

UTILISING NETWORK ANALYSIS TO EXAMINE AUSTRALIA'S ECONOMIC
HISTORY DISCIPLINE: CONTRIBUTIONS OF AN INTERDISCIPLINARY APPROACH

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Abstract

This paper develops a framework to examine Australia's economic history discipline between around 1960 and 1990. The approach to economic history experienced a great upheaval in the early 1960s, and there were various, additional intellectual changes throughout the period. Central to these developments were Noel and Syd Butlin, a strong group of economic historians at the ANU in Canberra, as well as individuals in smaller communities in Melbourne, Sydney and Adelaide. This project takes a collective view of intellectual history, and rather than the chronicle of isolated individuals, changes to the whole, interdependent community of practitioners are analysed. Qualitative techniques are augmented with visual social network analysis, in which network maps are constructed based on a number of different contextual factors. This composite methodology allows the social and professional configuration of the individuals to be linked to changes in the intellectual character of the discipline. By doing so, this methodology can extend the current understanding of this community, as well as provide a framework through which other intellectual communities may be analysed.

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I

Intellectual history is often told as the story of eminent individuals and published works. While this approach is certainly helpful, it can neglect the social elements that affect the construction of ideas and the diffusion of innovation. These concerns have been addressed in this paper, in which a composite methodology is proposed to analyse the economic history discipline in Australia between around 1960 and 1990. This period represents major intellectual changes for economic history in Australia. The early 1960s represents the development of a coherent and professional approach within the discipline, with this approach then diverging from the mid-1970s. Alongside these changes was the formation of a social and professional community of intellectuals, in particular the brothers Syd and Noel Butlin and their colleagues at the ANU in Canberra, with other communities at major Australian institutions in Sydney, Melbourne and Adelaide.

This paper focuses on the methodological framework used to discuss the changes to Australia's economic history discipline over time. Section II outlines the background to the economic history discipline in Australia. Section III discusses the aspects of the case study and the methodology that make this discipline worthy of study. Section IV presents the methodology, outlining the qualitative framework and the social network analysis (SNA) techniques that are used. A preliminary network is presented in this section to demonstrate the usefulness of this methodology, and the alternative perspective that SNA provides. The combination of techniques means that the social and professional configuration of the individuals can be linked to changes in the intellectual character of the discipline. In doing so, this methodology is able to extend the current understanding of this community, as well as provide a framework through which other intellectual communities may be analysed.

II

Economic history in Australia has its origins in the early-twentieth century with the publication of W.P. Reeves' *State Experiments in Australia and New Zealand* (1902) and T.A. Coghlan's (1855 – 1926) *Labour and Industry in Australia* (1918). Along with the interwar "storytellers" in E.O.G. Shann (1884 – 1935) and Brian Fitzpatrick (1905 – 1965), this earlier tradition favoured a causal narrative presentation as well as the discussion of real actions and events in the economy (Coleman 2015, 13; Lloyd 2015). There was a quantitative emphasis (Coghlan was NSW government statistician, after all), an interest in political issues, class

structure and industrial relations, as well as the (largely implicit) use of classical economic theory (Lloyd 1995). The links between different disciplines in the social sciences at this time were strong, and scholars moved freely between economics, history, economic history and even literature (Lloyd 2015).

After the ‘Analytical School’ of this early period (Lloyd 2015), and the disappointing output of most social sciences (including economic history) in the 1920s and 1930s, the immediate post-war period delivered a significant increase in the quality of the work in economic history. There was a focus on industry studies and the history of money and banking (Schedvin 1979), with a growing interest in Kuznet’s contributions to national income accounting and the structural change of the Fisher/Clark model (Lloyd 2015). However, Schedvin (1979, 545) argues that despite a number of important contributions, economic history was still “seriously unbalanced”, with undue attention paid to primary industries and to the period before 1851. Practitioners were also largely scattered and isolated, and it was not until the post-war surge in tertiary education that the establishment of a community of economic historians in Australia occurred.

