
Introduction

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The origin of the *Handbook of Research Methods and Applications in Heterodox Economics* is found in developments in methodology that occurred in the 1960s and 1970s which rejected deductive and non-causal forms of theorizing and questioned the sole use of quantitative statistical methods for evaluating theories that dominated much of the social sciences at the time. One outcome of the developments was the emergence of critical realism, which constitutes the philosophical foundation of this *Handbook*. Specifically, critical realism has its roots in the 1970s philosophical developments which argued that, for cause-and-effect events to occur in the world, there must be underlying causal mechanisms combined with structures to make them happen. By the late 1980s, critical realism had emerged as the philosophical foundation for a causal analysis in the social sciences; and by the early 1990s, it had entered heterodox economics through Tony Lawson (1997, 2003), his colleagues and students (Fleetwood 1999), and the critical realism workshop at Cambridge that has been ongoing since 1989/90. A second outcome was the development of the research strategy for theory development and evaluation known as the 'method of grounded theory'. Initially developed in 1967 by Barney Glaser and Anselm Strauss, it was first used in sociology and nursing; but over time it spread to other disciplines where qualitative research on social relations, social networks, and intentional actions through acting persons are important. In particular, it has become an accepted research strategy in management and organizational studies, business, marketing, and leadership research (Locke 2001; Goulding 2002), but not in economics to any great extent.¹

With hindsight, it is clear that critical realism (CR) and the method of grounded theory (GTM) are compatible, with the former providing the philosophical foundations for the latter, and the latter as a specific research strategy that establishes through empirical evidence the structures and causal mechanisms required by the former for theoretical-analytical explanation. However, this awareness was and is slow in coming because of some perceived limitations on the part of GTM. That is, from a critical realist perspective, it appeared to have an inductivist, empiricist, and/or a constructivist (with multiple realities) bias, to underestimate the value of general abstract theories, and to reject engagement with any previous theories (Layder 1990; Danermark et al. 2002). In any case, there are only a few efforts to show the compatibility between CR and GTM, with the earliest being by Yeung (1997), with subsequent contributions by Kempster and Parry (2011) and Oliver (2012).

As critical realism became more broadly accepted by heterodox economists, it became evident that its application to heterodox economic theorizing was not proceeding at the same pace. In fact, Tony Lawson and others repeatedly stated that critical realism is only the starting point and others will have to do the work of figuring out how to apply it to heterodox economics, to creating new heterodox theories and new ways to evaluate them. In the late 1990s and subsequent years, those critical realists who were interested

in filling in the gap turned to the pragmatist research strategy of abduction for theory creation and implicitly for theory evaluation.² Coincidentally at this same time, the first editor of this *Handbook*, Frederic Lee, was looking for a research strategy that gave form and articulation to the way he engaged in developing theoretical arguments and analytical, historical narratives. Following a hint by Warren Young regarding the method of grounded theory, he started reading articles and books on GTM which appeared to be precisely the research strategy he was looking for; and through a discussion with Steve Fleetwood about methodology, he became convinced that his research strategy needed a philosophical foundation, specifically CR. Frederic Lee first presented his integration of CR and GTM at the Critical Realist Workshop Seminar in Cambridge on May 11, 1998; and then presented a more developed version of the paper in 2000 at the Cambridge Realist Workshop Conference, *Critical Realism in Economics: What Difference Does It Make?*

The introduction of GMT into critical realism discussion occurred at the same time that Lawson's negative critique of econometrics (which was an important component of the critical realist discussion at the time) was being questioned to some degree by young heterodox economists such as Wendy Olsen, Paul Downward, and Andrew Mearman through presentations at the Critical Realist Workshop and the 2000 Conference and in publications over the next few years; see Downward (2003). They could not see why critical realism necessarily rejected the use of econometrics and other analytical statistical tools. In fact they did not see any necessary conflict between quantitative and qualitative research methods, if properly used; rather, they thought that the distinction between the two was rather fuzzy. This set them on a collision course with both critical realism and the dominant view that econometrics was the only valid research method for economics (heterodox or mainstream); and at the same time provided an opening for GTM (through its traditional emphasis on qualitative research methods) to enter the discussion. The upshot of this was the establishment of an advanced training workshop for postgraduate students on heterodox research methodologies under the auspices of the Association of Heterodox Economics (AHE).

