethical principles that may shape commitments at lower levels of the diagram.
b. Social Ontology: for example, an understanding of the social world as containing social structures with causal powers as well as individuals with causal powers (e.g.

Elder-Vass 2010), or an insistence that only individual human actions are causally significant in the social world (e.g. Harré 2002).

c. Methodology: broad perspectives on methods, such as interpretivism, ethnography, grounded theory, or randomized controlled trial methodologies, which provide a rationale for using particular groups of methods and assumptions about how data should be interpreted.
d. Theory: this level relates to substantive explanatory or interpretive hypotheses, e.g. that higher inequality creates social problems for all members of society (Wilkinson and Pickett 2010), or that gender is produced by performing activities that are socially marked as expressions of gendered natures (West and Zimmerman 1987). Here we are using the term 'theory' quite widely, to include very general social theories, middle range theory, and narrowly focused theories of specific phenomena. Theory in this sense is primarily concerned with explaining how the things that we study work and bring about particular events, whereas metatheory (i.e. the preceding three clusters) is more concerned with the principles that explain how we should go about studying them.
e. Methods: this covers more specific research techniques, such as regression analysis, participant observation, qualitative interviewing and thematic analysis (e.g. Wiltshire and Ronkainen 2021; Brönnimann 2022).
f. Empirical research: interaction with or observation of research participants or entities of interest and the data that is generated as a result.

The arrows on the diagram represent, first, the broadly accepted claim that these different types of knowledge claims are interrelated, and second, our belief that research can, should, and generally does lead to iterative interaction between knowledge claims in these different clusters. For an example of the first point, consider that the critical realist understanding of causality will tend to lead to a commitment to mechanism-based explanation and openness to a variety of methods that could help tease out an understanding of the mechanisms involved in a case, while a positivist understanding of causality will lead to a search for constant or statistical conjunctions of events and thus typically to empiricist quantitative methods. To illustrate the second point, consider the example of a researcher struggling to reconcile strong constructionist methodologies with research into the experience of victims of sexual violence (Weizenegger 2022, 63–64). As a result of recognizing the materiality of the physical harm produced, Weizenegger was led to question the assumption that material things such as human bodies are purely socially constructed, and to revise her ontological commitments, adopting a critical realist perspective instead. Much of this paper will be devoted to discussing examples like this of iterative connections between conceptual layers from critical realist research.

These interrelations may take various forms. The solid arrows represent what we may call 'downward' influences, in the context of this diagram, such as the influence of our ontological commitments on our methodological choices, and the unfilled arrows represent 'upward' influences, such as the revision of our ontological principles based on our evidence. Our upward arrows may thus represent challenges to our existing commitments at higher levels, but they may also act to support, validate, or confirm those commitments. The following sections of the paper explain and discuss some of the individual connections that these arrows represent in more detail. For the sake of simplicity, we have

not added arrows for every possible connection. There may also be other connections worth pursuing in any given project. For ease of reference, we sometimes refer to these connections using the upper-case letter labels in Figure 1.

We may think of the diagram as a representation of the structure of the beliefs of an individual researcher, and of the thought processes through which that structure of beliefs evolves. This may be an iterative journey: because beliefs at all of these levels are interrelated, changes in the researcher's beliefs in one cluster can affect beliefs not only in one other cluster, but, as a consequence, can loop through and affect other beliefs too. One might find, for example, that one's empirical findings affect one's ontological beliefs, which feeds through into one's preferred methods, leading to further work that expands or enhances the original empirical findings or leads to different understandings of them. In this sense, a project may not be a simple process of forming and executing a plan, but rather an intellectual journey that loops through these various conceptual clusters (re)configuring a much wider set of beliefs than we might initially have expected. In particular, when the results of empirical work create puzzles or contradictions for the researcher, this may lead to her reflecting on the wider theoretical, ontological, and/or methodological reasons for this.

## 4. Philosophical connections

The metatheoretical stance or philosophical principles of a researcher will influence her research, whether she recognizes this or not (Porpora 2015). A researcher's assumptions about ontology, epistemology and values in the social world and research necessarily

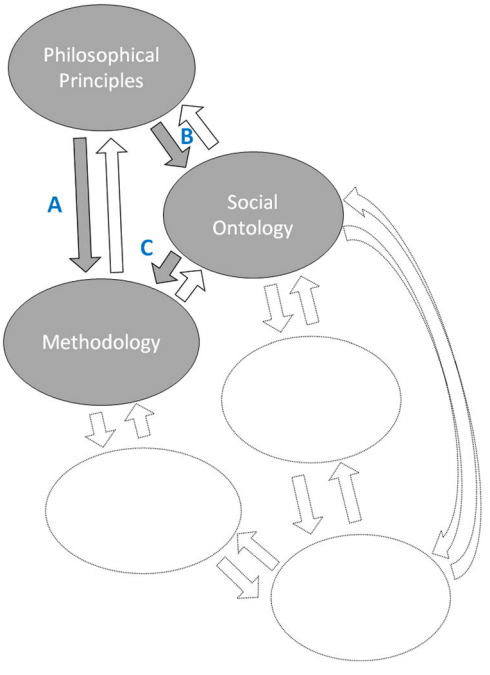


**Figure 2.** Philosophical connections.

shapes her approach and the outputs she generates. At the top of our framework, we represent the centrality of the relationships between philosophical principles, methodology and social ontology in a researcher's paradigmatic approach to social science inquiry (connecting arrows A, B, and C).