The early 1960s represented a major “reorientation” of the approach to economic history in Australia (Schedvin 1979, 545), with the narrative-based approach changing to one with a greater use of statistics, the more explicit use of economic theory, and the treatment of individuals in an abstract and aggregate way (Lloyd 1995). Central to the development of this orthodoxy was Noel Butlin (1921 – 1991), with the publication of his two seminal works *Australian Domestic Product, Investment and Foreign Borrowing, 1861 – 1938/9* (1962) and *Investment in Australia’s Economic Development, 1861 – 1900* (1964) representing the most decisive shift from the older approach. His contribution to the field was such that Sinclair comments that “subsequent writing on the subject has been either a direct outgrowth from Butlin or was influenced by him in some way” (1987, 245). Butlin’s publications were significant for their use of a wealth of previously neglected collections of colonial and state statistics, the synthesis of these statistics with qualitative data to formulate a rather persuasive argument, and the filling in of many of the empirical gaps that had previously hampered quantitative work in other, related areas (Schedvin 1979). Butlin’s interpretation focused on capital formation and investment, and rather than the account of real individuals and events, his was a work of “aggregate economic analysis over time” (Lloyd 2015, 59).

Noel was assisted in this work by both ample funding and an able group of younger practitioners. Noel led a strong department of economic history at the ANU, and after a

substantial career at the University of Sydney, his elder brother Syd Butlin (1910 – 1977) joined him there in the early 1970s. There were significant increases in the number of academic positions, departments and Chairs in economic history at most of the major universities, with the institutional expansion of this discipline part of a wider, post-war emphasis on tertiary education and the social sciences in Australia (Macintyre 2010). Though Canberra was the dominant location in the field at the time, there were additional intellectual communities in Sydney, Melbourne and Adelaide. Aside from the Butlins, other members of the ‘core’ of the discipline in this period include Herbert Burton², Nev Cain, Alan Barnard, Colin Forster, Alan Hall, Graeme Tucker, Ernst Boehm, John McCarty, Boris Schedvin, Gus Sinclair and JA La Nauze. This project is centrally interested in these ‘core’ economic historians, but also in individuals who may have worked primarily in another field, but influenced the discipline through their published work or through social and professional interactions with ‘core’ members. This includes economists, historians, collaborators, colleagues, members of professional societies and economic historians overseas.

Alongside this ‘orthodox’ approach and the older, narrative-based approach existed various alternative schools, including the institutional, Marxist, radical social, and historical geography perspectives of economic history. There were also a number of thematic niches such as female economic contributions, labour history, urbanisation and the Aboriginal economy (Lloyd 1995). While engagement with these alternative approaches or themes had origins in the first half of the twentieth century (either explicitly or implicitly), from the mid-70s members of the orthodox approach began writing in these alternative schools. The result was a divergence of what was considered ‘orthodox’ in economic history in Australia in the latter half of this period. There was also a number of debates that continue to shape the way that historical economic change in Australia is discussed. This includes the appropriateness of staples theory and the small open economy model to long-run development, the timing and causes of certain depressions, the motivation for settling Australia, colonial socialism, and the merits of Kuznet’s national income accounting techniques for estimating growth. Changes to the approach, the engagement with different themes and debates about interpretations of Australia’s economic past are all important aspects of the discipline’s *intellectual character* in this period. This intellectual character has been affected by the social interactions of the

² Burton was appointed as Australia’s first Professor of economic history at the CUC in 1948.

individuals, and it is through this lens – the combination of social interactions and intellectual contributions – that this study is framed.

III

Though there has been some interest in the formation of different approaches to economic history, work in this area is not comprehensive. Economic history disciplines overseas have attracted the most interest, and the differences and disputes between the deductive, American-based cliometric approach and the inductive, British narrative-based approach have been discussed in detail (see Lyons et al. 2008 for a review; Hudson 2001). Cliometrics, or the ‘new’ economic history, began in the US in the late 1950s and combines economic theory, quantitative methods, and the use of hypothesis testing to explain economic change over time (Lyons et al. 2008). This contrasts with the British approach to economic history, which is less “mechanical”, has a greater emphasis on understanding the complexity of economic interaction, and uses economic theory in an explanatory way (Kindleberger 2001, 194). Rather than a branch of applied economics, members of the British approach generally see themselves as more integrated with history and the social sciences (Kerridge 2001; Lloyd 2001). However, their approach has been criticised by the cliometricians as “not sufficiently economic” (Rostow 1957, 520).