The first AHE workshop was organized by Wendy Olsen in 2001. It featured presentations by Tony Lawson on causal explanation (philosophical foundation CR), Frederic Lee on the GTM (research strategy), and Wendy Olsen on statistical analysis and the use of various statistical (research methods) approaches and software packages to analyze qualitative data. The subsequent workshops in 2002, 2004, 2005, 2007, 2009, 2012, 2014, 2015 and 2016 were organized by Downward, Mearman, and Olsen, followed the same format but with greater emphasis given to research methods (and the kind of data associated with them) and their integrated use in the examination of a research topic.³ So over time, workshop research methods topics have included modeling strategies for analyzing complexity, triangulating quantitative and qualitative data, multilevel modeling, factor analysis, cluster analysis, regression analysis as econometrics, large data set analysis, fuzzy set analysis, qualitative comparative analysis, and social network analysis (Bruce Cronin). This increasing emphasis on research methods was fueled by two concerns: the first being the need to reorient economics so to match research methods with the diverse social material needed to be analysed, and the second to explain that any research topic that economists (especially heterodox economists) are engaged with requires the use of mixed research methods to deal with the mixed data.⁴

The outcome of the first two workshops was the first book that engaged critical realism and doing empirical economic research: *Applied Economics and the Critical Realist Critique* (Downward 2003). It followed the format of the workshops: the first part dealt with critical realism, the second with conceptual issues between critical realism and empirical work which included research strategies and research methods, and the last part applied critical realism to empirical analysis. However, the book did not have the hoped-for impact on heterodox economists. For it is painfully obvious that heterodox economics (and economics in general) remains dominated by a single research method – econometrics – with mathematical modeling being in second place. Currently, no core heterodox economics journal explicitly encourages that submitted papers should use more than one research method (and one kind of data). If, for example, you look at the *Journal of Post Keynesian Economics*, you come away with the opinion that econometrics is the only (and hence only legitimate) research method to be used by post-Keynesian heterodox economists.

The dominance of econometrics and mathematical modeling research methods courses taught in heterodox doctoral programs is also shockingly obvious.⁵ For example, in the USA the recognized heterodox doctoral programs at the University of Utah, University of Massachusetts Amherst, and New School for Social Research have for the past 30 years or so only provided a single research methods course: econometrics.⁶ This is in contrast to having their students take a course on methodology and/or learning different heterodox theoretical approaches, such as Marxist epistemology and theory.⁷ Consequently, when the time comes to write their dissertations, some students discover a disjuncture between the only research method they know, and what they actually want to research and write upon. Whether their dissertation advisors suggested alternative research methods or the students discovered them on their own, the end result was that they had to learn about them on their own, reading other people's research and imitating what they did, or to take classes outside of economics, such as in an undergraduate major in geography or history, or an MA in regional planning. In all cases there was no department support.⁸ Heterodox economists who received their training in other American doctoral programs had the same kind of experiences, such as taking an outside minor field in women's studies and learning about oral interviewing, learning ethnographic methods by doing independent reading, or going to different departments to learn about the research methods they use.⁹

This rather dismal state of affairs became strikingly obvious when former University of Massachusetts Amherst students formed a Union for Radical Political Economics (URPE) panel at the 2012 Allied Social Sciences Association (ASSA) to present papers on the importance of fieldwork for economics.¹⁰ This was driven by the fact (as noted above) that their doctoral program did not introduce them to any research method other than econometrics and hence they were unprepared to carry out the kind of research they wanted to do for their dissertation. Of course, without exposure in graduate school to alternative research methods that more accurately match the social data relevant to a research project, heterodox economists have to flounder around to find such approaches and then spend a great deal of time learning about them. This *Handbook of Research Methods and Applications in Heterodox Economics* is designed to overcome this omission of heterodox doctoral programs and the possible locked-in effects that result, and provide doctoral students and searching heterodox economists with an introductory overview of alternative possible research methods for their research.

