TWO-MODE NETWORKS OF NEW EDUCATION

How was the reform movement built up in the United Kingdom?

Lauri Luoto

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ABSTRACT

This dissertation examined the structure and development of the New Education Movement in the United Kingdom between 1875 and 1935. New Education was a reform movement that aimed to address the changing educational needs of societies and accommodate new moral doctrines and discoveries in the field of child psychology. Past literature has shown that the movement was ideologically fragmented. Thus, this dissertation implemented the previously proposed idea of treating New Education as a social movement rather than as a paradigm and analysing the networks between reformers.

To identify the key reformers, a reputational sampling method was applied. The study adopted a mixed methods approach, where information about key reformers' connections to various organisations was gathered from biographies and histories and treated as co-affiliation data ($n_1 = 58$, $n_2 = 49$). These quantitative data were complemented by documentary evidence that was used to validate and illustrate the observations made using two-mode network analysis.

Article I presents a case study of the network of Robert Baden-Powell, the founder of the worldwide Scout Movement. The study indicated a change in 1911, when Baden-Powell's network connections were increasingly dominated by a group of new educationalists to the detriment of the social reformers. This shift demonstrates how Baden-Powell became involved in the wider New Education Movement to make his scheme more relevant to the contemporary political agenda.

Article II revealed the overall structure of the New Education Movement and its evolution. Two-mode network analysis showed that until 1905, the movement was in a pre-institutional phase and was divided into two subgroups. From 1905 onwards, the movement became institutionalised and more interconnected. This development followed the appointment of the first professors of education in the UK and the founding of new organisations that aimed to impact society more directly than those established during the previous phase.

Article III examined the various roles of reformers during the institutional phase of New Education. Drawing from the literature on social movements, the analysis provided empirical support for the previously proposed idea that there were two kinds of prominence within the movement: that of conveners, who formed close-knit groups with like-minded people, and that of mediators, who built bridges between

such groups. How these roles promoted the progress of the movement is discussed based on both quantitative and qualitative data.

The results collectively demonstrated that New Education was built on grassroots action and social ties rather than shared ideologies or theories. Analysis of the composition of the subgroups showed a temporal change within the movement. Until the first decade of the 20th century, there was a distinction between social reformers and another group of reformers who focused more strictly on educational questions. After that, this division became less important with regard to the case organisation, the Scout Movement and the New Education Movement as a whole. The movement not only became more influential but also more unified.

While filling a gap in New Education research, the dissertation illustrated a method of analysing social movements using co-affiliation data. Creating network data from less structured documentary sources instead of using pre-collected datasets enables contributions to a wider variety of topics. Thus, the study contributes to the scholarly discussion on how network analysis can provide a new tool for revealing the past.

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TIIVISTELMÄ

Tässä väitöskirjassa tarkasteltiin New Education -liikkeen rakennetta ja kehitystä Yhdistyneissä kuningaskunnassa vuosina 1875–1935. New Education -liikkeen tavoitteena oli koulutuksen uudistaminen niin, että se vastaisi paremmin yhteiskuntien muuttuneita tarpeita ja ottaisi huomioon muuttuneita moraalikäsityksiä ja lapsipsykologian kehitystä. Aikaisempi kirjallisuus on osoittanut, että liike oli ideologisesti hajanainen. Väitöskirjassa toteutettiin aiemmin esitetty ajatus New Education -liikkeen tarkastelemisesta kansalaisliikkeenä sen sijaan, että sitä tarkasteltaisiin paradigmana. Liikettä analysoitiin uudistajien välisten verkostojen kautta.

Keskeisten uudistajien tunnistamiseksi käytettiin maineeseen perustuvaa otantamenetelmää. Tutkimus toteutettiin monimenetelmätutkimuksena, jossa tietoa keskeisistä uudistajien yhteyksistä eri organisaatioihin koottiin elämäkerroista ja historiikeista ja tietoja käsiteltiin jäsenyysverkostona ($n_1 = 58$, $n_2 = 49$). Näitä määrällisiä tietoja täydennettiin dokumenttiaineisolla, jota käytettiin verkostoanalyysillä tehtyjen havaintojen varmentamiseen ja havainnollistamiseen.