As introduced above, social ontology is our understanding of the nature of the objects of the social world and their relationships with each other. In the history of philosophies of science and sociological theory there are contradictions or tensions that remain unresolved or perhaps unresolvable, such as those about structure and agency. For example, in the context of social ontology, do structures in society exist externally to the individuals on whom they assert powers (*social holism* as developed by theorists such as Durkheim) or do the actions of human agents with desires and beliefs sum to create social structures (the *individualism* of, for example, rational choice theory or game theory) (Hollis 1994). Critical realist philosophy helps to resolve some of these tensions by offering a stratified social ontology in which social structures have emerged from, and can be continually reshaped by, human agency (Danermark, Ekström, and Karlsson 2019). They are two separate (but interdependent) phenomena, with different powers and properties, reflecting the stratified, hierarchically organized levels of objects and their causal powers within the social and natural worlds (Bhaskar 2016). When a researcher adopts this perspective, ontological (i.e. critical realist) philosophical principles influence her conception of the relationship between structure and agency in her social ontology (downward arrow B).

Methodology operates as a framework to guide the empirical (and theoretical) processes of research as a 'combination of techniques, the practices we conform to when we apply them, and our interpretation of what we are doing when we do so' (Olsen and Morgan 2005, 257). A combination of philosophical principles and social ontology will influence choices about the research question and identification of the problem, data collection methods, research standards and credibility, analysis and representation, ethical issues, the use of theory and other factors. The practice of a methodology, then, is oriented by the philosophical principles of the researcher, or the authority whose methodological example they follow. For example, the assessment of what makes good case study research and its purpose differs between two highly cited researchers, whose epistemological preferences result in divergent practices for case study methodology. Yin (2017) does not articulate an epistemic stance, but his approach to case study research is recognisably positivist-leaning in its focus on objectivity, validity, generalisability and hypothesis testing in knowledge creation. By contrast, Stake (1995, 99) advocates a case study methodology reflecting the principle that 'knowledge is constructed rather than discovered'. These epistemological differences fundamentally shape the advice given to researchers by each author about case study definition, data gathering, analysis, representation and what makes 'robust' case study methodology (downward arrow A).

There are examples of critical realist authors engaging with the deep connections between philosophical principles, social ontology and methodology. Quraishi et al. (2021) explore the influence of Bhaskar's interconnected concepts of epistemic relativism, ontological realism and judgemental rationality on their study methodology. They describe how these philosophical principles, and Bhaskar's metaReality more generally, were operationalized to bridge the gap between researchers and research participants of different faiths or no faith in prison research. For them, 'doing judgemental rationality' meant employing the tools of triangulation (i.e. of emotional responses with complex

intellectual decisions) and a depth reflexivity which was attentive to ethical, moral and political responsibility across 'laminated' levels of class, gender, ethnicity, faith and professionality (downward arrow A again). They describe how critical realist principles enabled a context-specific conceptual understanding of the stratified experience of positionality and reflexive understanding of personhood within their methodology. The authors argue these frameworks strengthened analysis of intrapersonal effects within the research team and with research participants, identification of which supported building of empathy and trust between researcher and researched.

Hastings (2021a) writes about the process of developing a critical realist methodology for quantitative research to explain family homelessness. The author describes how critical realist philosophy and its construction of social ontology provided the key for thinking ontologically about the relationship between structure and agency. This helped to reconcile an existing disconnection in the literature between individualized and structural accounts of the reasons for homelessness (Hastings 2021b) (downward arrow C). Hastings describes that, typically, statistical analysis conceptualizes events and their regularities as the fundamental unit of analysis. Critical realism's depth ontology instead required the author to focus on exposing the underlying structures of the world to uncover causal processes. She explains that, for her the methodology for using and making sense of data needed to be consistent with the critical realist position that reality consists of the domains of the real, actual and empirical; is stratified and emergent; and causal mechanisms are discovered through theorizing (Bhaskar 2016) (downward arrow A).

In practice, this meant that she treated data as simply a form of evidence of events at the *empirical* (or observed) level of reality. The first stage of empirical analysis involved exploring the data to describe patterns observable at the empirical level. She describes looking for data shapes suggesting the presence of structures, mechanisms and contexts relevant to answering the research question. However, as causal mechanisms producing these events are embedded in entities at the level of the *real*, and cannot be directly seen, she needed to theorize structures and mechanisms to develop complex and contingent realist causal explanations. Hastings explains how, to evoke mechanisms, she recontextualized what she saw in the data in theoretical language (abduction) (Porpora 2011) and used retroductive inference trying to answer the question: what makes the object possible? (Danermark, Ekström, and Karlsson 2019). She was inspired by Bhaskar, who describes the process of causal analysis as 'imagining a model of a mechanism that, if it were real, would account for the phenomenon in question' given a particular set of circumstances and when combined with other mechanisms in specific combinations (2016, 79). In practice, this methodological approach to data analysis and theorizing was an iterative and circular process of engagement with literature, data and theory, 'underlaboured' by critical realist concepts. Therefore, Hastings explains that when working with data, she was concerned with exploration (rather than confirmation), the goal of explanation (rather than prediction) and theoretical (rather than empirical) generalizations (Bhaskar 2016).