I.1 THEMATIC OUTLINE OF THE BOOK

For any factual field of inquiry or scientific research field to exist, its object of study must be real (as opposed to fictitious or non-existent) and relate to the problems and issues that are the focus of the research community. Moreover, the methods used by the researchers to study the objects and address the problems and issues need to be grounded in the real world. Heterodox economics is concerned with explaining and advocating changes in the real historical process of producing the social surplus that provides the flow of goods and services required by society to meet its recurring needs and to promote the well-being of those who participate in its activities. In other words, heterodox economics is a historical science of the social provisioning process, and this is the general research agenda of heterodox economists. Drawing from all heterodox approaches, its explanation involves both human agency embedded in a transmutable, hence uncertain, world with fallible knowledge and expectations and in a cultural context, and social processes situated in historical time which affect resources, consumption patterns, production, and reproduction, and the meaning (or ideology) of market, state, and non-market, non-state activities engaged in social provisioning. This implies that agency can only take place in an interdependent social context which emphasizes the social and de-emphasizes the isolated nature of individual decision-making; and that the organization of social provisioning is determined outside of markets, although the provisioning process itself does, in part, currently take place through capitalist markets. Thus heterodox economic theory is a theoretical explanation of the historical process of social provisioning, currently within the context of a capitalist economy; and hence it is also a historically contextual explanation. Therefore, it is concerned with explaining those factors that are part of the process of social provisioning, including the structure and use of resources, the structure and change of social wants, structure of production, and the reproduction of the business enterprise, family, state, and other relevant institutions and organizations, and distribution. In addition, heterodox economists extend their theory to examining issues associated with the process of social provisioning, such as racism, gender, and ideologies and myths.

Heterodox economic theory is not a pre-existing doctrine to be applied to an invariant economic reality. Rather, there are many heterodox theoretical arguments which appear to contribute to its construction, but there is no reason why they should command blind acceptance; and, in any case, they fall short of making a comprehensive theory. Consequently, new theories are needed to fill the gaps and omissions. In either case, there needs to be a basis for accepting the theories as reasonable scientific theoretical contributions to explaining the social provisioning process. This suggests that the development of heterodox theory requires theory creation and theory evaluation. Scientific theory creation requires a philosophical foundation on which a research strategy for theory creation and evaluation is based. Moreover, and relevant to this *Handbook*, graduate students (and even seasoned researchers) need to be familiar with a greater range of research methods on which theories are developed and evaluated.

The objective of this *Handbook* is to introduce heterodox economists to a range of research methods that might prove useful in their research and the construction and evaluation of their economic analysis. Consequently, the *Handbook* is arranged into three parts: 'Philosophical foundation and research strategy', 'Research methods and data collection', and 'Applications'. Part I consists of three chapters that set out the basis for the