Economic history in Australia has received much less attention. The discipline has been analysed broadly, giving an overview of the main individuals and approaches to economic history (see Coleman 2015; Fitzpatrick 1963; Jetson 2010; Lloyd 1995, 2015; Schedvin 1979, 1989; Sinclair 1987). A narrative-based school is identified as being dominant from the 1920s – 1940s, with an orthodox approach emerging from the early 1960s (Schedvin 1979; Sinclair 1987). There is contention about the extent to which the orthodox approach was an Australian branch of the American cliometrics revolution. While Schedvin (1989) has argued that “there has been no serious challenge to cliometrics in this country”, Lloyd (1995, 66) comments that the Australian orthodox approach is not a good example of cliometrics – it explains concrete processes of economic change rather than constructing “instrumental, ahistorical” models. There is also evidence to suggest a legacy from the British approach to economic history, as until the late twentieth century the majority of practitioners completed postgraduate training in the UK, and many British economic historians took up positions in Australia. However, economic history in Australia has remained distinctive from that of both the UK and the US (Coleman 2015). The discipline has operated on a unique trajectory from earlier practitioners, in particular the quantification first realised by Coghlan

and the sectoral development theory of Fisher and Clark (Lloyd 2015). The idiosyncrasies of the Australia's economic landscape have also shaped the discussions, with Australia's status as a settler society, a commodity-led exporter, and a nation with historically high levels of state intervention meaning that economic history has a distinctive local flavour. The unique composition and trajectory of economic history in Australia makes it an interesting case study, and worthy of study not just as an offshoot of dominant overseas approaches.

This study takes a collective, pluralistic approach to intellectual history, discussing community-wide changes to ideas. Historiography and the history of economic thought are overwhelmingly individualistic, generally examining a particular intellectual and their influences. This approach is helpful, as it provides a concentration of detail that is not feasible for community-focused studies. However, by examining individuals in isolation, these studies can neglect the interdependencies that are present in the construction of ideas. The concept of 'intellectual communities' is gaining traction in the literature, with the *History of Political Economy* recently dedicating an issue to such studies (Spring 2011). Intellectual communities have been examined for the French Physiocratic movement (Charles and Théré 2011), the Cambridge community in the mid-twentieth century (Marcuzzo et al. 2008), interwar Vienna (Craver 1986a; Klausinger 2006b; Leonard 2011), the 'Pareto Circle' (Cot 2011) and the Keynesian revolution (Cord 2011). However, the number of studies are limited and while the impact of social relationships between individuals are discussed, they are not analysed in a systematic way.

SNA is rarely applied to intellectual communities in historiography or history of economic thought. Network analysis is a collection of visual techniques and theoretical frameworks that can be used to analyse the patterns of relationships between individuals. The field is vast, and the relevant work in this area is extensive – covering the formation of communities (Burt 2000; Larson 1977; Skyrms and Pemantle 2000), the effects of different types of relationships on the diffusion of knowledge (Burt 2004; Friedkin 1998; Millar and Choi 2009; Nieves and Osorio 2013; Sorenson et al. 2006), how academic disciplines develop (Crane 1972; Fuchs 1993; Kuhn [1962] 1970; Mulkay et al. 1975; Mullins 1973) and how cognitive changes occur in a community (Granovetter 1973; Hansen 1999; Montanari and Saberi 2010; Nieves and Osorio 2013). SNA provides an alternative visual perspective on a community, giving a snapshot of the relationships for a sizeable number of people in a community. It is also particularly helpful in explaining the way that social and professional relationships affect the ideas of individuals and groups. As the focus of the history of

economic thought is on the changes to these ideas, this methodology complements the literary techniques that are generally used to analyse intellectual communities quite nicely.

IV

This section describes the various quantitative and qualitative techniques that are used in this study, as well as outlining the aspects of the intellectual character or social structure that each technique captures. A preliminary network is presented to explain the practical aspects of SNA, as well as to demonstrate the usefulness of the approach for this case study. By adopting an interdisciplinary approach, this methodology has the potential to provide insights into the social and professional interactions of the community, as well as linking changes in the social structure to changes in the intellectual character of the discipline.

1. *Social network analysis*

SNA is a collection of visual and numerical graph analysis methods that are used to analyse the pattern of relationships among individuals (Hu and Racherla 2008). In each of the network maps, a participant is referred to as an *actor* and represented as a *node* in the network. Actors can be individuals, organisations, texts or any other group of related entities. Relationships between the actors are shown as lines, referred to as *ties*, between nodes in the network. Values can be assigned to these relationships, with a thicker tie indicating a proportionally stronger relationship between the two actors. Finally, there are arrowheads on each tie, showing the direction that the relationship flows. If there are arrowheads on one end of the tie, it means that influence or information is given by one individual and received by another. Arrowheads on both ends mean the relationship is reciprocal.