## 5. Methodological connections

Focusing on the left-hand side of our framework, this section of the paper charts links between philosophical principles, methodology, methods and empirical research. Most

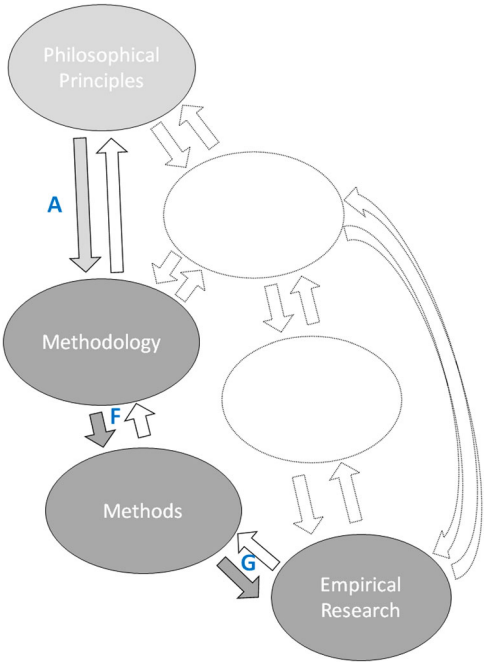


**Figure 3.** Methodological connections.

qualitative researchers – and, arguably to a lesser extent, quantitative researchers – recognize and place importance on coherence between the set of philosophical assumptions or tenets that guide their work and the methodology/specific methods that are employed, as well as how this shapes the generation of empirical evidence. Here, the ontological and epistemological principles that underpin the work should inform and be consistent with the overall methodological approach, specific method(s) that are selected, and this will have consequences for both the type of data that *can* be generated and how these data are interpreted (Guba and Lincoln 1994).

Explicit connections at A, F and G of the framework are recognized to varying degrees within different research traditions. Many who employ positivist positions – the philosophy of science behind empiricism – for example, tend not to explicitly recognize the set of philosophical assumptions that guide their methodology or specific methods, or indeed how this frames the way in which data are interpreted (Porpora 2015). Instead, in this tradition, methodological and method-based decisions are often made based upon (a) fit with the research question, (b) general acceptance of the methodology/methods by the scientific community, and (c) constraints or financial limits. These methods are then used to collect data that are frequently run through statistical tests to address the research question (without recourse back to methods, methodology, or philosophical principles). Such an approach can position one method (or a number of methods) as being objectively *the* best method(s) for conducting empirical research in line with the specific question. In contrast, those adopting other positions (e.g. constructionism) can be very explicit in framing the way in which their philosophical assumptions

determine the methodological approaches that can be adopted, specific methods within this, and how these shape the data that are generated. For example, given their belief in relativist ontology and subjectivist epistemology, many constructionists argue that methodologies and methods must be capable of facilitating interaction *with* participants to generate meaning (Sparkes and Smith 2014). The empirical evidence that follows is normally centred on the lived experiences, perspectives and sense making of participants and the researcher.

Those in a critical realist position tend to recognize that there is not a specific set of methodologies or methods that *must* be employed. Indeed, many have argued that qualitative, quantitative and mixed-method approaches can be utilized within a critical realist approach (Downward, Finch, and Ramsay 2002; Mukumbang 2023; Olsen 2022; Vincent and O'Mahoney 2018; Zachariadis, Scott, and Barrett 2013). The key thing for realists, then, is that the methodology and method(s) selected are capable of, and used in a manner that is oriented towards, examining entities, their (complex) causal relationships, and how these can explain events or actions in line with a laminated view of ontology (Bhaskar 1975). Importantly, for methodologies to be informed by critical realism, they require abductive and retroductive logics of reasoning (Ackroyd and Karlsson 2014). Creativity is also important in connecting A, F, and G within critical realist work. 'Thinking about possible mechanisms is matched by ingenious research practice which explores possible uses of new data and information that could indicate their existence and character' (Ackroyd and Karlsson 2014, 22). Here, many projects are informed by engagement with and critique of methods and methodologies employed in previous empirical research that implicitly or explicitly align with specific philosophical principles and also potentially how these (mis)align with the empirics of practice (e.g. professional experience and knowledge as a practitioner).The remainder of this section will now seek to bring such connections between A, F, and G from our framework 'to life' by examining previous critical realist literature.

Fletcher's (2017) study of Canadian farm women's experiences with agricultural policy, for example, critiqued methodologies employed within previous empirical studies on this topic to inform her own approach. Specifically, Fletcher reported that data from previous empirical research pointed to rising financial pressure on farms causing greater dependence on farm women's labour, while other research pointed to family farm finances being dramatically affected by the neoliberal paradigm in Canadian agricultural policy. However, little research had drawn a *causal* connection between both components and CR offered a means through which these links could be investigated. Indeed, in unpacking previous work such findings were perhaps symptomatic of connections between specific methods and methodologies (F up) (e.g. discursive methods used within a grounded theory methodology) and their nesting within a specific philosophical position (e.g. constructionism) that somewhat limited the development of complex *causal* theorizing. On this basis, Fletcher questioned the compatibility of grounded theory and critical realism. Firstly, because grounded theory tends to avoid substantive active engagement with existing theory during the analysis process and, secondly, because it draws principally upon inductive forms of inference whereas retroduction and abduction are crucial to critical realism.