Artikkeli I esitteli tapaustutkimuksen maailmanlaajuisen partioliikkeen perustajan Robert Baden-Powellin verkostosta. Tutkimus osoitti, että vuonna 1911 tapahtui muutos, jonka jälkeen Baden-Powellin verkostoyhteyksiä hallitsi joukko koulutuksen uudistajia ja yhteydet yhteiskunnallisiin uudistajiin vähenivät. Tämä muutos osoittaa, että Baden-Powell liittyi laajempaan New Education -liikkeeseen, jotta hänen partio-ohjelmansa palvelisi paremmin ajan poliittisia tavoitteita.

Artikkeli II kuvasi New Education -liikkeen yleistä rakennetta ja kehitystä. Jäsenyysverkoston analyysi osoitti, että liike oli vuoteen 1905 asti esi-institutionaalisessa vaiheessa ja jakautui kahteen alaryhmään. Vuodesta 1905 lähtien liike institutionalisoitui ja siitä tuli tiiviimpi. Tätä kehitystä edelsivät ensimmäisten kasvatustieteen professorien nimittäminen Isoon-Britanniaan ja sellaisten järjestöjen perustaminen, jotka pyrkivät vaikuttamaan yhteiskuntaan suoremmin kuin esi-institutionaalisessa vaiheessa perustetut järjestöt.

Artikkeli III tarkasteli uudistajien erilaisia rooleja New Education -liikkeen institutionaalisen vaiheen aikana pohjautuen kansalaisliikkeitä käsittelevään tutkimukseen. Tutkimus antoi vahvistusta aikaisemmin esitetylle näkemykselle, että kansalaisliikkeessä voi olla kahdenlaisia tärkeitä rooleja: koollekutsujat muodostivat

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tiiviitä ryhmiä saman mielisten ihmisten kesken ja välittäjät rakensivat siltoja tällaisten ryhmien välille. Sitä, miten nämä roolit edistivät liikkeen kehitystä, pohditaan sekä määrällisten että laadullisten havaintojen pohjalta.

Osatutkimusten tulokset osoittivat, että New Education -liike rakentui ruohonjuuritason toiminnalle ja sosiaalisille sidoksille pikemmin kuin yhteisille ideologioille tai teorioille. Alaryhmien kokoonpanojen analyysi osoitti ajallisen muutoksen. Liike oli 1910-luvulle asti jakautunut yhteiskunnallisten uudistajien ryhmään ja kasvatuskysymyksiin keskittyneeseen ryhmään. Tämän jälkeen jaosta tuli vähemmän tärkeä sekä tutkitun tapausorganisaation, partioliikkeen, että koko New Education -liikkeen kannalta. Liikkeestä ei siten tullut vain vaikutusvaltaisempi, vaan myös yhtenäisempi.

Väitöskirja täydensi aiempaa New Education -tutkimusta, minkä lisäksi siinä esiteltiin menetelmä kansalaisliikkeiden analysoimiseen jäsenyysverkostojen avulla. Verkostoaineiston kokoaminen rakenteeltaan vaihtelevista dokumenttilähteistä sen sijaan että hyödynnettäisiin valmiiksi kerättyä aineistoa mahdollistaa menetelmän käyttämisen laajemmin eri tutkimuskohteisiin. Väitöskirja edistää siten tieteellistä keskustelua siitä, miten verkostoanalyysi voi tarjota uuden työkalun menneisyyden tutkimiseen.

Acknowledgements

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List of Original Publications

This dissertation is based on the following original publications, which are referred to in the text by their Roman numerals:

I   Luoto, L. (2022). Shaping alternative education for all: Baden-Powell's affiliation network of educational reformers, 1900–1939. *History of Education*, 51(4), 541–559. 10.1080/0046760X.2021.2002432

II Luoto, L. (2023). The social nature of New Education: An affiliation network analysis of the movement's evolution, 1875–1935. *Paedagogica Historica*, 59(1), 36–54. 10.1080/00309230.2022.2095874

III Luoto, L. Identifying prominent actors in historical networks: The case of the New Education movement. In review.

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1   Introduction

The idea of applying the network approach to historical research has deep and diverse roots. Having caught the attention of social scientists for a longer time, interpersonal networks became part of historians' vocabulary through landmark works of the late twentieth century (e.g., Padgett & Ansell, 1993; N. Rosenthal et al., 1985). Today, there is a specialised journal called *Journal of Historical Network Research,* and prestigious social network conferences regularly have special sessions where the most recent research in the domain is presented. The field is, however, divided into smaller thematic and methodological subgroups.