rest of the book's emphasis on research methods and their application. Jamie Morgan deals with the philosophical foundation in Chapter 1 on 'Critical realism as a social ontology for economics'. He argues that the nature of social reality determines how it should be studied and what kind of knowledge claims about it can be made. Critical realism is a particular ontological argument that has social reality consisting of agency, structure, and ongoing historical transformational process. Consequently, social qua economic events are not the result of correlative, but otherwise unconnected, outcomes of two variables; rather, all economic events are causally constituted. With critical realism providing the social ontological foundation for economic analysis, the next step is to adopt a research strategy (which is a way of constructing explanations of economic events) that is consistent with it. Jamie makes a number of suggestions: abduction, retroduction and retrodiction, contrast explanation, and the method of grounded theory. Frederic Lee follows on in Chapter 2 on 'Critical realism, method of grounded theory, and theory construction' by dealing with research strategy of the method of grounded theory, and connecting it to critical realism on the one hand and to research methods and data collection on the other hand, which comprises Part II of the *Handbook*. The heart of the chapter is the delineation of the critical realist-grounded theory (CR-GT) approach to theory creation and evaluation which illuminates their historical character and directly engages with mixed research methods (such as historical method, survey methods, participation observation method, analytical statistics, social network analysis, modeling, and cases), data triangulation, and historical theorization. Because critical realism is concerned with the social ontology of the domain of economics, and the method of grounded theory promotes the use of mixed research methods and data triangulation, heterodox economics does not have a preference for a particular method or data. This, Rick Szostak argues in Chapter 3, 'An interdisciplinary perspective on heterodoxy', makes heterodox economics predisposed to interdisciplinarity rather than towards a narrow disciplinary perspective. He then discusses the implications interdisciplinarity has for the practice of heterodox economics.

Part II of the *Handbook* consists of 12 chapters dealing with different research methods (although it is not inclusive of all research methods that may be useful to heterodox economists). It starts off with Lynda Pickbourn and Smita Ramnarain in Chapter 4 examining the widely held belief that quantitative, qualitative, and historical research methods are clearly distinct, with a great distance between them. They argue that the distinction is much less clear than most economists want to believe, and that since social reality is complex, the choice of methods is better determined by the research question being pursued than by disciplinary norms. Chapters 5, 6 and 7 examine more closely historical and qualitative research methods, while Chapter 8 is more quantitative in orientation. What is common to these four methods is that they create information which can be used as data (see Chapter 2 for the distinction), as opposed to relying on given data to be analyzed. Natalia Bracarense and A. Reeves Johnson start Chapter 5 by reiterating the inherent role of historical material in the CG-GT approach. They then present different historical methods and show how they can be used in heterodox economics in both their traditional and nontraditional forms. What is interesting about the latter forms, such as oral history, is that they 'create' historical data where it was presumed none existed. In Chapter 6, Tiago Cardão-Pito covers the use of survey methods for the creation of data for heterodox economic research. While often seen as

a qualitative research method, Tiago shows that it can also be seen as a quantitative research method. Amit Basole and Smita Ramnarain in Chapter 7 show the usefulness of qualitative and ethnographic methods for the creation of non-numerical data regarding social relationships and motivation. Andrew Mearman in Chapter 8 shows that experimental methods, which fall somewhere between quantitative and qualitative methods, can be used to create data that can be used to answer certain theoretical questions.

Chapters 9 to 14 deal with a broad range of quantitative methods. Common to these methods is that they utilize pre-existing data as opposed to creating their own data and that they analyze the data systematically. Chapters 9, 10, and 11 by Michael Murray, Paul Downward, and Nuno Martins, respectively, deal with the use of various statistical methods to examine quantitative data. What is evident in the three chapters is that the use of statistical methods, especially econometrics, is not incompatible with critical realism if done carefully. Consequently the methods can provide an understanding of the quantitative data. In Chapter 9, Michael Murray argues that factor analysis and cluster analysis are highly compatible with critical realist-grounded theory approaches as they help to clearly delineate causal mechanisms and structures. Paul Downward and Nuno Martins argue in Chapters 10 and 11, respectively, that econometric techniques are not the exclusive preserve of orthodox economics but can be effectively utilized as components in mixed methods approaches.