Fletcher's study therefore implemented a 'primarily deductive yet flexible … coding process … that drew on existing theory and literature' (Fletcher 2017, 186) within

abductive and retroductive forms of logic. Both statistical data collection and semi-structured interviews were used as methods to generate data that could then be analysed within this overall methodology. As outlined earlier, one could argue that any method (s) could be adopted within a critical realist methodology (F down) however, importantly, the method(s) adopted must be capable of generating data that is able to answer the research question(s) in line with key tenets of critical realism (i.e. realist ontology, relativist epistemology, judgemental rationality, practical utility; Edwards, O'Mahoney, and Vincent 2014). What was clear from this study, then, was that the empirical data and associated retroductive theorizing answered the research question in a different way to other research traditions. Given that the philosophical principles had shaped the overall methodology (A down), forms of logic deployed and specific methods used (F down), this enabled the project to identify tendencies and causal mechanisms (G down) concerning farm women's experiences with agricultural policy that were, arguably, more complex, resonant with current practice, and practically usable by policy makers. For example, the notion that gender ideology at the level of the household and farm – and corporatization in Canadian agriculture more generally – interacted to affect women farmers' working conditions and mental health, and that these issues need to be considered together in changes to policy and practice.

Another critical realist study charting the connections at A, F and G of our framework is the work of Nichol and colleagues (Nichol 2020; Nichol et al. 2021; Nichol et al. 2023). Nichol et al. asserted that much of the previous literature in sport coaching had – through cross-sectional or correlational studies – illustrated connections between coach behaviour and specific athlete outcomes but few, if any, studies had charted the influence of coaching practice in a manner that recognized and respected complex causal relationships between entities (Nichol et al. 2019). Indeed, much of the previous literature in this area had drawn upon quantitative questionnaire – or survey-based methods, asking players (and, in some cases coaches) to rate both coach behaviour and some form of athlete outcome(s) (e.g. motivation levels), before running statistical tests (e.g. correlations or regressions) within positivist methodologies to assess these connections. Crucially, then, much of the research in this area could not assume causality or directionality but only that a relationship was present, the strength of this relationship, or the influence of one or multiple variables in predicting one dependent variable (Nichol et al. 2019). Alongside engagement with empirical research, the author also entered the research project with knowledge of the 'empirics' of the subject area (i.e. professional practice and knowledge as a coach). Importantly, dissonance existed between the authors' professional knowledge/expertise of coaching and its complexity, findings from previous empirical research, and the use of dominant methods (G up) and methodologies (F up) – as well as how these were implicitly or explicitly connected to philosophical principles (A) to investigate the essence of influence in coaching. Here, for the author, the methods and methodological approaches (guided by implicit positivist principles) in much previous work did not adequately represent or facilitate investigation of the fundamental essence of influence in coaching. In other words, they did not match its complexity.

This cognitive dissonance led the researcher to explore other philosophical principles that may better reflect the multiply determined and complex nature of the discipline and specific focus of inquiry. After reading about, finding solace in, and then being guided by

philosophical principles of critical realism (e.g. emergence, laminated ontology, contingency), the author decided that, in order to address and investigate this complexity, a multiple-method ethnographic (realist) methodology – accounting for causality – would be suitable (A down). Specifically, ethnographers are 'encouraged to explore the phenomenological reality of actors' understandings and interpretations and their effects on social structure, but not to take these interpretations as fully constitutive of social structure' (Davies 2008, 22). In line with a realist approach, and to investigate the ways in which coaches and athletes both shaped and were shaped by social structure, this required the research team to deploy a range of methods (F down). Specifically, participant observation, stimulated recall interviews and semi-structured interviews were employed to (a) appraise what was going on in the specific context, (b) understand actors' intentions and perceptions of practice, and (c) in line with a realist methodology, theorize the mechanisms through which influence was brought about or not. As outlined in other studies highlighted above, this enabled the research to produce more complex *causal* explanations of the role of both social structure and agency in shaping the (inter)-actions of individuals within sport coaching environments (G down). In this case, a more subtle and sophisticated explanation of how, when, and why coaching practice influenced (or did not influence) athletes was able to be developed. Importantly, the process of conducting empirical research and reflexivity also informed the refinement and deployment of methods (G up). In this study, upon participants noticing the note taking practices of the researcher – and the researcher acknowledging how this may shape data being collected – he refined his approach and moved from taking field notes in diary form to generating these on a mobile phone to be deliberately more inconspicuous (Nichol 2020).

A further example from Hastings' (2021a, 2021b) work on family homelessness in Australia shows a critical realist influence on the use of statistical methods. Although using quantitative methods in her PhD, Hastings had been feeling uncomfortable with how she was being asked to interpret the results of statistical techniques. She judged the outputs as only 'an imperfect, impressionistic, and overly simplistic artefact of what was happening in the "real world"' (2021b, 8). Critical realism requires that quantitative (or any) data is seen as a form of evidence of events at the empirical level of reality. Therefore, all statistical methods are, by definition, purely descriptive. The patterns in the data, discovered by 'cutting' the data in different ways through univariate, bivariate and multivariate analysis, provided evidence for the real work of abstraction, abduction, retroduction and retrodiction. For example, by developing multivariate panel regression models, Hastings (2021b, 8) was 'not looking to 'prove' causality, rather to find more complex and nuanced descriptive patterns in the data reflecting the underlying reality of structures and mechanisms' to enable and enrich her theoretical causal explanation. In summary, her engagement with empirical quantitative data, using statistical methods (G down), was transformed by how those methods were embedded in a study methodology (F down) built on critical realist philosophical principles (A down).