Within educational history, the concept of 'network' is often used metaphorically in the sense that it provides a framework for analysing data, but no specific network methods have been applied. Although there has been growing interest in networks, several authors have expressed their reservations about applying purely quantitative methods that are common in social sciences. Fuchs, for example, assumed it could 'repel historians' (2007, p. 186; see also: Caruso, 2017, p. 272; del Pozo Andrés & Braster, 2018, p. 2). The growing need to understand the interpersonal networks behind the trajectories in educational history has, thus, been predominantly met by using descriptive approaches.

Traditionally, historical network research has its roots both in sociology and anthropology, where the former focuses on the structuralist properties of the network as a whole and the latter has been more interested in smaller and eco-centric networks. Another historical method close to network analysis is prosopography, or collective biography. Depending on the scope of the study, this method utilises descriptive methods or the analysis of qualitative and network data (Nitschke, 2016, p. 11ff; Verbruggen, 2007). A third—and growing—group of historical network research is emerging among scholars concentrating on quantitative history and working under the wide umbrella of digital humanities. This school has quite a long history. The 'New Social History' took place in many countries in the 1960s. The researchers of this tradition focused on people, themes and sources that had previously been mostly dismissed by mainstream historians, such as tax registers and records of marriages, in many cases trying to capture ordinary people's life experiences (Lemercier & Zalc, 2019, pp. 19–22).

Although the approaches mentioned above focus on the relationships between people, the rise of sociomateriality and need to study complex phenomena has increased the interest in studying the networked relationships between the social and material. Leaning on models such as actor network theory, the objects studied can include both tangible objects like spatial arrangements and technologies, as well as language and practices that are enacting educational policies (Fenwick & Edwards, 2011). Amid this fragmentation of approaches, the researcher must consider which methods and underlying theoretical assumptions are best suited to the phenomenon under study. A difficulty in defining the relationship between history and network can be seen in a recent handbook of historical network research (Düring et al., 2016), which has left some of the widely used approaches unnoticed. These include graph theoretical models, in which the networks are represented as nodes connected by links. These models are widely used in the present study.

1.1   New Education as a social movement

The benefits of the network approach appear particularly well when studying educational reforms that get their driving force from informal movements. With no official forums or programme declarations, the movements lack standard policy analysis sources. The New Education movement, which emerged at the turn of the twentieth century, is a remarkable example of such movements.

Though known by this name by both scholars and those personally involved, New Education has remained a vague term. Selleck, one of the early scholars on the subject, used the term New Education in his pre-1914 work but turned to 'progressive education' thereafter (Selleck, 1968, 1972). Skidelsky, in turn, referred to the 'new school movement' (1969). The controversy over terms has been discussed repeatedly, and more recent texts have consistently used 'New Education' when referring to the trajectories discussed in this text. With more specific temporal and content boundaries than 'progressivism', the term better enables the analysis of goals and influences of the movement (Brehony, 2001, pp. 415–6; Hofstetter & Schneuwly, 2009, pp. 453–4; Hai et al., 2020, pp. 1–2). The term was also known to those personally involved. R.H. Quick of Harrow summarised one contemporary interpretation for the movement's regarding the goal of education and the role of the learner. In 1902, he stated that 'the New Education treats the human being not so much as learner as a doer. – The success of education is not determined by what the educated *know* but by what they *do* and what they *are*' (as cited in Selleck, 1968, pp. 102–3, emphasis in original).

Established at the turn of the twentieth century, the movement spread across the world as a way to address the changing educational needs of societies and accommodate new moral doctrines and discoveries in the field of child study. As can

be seen from Quick's quote above, the ideas and practices of New Education included both a child-centred attitude and interest in experimental curricula and pedagogies. However, the content of the reform varied in accordance with the political and cultural contexts of each country. In the UK, it included measures such as offering public schooling for more children. Pedagogically, one of the central concerns of New Education was the personality of the child. This interest was powered by the rise of psychological studies and the ideas presented by prestigious scholars, such as C. G. Jung and Jean Piaget.

Though international in character, the New Education movement was a coalition of national reform movements rather than an international movement (Brehony, 2001, p. 414). Although most recent studies have concentrated on transnational influences, the present study discusses the dissemination and development of the reform in the UK. Prior works with similar aims have not analysed the movement as a whole but rather through the lens of single organisations such as Dalton Plan, Froebel Association or New Ideals in Education Conference (del Pozo Andrés & Braster, 2018; Howlett, 2017b; Read, 2012), leaving room for a more comprehensive analysis.