Network maps are constructed via a matrix with individuals or groups or texts listed on both the horizontal and vertical axis. The number at the junction of the two actors describes the presence and strength of the relationship between them (Hanneman and Riddle 2005). These matrixes can then be analysed using the network analysis software *UCINET* and visualised with its built-in graphing module *NetDraw*. *NetDraw* visualises the community so that the ties between individuals are as short as possible. Practically, this means that individuals who have stronger relationships or have a number of connections in common are placed together in a cluster. This means that a network map can be used as a visual aid, with regions on the map indicating different groups or cliques.³

³ See figure 1 below.

Network maps will be constructed based on various social and intellectual relationships between individuals in this community. The first is a citation network, which is constructed from the discipline's body of literature. While this network will only be constructed from texts of economic history, the citations that are recorded may be from a variety of disciplines, time periods and locations. Citations indicate an aspect of the *intellectual character*, as they represent shared pieces of knowledge and the 'footprints' of intellectual conversations between two individuals (Newman 2010; Siler 2013). They can also show the degree of similarity between texts, the influence of certain authors, the relatedness of the text to other disciplines, as well as indicating works that are 'paradigmatic' for the discipline (Leydesdorff and Amsterdamska 1990; Newman 2010; Small 1978). Citations hold various social functions as well, and can indicate social influence, intellectual debts, political motivations, and attempts at validation by authors (Gilbert 1977; Gondal 2011; Kaplan 1965; Merton 1968). This dual nature means that citations are a good indicator of the link between the social and intellectual dimensions of intellectual communities.