The next three chapters, Chapters 12, 13, 14, by Bruce Cronin, Jonathan Cogliano and Xiao Jiang, and Frederic Lee, respectively, deal with social network analysis, agent-based computational analysis, and modeling, which are research methods based on non-statistical mathematical techniques. Social network analysis explores relational data using graph theoretic techniques. Computational economics is used to explore theoretical issues using hypothetical economies, helping the heterodox economist come to a better understanding of various theoretical arguments. In Chapter 12, Bruce Cronin introduces the techniques of social network analysis, arguing that with their focus on social relationships, these are particularly useful in evidencing questions of interest to heterodox economics. Jonathan Cogliano and Xiao Jiang introduce agent-based modeling approaches in Chapter 13; their flexibility in incorporating highly heterogeneous agents with high degrees of freedom also makes this a useful tool for issues of heterodox interest. Contrary to the use of modeling by mainstream economists, Frederic Lee argues in Chapter 14 that modeling is a research method that contributes to theory construction and development. Moreover, he argues that mathematical modeling is consistent with critical realism and the method of grounded theory when the structures and causal mechanisms in the real world are constituents of the world in the model. As a result the working of the world in the model helps develop the CR-GT narrative of how the real world works.

The last chapter in Part II, Chapter 15, on multiple and mixed research methods, essentially brings together all the above research methods and their data. Bruce Cronin demonstrates how multiple and mixed methods contribute to a heterodox approach to economics and provides a 'how to' guide. Good research, and good theory development, involve at least two different research methods and data types; and so the monolithic econometric approach of mainstream economics is necessarily limited.

Part III consists of 14 applications of research methods to different economic topics.

What is central to most of these chapters is that mixed research methods and data triangulation are used, and the reasons why they are being used. Thus the reader is provided with an in-depth introduction to how to use different research methods, and what they bring individually and together to understanding the research topic at hand.

In Chapter 18, Lynne Chester supplements quantitative analysis of secondary data with interviews, focus groups, and surveys to provide otherwise unobtainable policy insight into the effects of energy price changes on low-income households. The chapter relays valuable field experience of recruiting and working with 'economically marginalized' populations in research projects. In Chapter 19, Bob Davidson builds a case study of the marketization of the home care industry in New South Wales from a historical analysis of documents, quantitative analysis of secondary data, interviews with participants, focus groups, and participant observation. In Chapter 23, Therese Jefferson, Siobhan Austen, Rhonda Sharp, Rachel Ong, Valerie Adams and Gill Lewin use mixed methods to examine employment decisions of aged care workers in Australia. Quantitative analysis of secondary and survey data was used to identify 'demi-regularities' that were then interpreted with richer insights drawn from participant interviews, highlighting the role of 'recognition' and 'signals' in employment decisions. In Chapter 24, Lynda Pickbourn uses mixed methods to enrich economic analyses of migration and remittance behavior. She contrasts the use of unstructured interviews, participant observation, and focus groups to generate data in qualitative research with standard approaches that use surveys to collect data to test hypotheses; with qualitative approaches broadening understanding, such as the role of gender in migration and remittance behavior. In Chapter 29, Lynne Chester presents an analysis of changes to the Australian electricity sector within a *Régulationist* framework, employing an historical interpretation of an extensive range of quantitative and qualitative data. She provides a systematic framework for the selection and evaluation of data sources.

A number of chapters highlight the value of supplementary methods when there are weaknesses in available quantitative data. In Chapter 16, Armağan Gezici uses interviews and quantitative analysis of secondary data as supplementary methods to compensate for deficiencies in data needed for a conventional analysis of investment behavior in Turkey. These highlight risk-aversion, shorter time horizons, and export propensity as important factors not considered by standard approaches. Jesús Muñoz combines documentary analysis with interviews within an historical perspective in Chapter 20, to develop a case study of the operation of the Mexican stock market, where volatile and emerging market characteristics make conventional quantitative analysis difficult, which in any case is prone to superficiality. He finds participants cling to a certainty paradigm in the face of market turbulence. In Chapter 25, Mieke Meurs supplements statistical analysis of economic data with interviews, providing opportunities for smallholders to explain their motivations for behavior, opening up alternative explanations to standard models, prompting alternative policy proposals. Carmen Deere and Zachary Catanzarite employ a mixed methods approach in Chapter 26, to examine intra-household distribution of wealth, using focus groups, interviews, and participant observation to supplement quantitative analysis of secondary data. This allows questions to be asked about wealth distribution by gender that are not accessible from the statistical analysis of standard data sets.