In examining methodological connections, it is important to note that we are not working from 'scratch'. Indeed, many resources exist that carefully consider how already established techniques, methods and practices can be made compatible with critical realist (or other) methodologies. Two such notable examples include discussions of thematic analysis (Wiltshire and Ronkainen 2021) and interviewing (Brönnimann 2022)

within a critical realist approach. Should readers wish to engage with other notable examples from the literature that help to illustrate these and wider methodological connections, the work of Alderson (2021), Maisuria and Banfield (2022), and publications included within Price and Martin's (2018) special edition in the *Journal of Critical Realism* provide valuable sources to draw inspiration from and reflect on. In order to bring about novel and impactful insights at A, F, and G, we encourage researchers to take inspiration from previous work, but also to be brave and innovative in their practice.

## 6. Theoretical connections

Turning to the right-hand side of our conceptual framework, this section traces the connections between social ontology, theory and empirical research. Explicit attention to social ontology is much more common in critical realist work than in other traditions, which tend to be relatively unreflective about social ontology or to conflate it with theoretical work. For critical realists, social ontology is concerned with what sorts of things (or 'entities') can have causal influence in the social world (and how), whereas theory is concerned primarily with how causal powers interact to shape particular events or classes of events. The two are tightly interrelated. The forces that interact to shape events are powers of the entities identified in social ontology (D). In work on social ontology, we identify generic types of entities and their powers (retroduction). In work on theory, we often identify characteristic patterns of interaction between these powers that tend to produce particular events or types of event (retrodiction). Empirical research, in this framing, provides us with evidence that, when juxtaposed with our existing

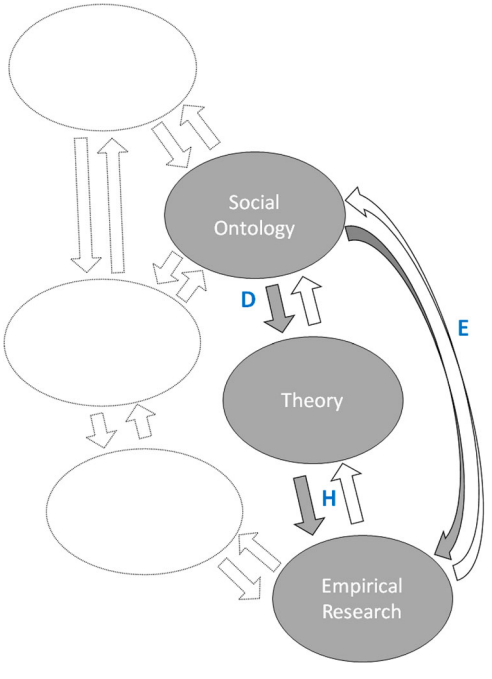


**Figure 4.** Theoretical connections.

understanding of the context, may lead us to pose both ontological and explanatory questions: questions like "what structures could be influencing these events" (E up) and "how does the interaction of their causal powers produce these events" (H up). But the evidence also provides us with a resource for challenging possible answers to those questions – both our own hypotheses and those that have been offered by earlier authors.

Given the extensive work that has already been done on the issue of what structures influence social events, it makes sense to begin the task of answering these questions by considering whether previous work offers plausible candidate explanations for the case at hand. This is not to suggest that existing arguments should be adopted uncritically – they should always be challenged by examining whether they work with the evidence and help with the explanatory problem. More generally, there is nothing wrong with starting from a pre-constructed social ontology, as long as the researcher is sensitive to the possibility that it might be problematic, and willing to revise, extend, or even abandon it if necessary.

Thus, for example, in a study on the influence of sport coaches' behaviour on athlete outcomes, Nichol (2019) found that existing, mostly positivist, studies lacked the capacity to identify how, when and why such influence operated. In searching for resources to help construct better explanations he found value in critical realism's general philosophical ontology, but also in some more specific elements of social ontology (Nichol 2020; Nichol et al. 2021, 2023). In particular, he adopted and applied the concepts of norm circles – groups of people whose influence tends to produce conformity with particular norms – and of conscious reflexivity, and critical realist understandings of how the two can interact to influence behaviour (Elder-Vass 2007b, 2010). Here we can see a process at work in which empirical research generated dissatisfaction with the ontological and theoretical explanations available in one tradition (E up and H up). This was followed by adoption of alternative resources and their employment in the construction of explanations specific to the empirical case (E down and H down). This process also implicitly tests the value of these ontological and theoretical resources, and either provides support for them or challenges them (iterating back to E up and H up).

For another example, consider Manuel Heckel's recent PhD thesis on pressures to commercialize development funding for Kenya's water infrastructure (Heckel 2023). Heckel adopts but also supplements several existing elements of critical realist social ontology. In particular, he makes extensive use of Lawson's (2019) social positioning theory. He employs positioning theory to explain attempts to reposition a group of water authorities, nominally under local government control, as financially independent 'debt emitters'. Although this process remains incomplete and contested, the intention is that the debt emitter position should be occupied alongside their existing positioning as water service providers. In Lawson's ontological work on positioning theory it is possible for the same entity to be multiply positioned, but he generally treats such positioning as 'nested'. Heckel argues that for these water service providers, the debt emitter position is not nested but rather linked: it is not necessary for a water service provider to be a debt emitter, nor is it necessary for a debt emitter to be a water service provider, and so these positions cannot be thought of as nested. We can see this as a case of D up, in which Heckel's understanding of the causal influences on water authorities fits with Lawson's existing work on the ontology of social positioning but also suggests the need to add a new category to it.