In addition to having international influences, the British reform was caused by domestic tensions, such as declining military and political power and the growing political awareness of the working classes. As a result of pressure from the reformists, the 1902 Education Act attempted to widen access to and increase state control over schools by establishing a system of local educational authorities. The Act, although facilitating the growth of secondary schools, has also been blamed for consolidating an unequal education system based on social class differences and for failing to alleviate tensions in educational debates. The general election of 1906, which was when educational questions were high on the agenda, returned the Liberals to office after a long period of continuous Conservative rule. This led to social reforms that are commonly known as the Children's Charter. However, calls for reform persisted until some stability returned to educational discussion and practice in the late 1930s (Hofstetter & Schneuwly, 2009, p. 453; Howlett, 2013, pp. 234–6; McCulloch, 2019, pp. 2–3).

Though having certain similar goals on a general level, the New Education reformers did not have much more in common than attacking the status quo—for example, payment per results—that was applied in the schools at the time (Selleck, 1968, pp. 336–7). Because it was not fuelled by shared theories, New Education has often been treated as a network of reformers and social movement rather than a paradigm. In his widely cited 2001 article, Cunningham called for an examination of the networks and structures through which individual progressives operated to understand why the competing and even contradictory interests they promoted were often perceived as a homogeneous movement. He made a small-scale attempt in this

direction in 2018 but followed a more qualitative path. Otherwise, the work has yet to be done.

Brehony (2001, p. 414) considered the New Education Fellowship to be a social movement, using established criteria for identifying social movements. Therefore, theories of social movements and networks may be useful in analysing the development of New Education, hence deserving a closer look. In general, social movements consist of several exchanges, such as the mobilisation of resources, information and activists. Traditionally, studies on social movement networks have concentrated on social cohesion or structural equivalence. The former focuses on the sectors of a network where the links between movement actors are particularly high. The latter has its focus on those subsets of actors in a network that have similar patterns of linkages to third parties. (Diani, 2002, pp. 189–190). Although social movements and networks have been studied in the past, many of these studies are snapshots. There is a growing need for studies about change in these networks because movements are 'inherently dynamic, always evolving as a function of the interactions of their participants' (Stevenson & Crossley, 2014, pp. 70–1). In part, the present study addresses these needs.

Since New Education is treated as a social movement rather than a paradigm, its division into subgroups is examined through the networks of its members. Putnam (2000, pp. 152–3) argued that social capital and social movements are closely connected and that social networks are the quintessential resource of movement organisers. Existing informal groups, friendship networks, and social ties are more likely than high ideals or self-interest when trying to explain the participation of collective action. This mechanism of creating social movements causes the emergence of parallel cores. Some forms of social capital, called bonding, are inward looking and tend to reinforce exclusive identities and homogenous groups. On the contrary, bridging networks are outward looking and encompass people across diverse social cleavages (Putnam, 2000, pp. 22–3).

One practical way of observing the formation of the movement like New Education is to analyse overlapping memberships between various organisations. These overlaps, often called interlocks, have been used extensively to understand the structures of social movements. Past scholarship has shown that overlapping board members help nonprofits coordinate efforts, share information, and enhance both an organisation's perceived legitimacy and its capacity to acquire resources (Esparza & Jeon, 2013; Galaskiewicz et al., 2006; Ma & DeDeo, 2018). Compared with corporate board interlock studies, which have often focused on the role of interlocking board members in channelling information and resources, nonprofit board interlock studies investigate the role of interlocking board members in signalling the status of the organisation (Yoon, 2021, p. 2). In a movement like New Education, which aimed to facilitate a reform in its environment, these perspectives

provide two valuable aspects: how overlapping members have been used to increase political capital for the fulfilment of the reform and the eventual emergence of multiple interlocks that were formed in parallel to align resources for competing aspirations. In the beginning, New Education was on the periphery of institutionalised agencies, but during the first decades of the twentieth century, the reformers launched their own editorial vehicles and social and scientific events as a means of acquiring influence and testing theories, thus making the movement more institutionalised (Brehony, 2004, pp. 734–5; Selleck, 1972, pp. 75, 84.) How the process of increasing its legitimacy and status was enabled by interlocking networks is discussed in detail in the forthcoming chapters.

1.2   Scout movement

Equally vague as were the educational objectives of the New Education, were those of the Scout movement, which was one of the most enduring educational organisations that emerged at the time.[1] Although the analysis New of Education provides a wide overview of educational reform, looking at the development of a single movement can allow us to see more subtle structures and the ways in which single causes are attached to the umbrella movement.