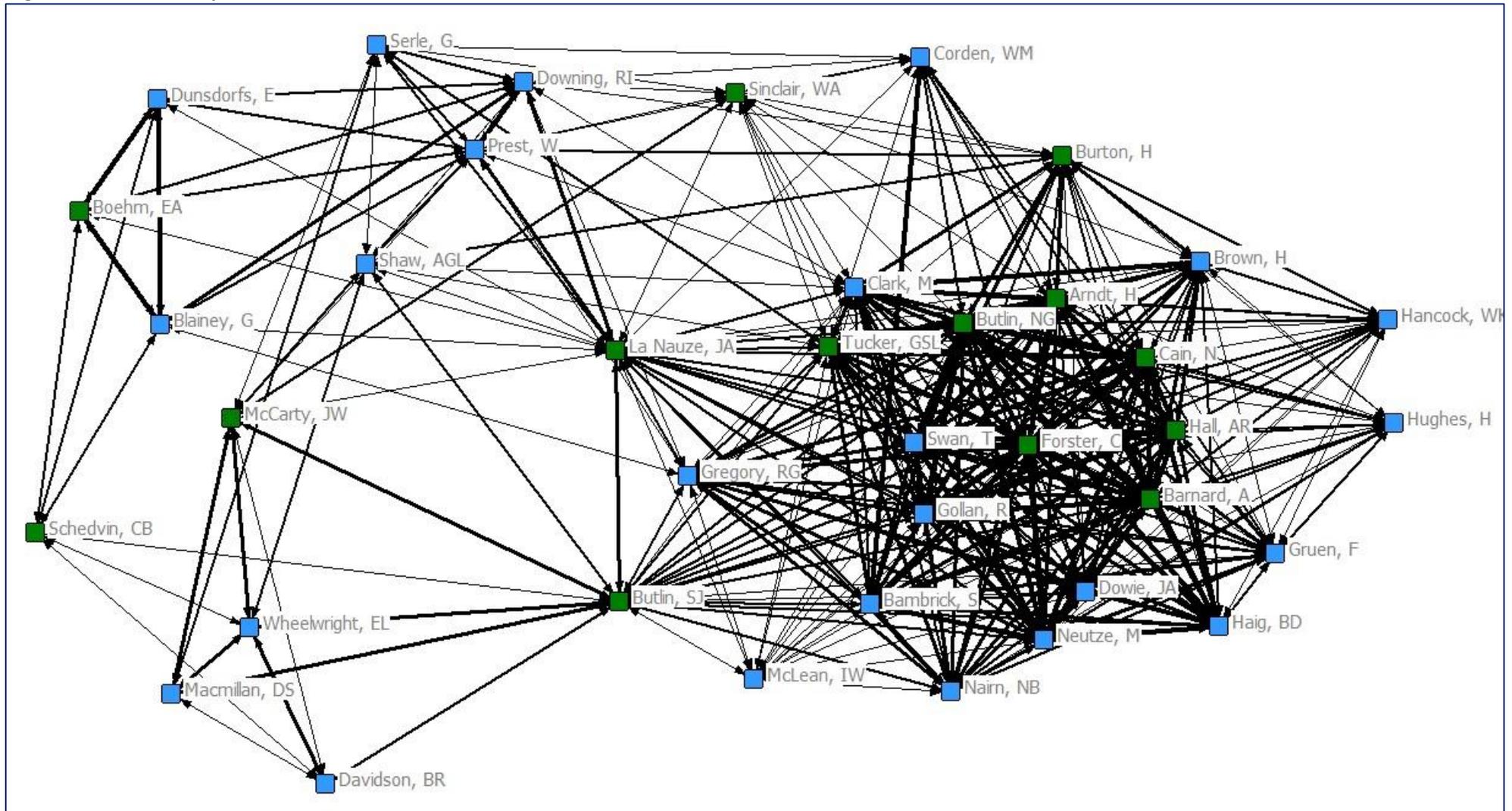
Collaboration is another way to indicate both social and intellectual relationships, and while co-authorship is the most common way to visualise this effect, collaboration itself covers a broad spectrum of interactions (Cronin 2004). Co-authorship captures quite significant interpersonal interaction as well as the intellectual influence from trading theoretical understanding and insights (Moody 2004; Newman 2004). However, not all individuals who collaborate become co-authors, and acknowledgments are used to analyse a wider set of collaborative practices (Katz and Martin 1997; Laudel 2002). Acknowledgments capture both *trusted assessorship* and *mutual stimulation*. The first is related to the publication of results, and describes the individuals that an author draws on to shape and critique insights in published material (Cronin 2004; Laudel 2002; Mullins 1973). *Mutual stimulation* is not related to a single research contribution, instead indicating the effect of ongoing interaction and communication, with individuals prompting each other to think about unsolved issues, new perspectives or new research possibilities in their field (Laudel 2002). Discussions of this nature, if they helped to shape the course and outcome of a project, are generally included in the acknowledgments of a text. Acknowledgments are also useful in determining peer alliances and genealogies of influence (Cronin and Overfelt 1994), and while citations are included in the reward system for research, acknowledgments are not. This means that while citations may include political motivations or positioning strategies, acknowledgments are a "tapestry of private interactions and interplays between scattered actors", dutifully capturing a

“kaleidoscope of moral support and material influences” (Cronin 2004, 558). Collaboration, in either form, indicates both personal interaction and intellectual stimulation, meaning it is able to show the link between the social and cognitive structures of a discipline.

Physical space is a crucial dimension that structures both social interaction and the diffusion of ideas. Institutional affiliation is used to map the geographic proximity between two individuals, under the assumption that if two individuals work within the same university or faculty, they are more likely to have contact and communication than those who are geographically disparate (Sorenson et al. 2006). Geographic proximity indicates lower travel costs, less cultural distance and easier communication, all of which increase the chance that individuals will interact more with those physically closer to themselves (Hedstrom 1994). In addition to greater frequency of interaction, geographic proximity leads to in-person communication which, through the incorporation of non-verbal cues, increases the chance that knowledge is received and understood more efficiently (Broekel and Binder 2007; Polanyi 1966; Sorenson et al. 2006). This means that geographic proximity leads to a greater *frequency* and *quality* of communication, and can positively affect the diffusion of ideas amongst the community.

Figure 1 below presents a preliminary network based on geographic proximity in this community. This map visualises the individuals at the core and the first periphery of this study, with the ties between individuals indicating that they spent time working together at a university. Thicker ties between individuals mean that they spent a greater number of years working together. This map shows that there is a large cluster of individuals who spent a number of years working at the same institution (the ANU), including Butlin, Barnard, Cain, Hall, Tucker, Forster, amongst others. As this cluster shows individuals that spent a number of years in reasonable physical proximity of each other, it is expected that they had a greater level of interaction and opportunity to influence each other than those in different cities. This preliminary network is presented here to demonstrate some of the practical elements of using SNA, as well as to show how the social structure of the community may affect the ideas of the individuals.