In other cases, authors may find that the evidence throws up ontological puzzles that need entirely new solutions. For an example, consider a recent study on the nature of economic value and its role in the finance sector (Elder-Vass 2022). The book argues that any given class of financial instruments only becomes an asset when a group of potential investors, which the author calls an *asset circle* (a social ontological hypothesis), has been persuaded, usually through narratives promoted by *value entrepreneurs*, that the instrument has value as a potential investment (a domain specific theory hypothesis). At the empirical level, the argument is developed by engaging with (mostly secondary) evidence on three groups of cases: the processes through which venture capitalists build the valuations of their portfolio companies in preparation for selling those companies, either through an acquisition or an initial public offering on a stock exchange; the rise of the cryptocurrency Bitcoin; and the promotion by U.S. investment banks of the mortgage-backed securities that were central to the financial crisis of 2008.

By engaging with this range of cases, the book is able to consider differences and similarities between the processes of constructing valuations across a wider range of financial assets and thus identify some of the structures and mechanisms involved (E up and H up). The outcomes of the project included new theoretical arguments (H up), such as the claim that value entrepreneurs (e.g. venture capitalists) play an active role in the construction and application of valuation conventions, which added something to the relevant theory. And they included new social ontological claims (E up), notably the argument that the social structures the book calls asset circles have causal powers that make an essential contribution to determining the value of assets.

This process of obtaining retroductive results from a series of studies, it must be emphasized, is far from straightforward. There is a sense in which retroduction depends on leaps of the imagination, perhaps driven by subconscious reasoning processes over which we have no conscious control, that result from the researcher immersing themself in a set of relevant evidence and setting themself the challenge of making sense of it. There is no guarantee that any apparent insights this process generates are sound. Hence the researcher may (and in the case above the author did) find themself iterating around a cycle of inspiration, doubt, and rejection or revision of hypotheses as ideas are generated and tested – both for coherence with each other (D up and down) and against the empirical knowledge base (E up and H up). This process draws not only on one's evidence, but also on existing theory in the field (H down) and on prior work on social ontology (E down). This existing work is also challenged in the process, so that one ends up with a mix of existing theory and novel hypotheses. In this case, ideas from existing theory regarding the role of narrative in financial value (notably Beckert 2016) and work on the economics of conventions (e.g. Orléan 2014) were integrated, with some adaptations, into the final framework (though neither of these authors identifies as critical realist). Similarly, the author's earlier work on norm circles and monetary structures provided frameworks for new interpretations of the empirical material (E down). These arrows (E down, and H down) also reflect the ways in which what we observe, or at least how we interpret what we observe, is partly shaped by the conceptual apparatus we bring to bear. Once we adopt a concept like norm circles or asset circles, for example, we start to see new connections and new angles in the evidence itself.

## 7. Conclusion

In this article, we have started from a position that research necessarily involves connections between sets of interrelated meta-questions, whether explicitly acknowledged or not by the researcher. Our objective has been to help scholars of all philosophical traditions identify these connections and think through the implications of these questions, rather than propose a 'one size fits all' example of *how* to do research.

We have focussed our examples and discussion on critical realist research. This is primarily motivated by our acknowledgement of the additional demands on scholars doing critical realist research, especially for the first time. Many established methodologies exist with already embedded philosophical principles. Therefore, researchers using them do not necessarily need to do the groundwork themselves or articulate how the relevant meta-questions have been answered in their study design. In contrast, critical realism offers a rich, complex and relatively new approach to social science, requiring the researcher to work to embed its philosophical principles into their project through innovative design and creative methodologies. Our paper has pursued the objective of explicitly outlining a foundational set of connections underpinning a research project and used examples of practical approaches to get 'inside' the experience of making these connections. We hope our framework serves as a tool to aid research design and to identify and understand the conceptual architecture sitting behind accounts of critical realist research. This will help researchers, new to critical realism, to more easily replicate or adapt existing approaches. We also hope our examples show that critical realism can be successfully operationalized as a methodology for empirical research. Beyond this, we feel that the paper has scope to support those in other philosophical positions to more critically think through connections in projects to strengthen the quality, rigour and emancipatory potential of their work.

The framework developed in this paper is a guide or point of reference, rather than a definitive road map of what to do. We encourage researchers to consider whether this framework covers the range of meta-questions that are important to them. For example, they may think it essential to separate ontology and epistemology or to think more carefully about how elements of the framework fit with questions of ethics, critique and policy advocacy. In other words, researchers may find it helpful to start with the framework as they develop the conceptual mapping of their project and work through the set of meta-questions that matter for their research purpose. We hope that researchers produce papers documenting these broader connections or adaptations of the framework and contribute to the 'bank' of materials available to support those engaging with critical realism or other philosophical positions.

## Notes on contributors

***Adam Nichol*** is an Assistant Professor in the Department of Sport, Exercise and Rehabilitation at Northumbria University, UK. His research interests focus on the sociological study of (non)influence in and through sport using a critical realist lens. He has conducted internationally funded research shaping policy and practice in national sporting organizations.

***Catherine Hastings*** is a Research Fellow in the Law School at Macquarie University. In 2020, she received her PhD in Sociology for a thesis titled 'Family Homelessness in Australia: A Quantitative Critical Realist Study'. Catherine has an established applied social research and evaluation

consultancy which she pursues alongside scholarly research on homelessness, disadvantage and legal need.