Founded in 1908, the Scout movement was established in the midst of the institutionalisation of New Education. Robert Baden-Powell (1857–1941), a successful military general, developed the Scout scheme after returning from the Second Boer War (1899–1902). His interest in improving the health and character of youth was partly motivated by the poor performance of British soldiers during the war and by fears about the possible decline of Britain's imperial power. Nevertheless, in addition to the motive of maintaining social control, his considerations included the then-popular aspiration of empowerment and promoting advocacy for young people's agency. When Baden-Powell's scheme, which was meant to be used by various organisations, was published in *Scouting for Boys* (1908), it became an overnight success. Although his ideas were not unique and lacked scientific credibility, his scheme's popularity and relevance to the

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[1]   Following the example of previous publications, some spelling rules have been applied: When 'scout' and 'scoutmaster' refer to individuals involved in scouting, they are considered as common nouns and are not capitalised. All instances where 'Scout' or 'Scouting' refer to the movement/organisation founded by Baden-Powell, are capitalised. Meanwhile, when referring to independent organisations, who practice scouting without being part of the Scout movement (i.e., 'scouting' is used as a term describing activity), the terms are not capitalised. Quotes follow the spelling of the original text.

contemporary political agenda made it a phenomenon that attracted the attention of established educationalists. In an age of growing need to address juvenile delinquency and widen access to education for working class children with limited resources, the roles of informal and formal education were complementary to one another (Mills, 2013, pp. 124–5). Baden-Powell's scheme was seen both by himself and many others as part of the solution to the problems of school education at the time.

Although classic texts on New Education recognised Baden-Powell as relevant for the movement in some way, they have experienced difficulties in placing him on the map. Selleck mentioned scouting in the context of the duty and discipline movement and assessed that it 'wished to make of every Englishman a boy-scout' by promoting virtues like respect for authority, self-control and imperialism and was ultimately a 'desperate attempt to restore values that had lost their popularity' (Selleck, 1968, pp. 303–304). Boyd and Rawson, in turn, considered that, although nobody 'has ever thought of the Scout troop with its twenty to thirty members as a school—it has shown many of the features of the ideal school' where the 'Scoutmasters are not "masters" in ordinary sense, but friendly helpers who serve freely as guides and inspirers and get willing obedience' (1965, p. 33). Stewart regarded the Boy Scout Movement as the nearest, though distant, British equivalent to the German youth movement *Wandervögel* founded in 1896. In the spirit of opposing urbanisation and rediscovering the country, the young members of *Wandervögel* organised unsupervised camps with both sexes together that had some high-minded aspirations but were also believed by the older generations to lead to general unsettlement and moral breakdown (1968, pp. 69–70).

Instead of addressing this ambiguity of interpretations, the research agenda on Baden-Powell has been dominated by controversies within the movement. Particularly, the Scout movement's relationship with militarism has provoked several studies and varying interpretations (for a summary, see Macleod, 2009, pp. 16, n12). In more recent educational literature, the Scout movement has usually been mentioned, if at all, in the context of utopianism or militarism (e.g., Howlett, 2017a, p. 143; Howlett, 2017b; McCulloch, 2011, p. 95). The lack of research about scouting has been discussed by several authors. Farrell believed this is because researchers look down at scouting as a recreational activity for middle-class youngsters in well-off nations and because educational research has been more focused on formal education (Farrell, 2012, pp. xi–xii).

Another obstacle to studying the Scout movement was related to its national character. The Scout movement and its sister movement, Girls Guiding, are pre-eminently movements rather than constituted organisations. They are simultaneously highly local, national and international, having different powerful traditions from place to place. Therefore, scholars have concentrated on understanding the

movement predominantly in a local or national context (Krautmacher, 2013, p. 5; Warren, 2009, pp. xi–xiii). Recently, there has been a growing number of articles in established journals about scouting but primarily with a national focus (e.g., Bulatov, 2021; Lundberg, 2022; Wu, 2022).

As the Scout scheme is not based on any single theory, numerous studies have investigated the similarities between Baden-Powell's Scout method and ideology and other approaches to education, such as *Wandervögel* (Ferchhoff, 2013), Seton's Woodcraft movement (Jeal, 2001, pp. 378–80; M. Rosenthal, 1986, pp. 64–81), public school and military education (Gerr, 1981). The informal perspective in the early Scout movement has been taken by Mills (2013, 2016).