Finally, a set of applications highlight the use of a specialized single methodological approach to tackle questions of heterodox interest. In Chapter 17, Gyun Cheol Gu uses a grounded theory approach, drawing on empirical studies of price formation, to refine the post-Keynesian price stability and cyclicity framework and models. Jamee Moudud employs econometric time series techniques in Chapter 21, to demonstrate persistent differences in policy regimes, indicating policy-making as a contested process. In Chapter 22, Gennaro Zezza provides an application of modeling – stock-flow-consistent models – demonstrating how modeling whole economies can address post-Keynesian questions ignored by conventional economic models. Thomas Lambert and Michael Bewley present an application of experimental methods in Chapter 27, to evaluate the effectiveness of enterprise zones in Kentucky. And in Chapter 28, Susan Schroeder demonstrates how econometric time series techniques can be used to distinguish different types of business cycles, a long-standing heterodox theoretical concern.

I.2 REFERENTIAL STRUCTURE

Beyond this thematic introduction, the structure of the *Handbook* can also be considered in terms of its referential structure, the citation pattern of its chapters. Figure I.1 presents a visualization of the links among the authors cited in each chapter, the squares representing chapters, the circles authors cited, and the arrows contributions to the chapter. In most part, the first two parts of the *Handbook* engage with a core of common references, broadly within a triangle of Chapters 1–3, constituting Part I. Part II, Chapters 4–15, fills this triangle, with the exception of Chapter 6 on formal survey methods and Chapter 12 on social network analysis; these concern specialist methodologies, somewhat novel in their application to heterodox economics. The application chapters, Chapters 16–29, ring this core, with some connections to the core-cited authors and many links to specialized sources.

Figure I.2 presents the core author citations in the *Handbook*, what is known as the ‘3-core’, as detailed in Chapter 12. Chapters are represented as squares and authors represented as circles and an arrow representing an input to the chapter; larger squares and circles represent more citations and cites respectively. Chapters 15 (Cronin), 4 (Pickbourn and Ramnarain), 2 (Lee), 1 (Morgan), and 11 (Martins) make the greatest number of citations to authors within this core. Perhaps not surprisingly, as lead editor of the *Handbook*, Frederick S. Lee is the most cited and most central author in the citation network, followed by Tony Lawson, Paul Downward, and Andrew Mearman. The proximity of the last three reflects the close collaboration of Downward and Mearman, with Lawson’s critical realism as a major reference point. Also of particular note in structuring the centre of the citation network are Shelia Dow and Andrew Sayer, and the paradigmatic figures of Karl Marx and John Maynard Keynes, either side of Chapter 16 (Gezici), and Milton Friedman between Chapter 1 (Morgan) and Chapter 2 (Lee). To the left, Barney Glaser and Anselm Strauss, Alan Bryman, and Yvonna Lincoln (but interestingly, not frequent co-author Norman Denzin), pioneers of grounded theory and mixed method methodologies, and around the edge of the core, important contributors to the critique of methodological individualism and post-Keynesian perspectives.