Figure 1 – Preliminary institutional affiliation network



Note: Core and first periphery individuals only. Green nodes indicate those that are at the core of the discipline. Blue nodes are those at the first periphery. Ties between nodes indicate that those individuals overlapped in the years they spent working at certain universities. Thicker ties mean those two individuals spent a greater amount of time working at the same university. Compiled by author, using UCINET and NetDraw.

The use of citation, collaboration and institutional affiliation network maps in this project is with the aim of capturing various social and intellectual relationships in this community. However, it is necessary for the visual network analysis to be linked to the literary character of the discipline. Because of this, SNA is used in conjunction with qualitative methods for discussing intellectual communities.

2. *Qualitative*

The qualitative component is used to determine the intellectual character of economic history in Australia, as well as the changes to this character over time. Texts are analysed following both Lloyd (1995) and Coleman's (2015) framework for examining economic history in Australia. Lloyd (1995) argues that differences in approach are due to differences in the basic assumptions about how the economy operates (ontology), and the methodology for gaining knowledge of it (epistemology). Ontology examines the entities that can, or are said to exist within a system, as well as the way in which these entities are grouped, placed in a hierarchy or categorised. For economic history, the ontology of the text refers to the how the author sees the nature of the social world - whether the economy is the behaviour of individual actors, or the behaviour of "irreducible structures of social, institutional and political relations" (Lloyd 1995, 70). Epistemology discusses the nature of knowledge, and how knowledge about a certain entity can be acquired. The discipline's texts are studied for their methodology and their way of building knowledge about the economic world of the past. There is a difference between instrumentalism, which manipulates and interprets models and data; and realism, which describes and analyses real cases of economic and social change. Lloyd (1995) argues that this epistemological division can be seen as the difference between deductive, abstract model-building and inductive, historical explanation.

Coleman (2015) uses a series of spectra to describe differences in the approach to economic history. The first is methodological, contrasting works that have a greater relationship with economics or history. Next is a spectrum that contrasts texts that are epochal and thematic with those that are episodic and sectional. There is also differences between 'internalist' and 'externalist' texts, with the internalist advocating that Australia's development was largely unique and independent of world economic forces, and the externalist arguing that Australia's development was closely tied to Britain's progress. The final spectrum that Coleman discusses is on the role of the economic historian as either a scholar or an engage, which contrasts between the historian "more interested in how the machine works, and the

historian who is, at bottom, more interested in what the machine can be put to do” (Coleman 2015, 27).

Biography and oral history will also be used, contributing to both the SNA and literary components. These sources offer quantitative details for the institutional affiliation networks in particular, as well as clarifying the nature of various types of collaboration. Additionally, these sources offer unique perspectives and additional details for the qualitative component. Interviews are currently being conducted with members of the community, with questions focussed on the individual’s interactions with others in the discipline, as well how their approach to economic history has been shaped. While human memory is flawed, and these sources may be biased, it offers a good medium through which the link between personal interactions and the intellectual structure of the discipline may be analysed.

CONCLUSIONS

This paper presents a methodology for examining the economic history discipline in Australia between around 1960 and 1990. This period represents major intellectual changes for the discipline, including the development of a coherent theoretical and methodological approach in the early 1960s, and the divergence of this approach from the mid-1970s. By examining this discipline as a whole rather than as a series of discrete individuals, this project aims to account for various contextual and personal interdependencies that exist within intellectual communities. Additionally, the systematic use of social network analysis in a study of intellectual history is novel for the discipline, and the framework outlined here could certainly be applied to other disciplines and time periods.

The value of including network analysis in a study of intellectual history is that network analysis includes detailed methodological and theoretical frameworks for analysing how social interactions affect the intellectual character of the community. Firstly, the network maps provide an alternative, visual perspective on the community, providing a snapshot of the interrelationships between individuals in the period. Secondly, the application of network theory links the ideas of the community to the social interactions that are visualised with the network maps. By augmenting qualitative techniques with social network analysis, this methodology has the potential to extend the understanding of formation and development of Australia’s economic history discipline.

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