***Dave Elder-Vass*** is an Honorary Fellow at Loughborough University, UK. His recent book *Inventing Value* (Cambridge University Press, 2022) examines how financial entrepreneurs generate the belief that the financial instruments they create have value. *Profit and Gift in the Digital Economy* (Cambridge University Press, 2016) theorizes economic diversity and its implications for social theory and politics. He has also published extensively on social ontology and social theory from a critical realist perspective, including *The Causal Power of Social Structures* (Cambridge University Press, 2010) and *The Reality of Social Construction* (Cambridge University Press, 2012). For more information see his website: https://eldervass.com/

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## ORCID

*Adam J. Nichol* http://orcid.org/0000-0002-9319-9703
*Catherine Hastings* http://orcid.org/0000-0002-5486-8118
*Dave Elder-Vass* http://orcid.org/0000-0002-0789-660X

## References

Ackroyd, Stephen, and Jan Ch. Karlsson. 2014. "Critical Realism, Research Techniques, and Research Designs." In *Studying Organizations Using Critical Realism: A Practical Guide*, edited by P. K. Edwards, J. O'Mahoney, and S. Vincent, 21–45. Oxford: Oxford University Press.

Alderson, Priscilla. 2021. *Critical Realism for Health and Illness Research: A Practical Introduction*. Bristol: Policy Press.

Beckert, Jens. 2016. *Imagined Futures: Fictional Expectations and Capitalist Dynamics*. Cambridge, MA: Harvard University Press.

Bhaskar, Roy. 1975. *A Realist Theory of Science*. Leeds: Leeds Books.

Bhaskar, Roy. 2016. *Enlightened Common Sense: The Philosophy of Critical Realism*. Abingdon: Routledge.

Brönnimann, Andreas. 2022. "How to Phrase Critical Realist Interview Questions in Applied Social Science Research." *Journal of Critical Realism* 21 (1): 1–24. doi:10.1080/14767430.2021.1966719.

Danermark, Berth, Mats Ekström, and Jan Ch. Karlsson. 2019. *Explaining Society: Critical Realism in the Social Sciences*. London: Routledge.

Davies, Charlotte A. 2008. *Reflexive Ethnography: A Guide to Researching Selves and Others*. 2nd ed. London: Routledge.

Downward, Paul, John H. Finch, and John Ramsay. 2002. "Critical Realism, Empirical Methods and Inference: A Critical Discussion." *Cambridge Journal of Economics* 26 (4): 481–500. doi:10.1093/cje/26.4.481.

Edwards, Paul, Joe O'Mahoney, and Steve Vincent. 2014. *Studying Organizations Using Critical Realism: A Practical Guide*. Oxford: Oxford University Press.

Elder-Vass, Dave. 2007a. "A Method for Social Ontology." *Journal of Critical Realism* 6 (2): 226–249. doi:10.1558/jocr.v6i2.226.

Elder-Vass, Dave. 2007b. "Reconciling Archer and Bourdieu in an Emergentist Theory of Action." *Sociological Theory* 25 (4): 325–346. doi:10.1111/j.1467-9558.2007.00312.x.

Elder-Vass, Dave. 2010. *The Causal Power of Social Structures*. Cambridge: Cambridge University Press.

Elder-Vass, Dave. 2022. *Inventing Value*. Cambridge: Cambridge University Press.

Fletcher, Amber J. 2017. "Applying Critical Realism in Qualitative Research: Methodology Meets Method." *International Journal of Social Research Methodology* 20 (2): 181–194. doi:10.1080/13645579.2016.1144401.

Guba, Egon G., and Yvonna S. Lincoln. 1994. "Competing Paradigms in Qualitative Research." In *Handbook of Qualitative Research*, edited by N. K. Denzin and Y. S. Lincoln, 105–117. London: Sage.

Harré, Rom. 2002. "Social Reality and the Myth of Social Structure." *European Journal of Social Theory* 5 (1): 111–123. doi:10.1177/13684310222225333.

Hastings, Catherine. 2021a. "A Critical Realist Methodology in Empirical Research: Foundations, Process, and Payoffs." *Journal of Critical Realism* 20 (5): 458–473. doi:10.1080/14767430.2021.1958440.

Hastings, Catherine. 2021b. "Homelessness and Critical Realism: A Search for Richer Explanations." *Housing Studies* 36 (5): 737–757. doi:10.1080/02673037.2020.1729960.

Heckel, Manuel. 2023. "Water Service Providers and Debt Emitters: Kenya's Transformation of Public Water and Sanitation Utilities' Financing." PhD diss., University of Sheffield. https://etheses.whiterose.ac.uk/32498/.

Hempel, Carl G. 1968. "Explanation in Science and in History." In *The Philosophy of Science*, edited by P. H. Nidditch, 54–79. Oxford: Oxford University Press.

Hollis, Martin. 1994. *The Philosophy of Social Science: An Introduction*. Cambridge: Cambridge University Press.

Lawson, Tony. 2019. *The Nature of Social Reality: Issues in Social Ontology*. Abingdon: Routledge.

Lincoln, Yvonna S., Susan A. Lynham, and Egon G. Guba. 2011. "Paradigmatic Controversies, Contradictions, and Emerging Confluences, Revisited." In *Handbook of Qualitative Research*, 4th ed., edited by N. K. Denzin and Y. S. Lincoln, 97–128. Thousand Oaks, CA: Sage.

Maisuria, Alpesh, and Grant Banfield. 2022. *Working with Critical Realism: Stories of Methodological Encounters*. London: Routledge.

Mukumbang, Ferdinand C. 2023. "Retroductive Theorizing: A Contribution of Critical Realism to Mixed Methods Research." *Journal of Mixed Methods Research* 17 (1): 93–114. doi:10.1177/15586898211049847.