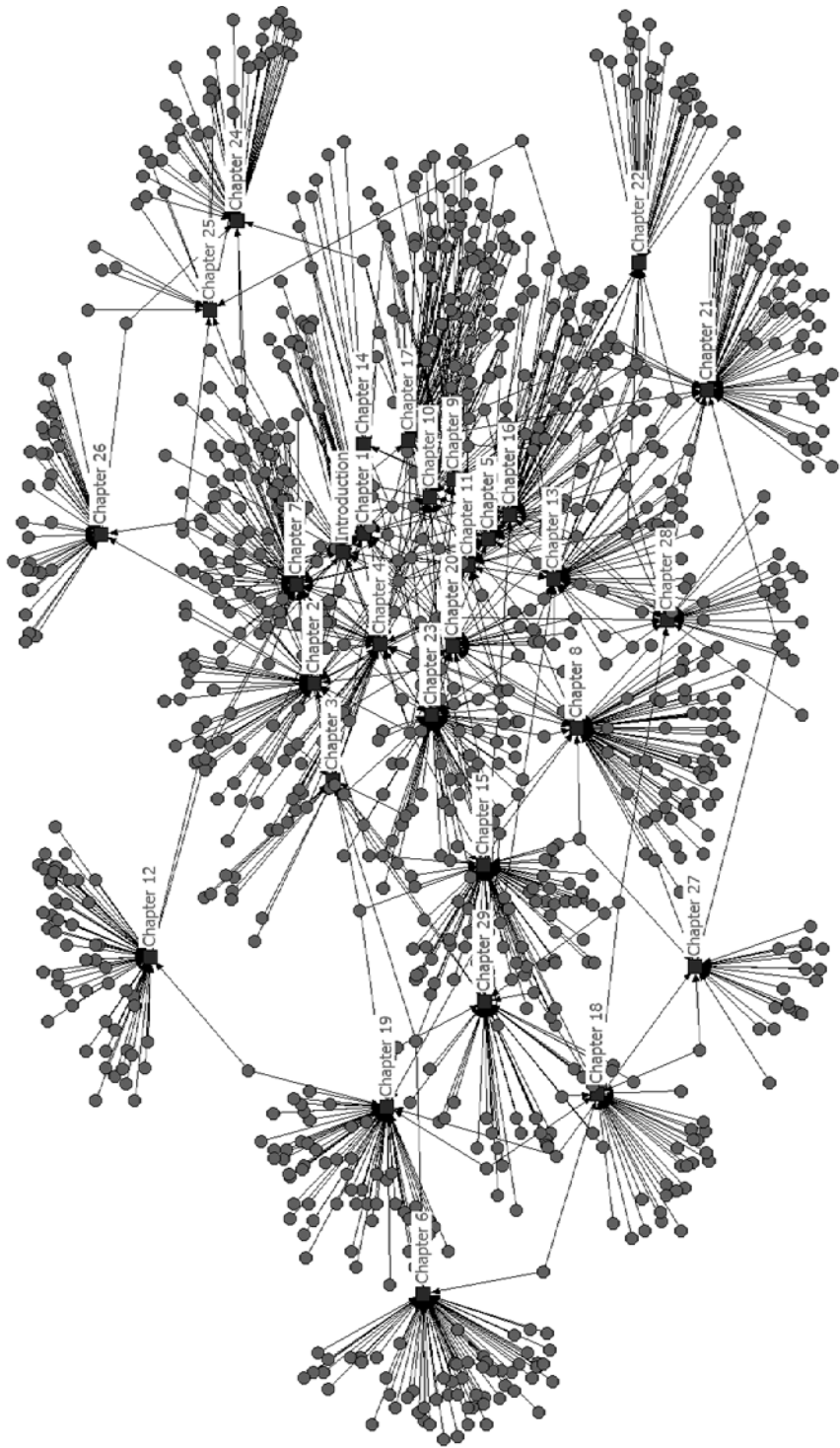


Figure I.1 Citation structure of the Handbook

I.3 CONCLUSION

This introduction has provided both thematic and referential pathways to help readers locate related material in both the exposition of methods and application examples. We are confident that the chapters in this *Handbook* will provide a solid scaffolding for those wishing to rise from a broad critical realist-grounded theory understanding to more rigorous concrete enquiry. We are hopeful that new generations of heterodox economists will find the means here to take their investigations forward with confidence, and that established academics will find tools here to explore or refine new approaches and perhaps help generate broader research methods programs in our graduate schools.

NOTES

1. For the few who have used GTM in economics, see Reid (1993), Reid et al. (1993), Finch (2002), and Scheibl and Wood (2005).
2. Abduction (or sometimes called retroduction) is a form of theory construction that goes from the surface event to the structures and causal mechanisms that produce it by inferring causes from the effects. The first step in this process is a 'hypothetical' theoretical-abstract redescription of the events based on existing theoretical arguments and qualitative and quantitative material. The next step is to postulate and identify the structures and causal mechanisms underpinning the theoretical redescription, thereby producing a theoretical explanation (hence theory) of the event. The final step is to check whether the theory is empirically valid. Although, advocated by critical realists, abduction is in fact weak on realism. That is, there is no requirement that the theoretical redescription be empirically grounded; and nor is there any requirement that the postulated structures and causal mechanisms be real and empirically grounded. Hence, it is argued by some critical realists that abduction permits the use of analogies, similes, and metaphors as useful ways to identify causal mechanisms and structures. But since the latter are by their nature not real, they cannot contribute in any manner to the construction of a realist theory and in any case may direct the attention of the researcher towards fictitious, hence empirically ungroundable, causal mechanisms and structures and thus to non-factual theories. Finally, abduction does not indicate how the causal processes should be delineated and articulated; that is, the analytical and literary form the theory should take. In short, abduction is insufficient as a research strategy for the creation of a critical realist grounded theory (Lawson 1996, 1998, 1999, 2003; Sarre 1987; Sayer 1992; Pratt 1995; Boylan and O'Gorman 1995; Yeung 1997; Runde 1998; Downward 1999; Oliver 2012).
3. The workshop initially obtained its funding from the Economic and Social Research Council (UK). But in 2006 the composition of the panel evaluating the applications for funding changed so that it was dominated by mainstream economists. The outcome was that the AHE's application for funding was rejected largely on the grounds that it did not involve mainstream economics. The subsequent workshops were funded by the Cambridge Political Economy Society Trust and/or the AHE. For further information about the AHE and its workshop, see <http://www.hetecon.net>.
4. The lecturers and postgraduate students at the workshops include many who are contributing chapters in this *Handbook*: Jamie Morgan (Chapter 1), Frederic Lee (Chapters 2 and 14), Andrew Mearman (Chapter 8), Paul Downward (Chapter 10), Bruce Cronin (Chapter 12), and Therese Jefferson (Chapter 23).
5. Mathematical economic modeling as a recognized, independent research method has emerged over the past 25 years. Its differentiation from mathematics as a way to do economics as opposed to just representing economic theory and arguments emerged when economists started considering that it was the world in the economic model that was the subject of their research interests rather than the model of the actual world; see Chapter 14 for further discussion.
6. This was also the experience of heterodox economists who attended mainstream programs at the US universities of Stanford, MIT, Harvard, Yale, and Rutgers from the 1960s to early 1980s.
7. In the case of Notre Dame, when it still had a heterodox graduate program, students were introduced to the Institutionalists' research strategy of pattern modeling.
8. Doctoral students at the University of Missouri-Kansas City also only take econometrics as their research methods course. But the department makes it quite clear that they need to be familiar with more

than a single research method and encourages the students to take research methods courses in other departments.

9. Heterodox postgraduate students in Australia, the United Kingdom, Germany, and elsewhere face similar issues. In short, if a student is associated with an economic department then learning about alternative research methods is quite difficult to come by (unless you are at the University of Leeds, Greenwich, Kingston or the West of England, UK; or the University of Bremen, Germany). But if a student is located in, say, a business school and is doing an economics research topic, then they are faced with an abundance of research methods to choose from; yet this richness of methods isolates them from most economists who cannot handle such diversity.
10. The presenters included many who are contributing chapters in this *Handbook*: Smita Ramnarain (Chapters 4 and 7), Amit Basole (Chapter 7), Lynda Pickbourn (Chapters 4 and 24), and Armağan Gezici (Chapter 16).

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