Nichol, Adam J. 2020. "Critically Investigating the Complex, Emergent (Non)influence of Sport Coaching Practice." PhD diss., University of Northumbria at Newcastle. nichol.adam_phd.pdf (northumbria.ac.uk).

Nichol, Adam J., Edward T. Hall, Will Vickery, and Philip R. Hayes. 2019. "Examining the Relationships Between Coaching Practice and Athlete "Outcomes": A Systematic Review and Critical Realist Critique." *International Sport Coaching Journal* 6 (1): 13–29. doi:10.1123/iscj.2017-0105.

Nichol, Adam J., Philip R. Hayes, Will Vickery, Emma Boocock, Paul Potrac, and Edward T. Hall. 2021. "Athletes as "Sites of Normative Intersectionality": Critically Exploring the Ontology of Influence in Sport Coaching." *Sociology of Sport Journal* 38 (3): 241–250. doi:10.1123/ssj.2020-0114.

Nichol, Adam J., Paul Potrac, Philip R. Hayes, Emma Boocock, Will Vickery, Callum T. Morgan, and Edward T. Hall. 2023. "Coaching in the Shadows: Critically Examining the Unintended (Non)Influence of Pedagogical Practice." *Physical Education and Sport Pedagogy* 28 (4): 362–379. doi:10.1080/17408989.2021.1990244.

Olsen, Wendy. 2022. *Systematic Mixed-Methods Research for Social Scientists*. Cham: Palgrave Macmillan.

Olsen, Wendy, and Jamie Morgan. 2005. "A Critical Epistemology of Analytical Statistics: Addressing the Sceptical Realist." *Journal for the Theory of Social Behaviour* 35 (3): 255–284. doi:10.1111/j.1468-5914.2005.00279.x.

Orléan, André. 2014. *The Empire of Value: A New Foundation for Economics*. Translated by M.B. Debevoise, Cambridge, MA: MIT Press.

Patton, Michael Q. 2002. *Qualitative Research and Evaluation Methods*. 3rd ed. Thousand Oaks, CA: Sage.

Porpora, Douglas. 2011. "Recovering Causality: Realist Methods in Sociology." In *Sociological Realism*, edited by A. Maccarini, E. Morandi, and R. Prandini, 149–167. London: Routledge.

Porpora, Douglas V. 2015. *Reconstructing Sociology: The Critical Realist Approach*. Cambridge: Cambridge University Press.
Price, Leigh, and Lee Martin. 2018. "Introduction to the Special Issue: Applied Critical Realism in the Social Sciences." *Journal of Critical Realism* 17 (2): 89–96. doi:10.1080/14767430.2018.1468148.
Quraishi, Muzammil, Lamia Irfan, Mallory Schneuwly Purdie, and Matthew L. N. Wilkinson. 2021. "Doing 'Judgemental Rationality' in Empirical Research: The Importance of Depth-Reflexivity When Researching in Prison." *Journal of Critical Realism* 21 (1): 25–45. doi:10.1080/14767430.2021.1992735.
Sayer, Andrew. 1992. *Method in Social Science*. London: Routledge.
Sparkes, Andrew C, and Brett Smith. 2014. *Qualitative Research Methods in Sport, Exercise and Health: From Process to Product*. London: Routledge.
Stake, Robert E. 1995. *The Art of Case Study Research*. London: Sage.
Tamminen, Katherine, and Zoë A. Poucher. 2020. "Research Philosophies." In *The Routledge International Encyclopedia of Sport and Exercise Psychology: Volume 1: Theoretical and Methodological Concepts*, edited by D. Hackfort and R. Schinke, 535–549. London: Routledge.
Tracy, Sarah J. 2020. *Qualitative Research Methods: Collecting Evidence, Crafting Analysis, Communicating Impact*. 2nd ed. Hoboken: John Wiley and Sons, Inc.
Vincent, Steve, and Joe O'Mahoney. 2018. "Critical Realism and Qualitative Research: An Introductory Overview." In *The Sage Handbook of Qualitative Business and Management Research Methods*, edited by C. Cassell, A. L. Cunliffe, and G. Grandy, 201–216. London: Sage.
Weizenegger, Bree. 2022. "Cobbling Together Methods for a Coherent Critical Realist Methodology." In *Working with Critical Realism: Stories of Methodological Encounters*, edited by A. Maisuria and G. Banfield, 63–76. Abingdon: Routledge.
West, Candace, and Don H. Zimmerman. 1987. "Doing Gender." *Gender & Society* 1 (2): 125–151. doi:10.1177/0891243287001002002.
Wilkinson, Richard, and Kate Pickett. 2010. *The Spirit Level: Why Equality Is Better for Everyone*. London: Penguin.
Wiltshire, Gareth, and Noora Ronkainen. 2021. "A Realist Approach to Thematic Analysis: Making Sense of Qualitative Data Through Experiential, Inferential and Dispositional Themes." *Journal of Critical Realism* 20 (2): 159–180. doi:10.1080/14767430.2021.1894909.
Yin, Robert K. 2017. *Case Study Research and Applications: Design and Methods*. Thousand Oaks, CA: Sage.
Zachariadis, Markos, Susan Scott, and Michael Barrett. 2013. "Methodological Implications of Critical Realism for Mixed-Methods Research." *MIS Quarterly* 37 (3): 855–879. doi:10.25300/MISQ/2013/37.3.09.