Fewer are those studies locating Baden-Powell's thoughts in the context of contemporary educational discussion. His social and educational goals have been discussed merely as an alternative explanation for military goals (Dedman, 1993; Warren, 1986). One of the most extensive works was made by Macdonald (1993), who located Baden-Powell's thought by examining the books he recommended in *Scouting for Boys* (1908). In his seminal work, first published in 1989, Tim Jeal (2001, pp. 581–3) found that many studies on Baden-Powell's educational influencers referred to documentation created to defend against claims of plagiarism rather than to record the actual situation. While the pedagogical components of Scouting and Guiding have since been studied from different perspectives, there are sources where Baden-Powell commented on educational matters, such as the editorials of the Scout magazines, that have not yet been fully exploited by researchers.

Terming them 'invisible contributors', Martin Dedman (1993, p. 213) supposed that there were educationalists who influenced Baden-Powell but whose contribution was not acknowledged in print. Uncovering some of them is one of the contributions of the present study. To control his public image, either people who influenced Baden-Powell's thinking were seldom mentioned in his books, or their acknowledgement was removed from subsequent editions. The publishers of Baden-Powell's texts had, in some cases, affected the content to make it more suitable for the intended audience (Dedman, 1993, p. 213). In fact, some of his later career books were actually written by his private secretary. Moreover, parts of Baden-Powell's correspondence were destroyed either by himself or by his widow to retain his legacy (Jeal, 2001, pp. 79, 460). For these reasons, Baden-Powell's published works and correspondence, often used as sources for his educational thought, are somewhat unreliable sources. Social network analysis, as applied in the present study, provides a novel way of using the source material, hence helping overcome the above-mentioned issues. The purpose was to investigate with which educational reformers Baden-Powell sought cooperation with or to whose ideas he referred to in his current writings, as well as what kind of relationships these persons had with each other. In

this way, it was possible to obtain more detailed information about his network of relationships than was identified in previous studies.

2   Research questions

The contribution of the present study is twofold: substantial and methodological. Substantially, by means of network analysis, it provides a new perspective to research areas that have received only sporadic attention during the past two decades, even though uncovered areas have been identified in the literature.

The evolution of the New Education movement has mostly been discussed recently through single organisations or the international travelling of ideas. Nevertheless, it has been explicitly proposed, though not implemented, to apply a network approach to shed light on its structure and evolution on a national level (Cunningham, 2001). In the present study, the movement is investigated both as a whole and through one case person: Robert Baden-Powell. As the founder of a vibrant youth movement, studying his networks and influencers reveals the development of one movement and its relationship with other reformers of its time.

The present study follows the path first started by Lalli et al. (2020), who showed that network analysis can be used to create alternative explanations for historical events as a way to challenge common beliefs. By applying a mixed methods approach, the social explanations created in the present study are not considered as competing with those of the literature, but social and substantial factors are discussed in relation to each other. Therefore, the current work aims to respond to the following questions:

Q1. Based on an affiliation network analysis, which factors held the New Education movement together and, on the other hand, divided it into subgroups? How did its internal structure change as the reform was institutionalised? (Articles II and III)

Q2. What kind of previously unidentified connections did Robert Baden-Powell have with educational reformers? What does the emergence and timing of these connections reveal about the early development of the Scout movement and its relationship with the wider New Education movement? (Articles I and II)

Methodologically, the present study aims to create a basis for the wider use of network methods in historical studies. Comprehensive information about

connections between persons is seldom available in historical sources, whereas the availability of membership and other affiliation data are much more widespread. Hence, using a two-mode approach has its benefit. Although it has been used in some previous studies, they have predominantly applied precollected datasets, such as databases or published membership lists, which enable large research data but limit the use of the method to cases where such data are available. Collecting the data instead of biographical sources enables contributions to be made to a variety of existing historical debates and an analysis of the structuralist observations in relation to qualitative data. The mixed methods approach, where the network data are converted from documents and the documents are also analysed as such, allows for not only seeing the structures and consequences, but also discussing the historical events that led to them.

The majority of historical two-mode studies have analysed the data in a projected format, even though this involves a loss of information. Following the introduction of native two-mode methods, it is possible to keep the data in its original unprojected format, hence preserving in the data the duality of the people and organisations they attended throughout the research process, from network analysis to the qualitative phase. Following this approach, the present study aims to respond to the following question:

> Q3. When identifying influential persons or subgroups from coaffiliation data, do these observations have counterparts in qualitative analysis? What factors should be considered for further usage of the method? (Articles I, II and III).

All the studies contribute to the same overall goal of understanding the New Education Movement by applying novel approaches to two-mode network analysis. Articles I and II examine temporal change through the lens of the composition of subgroups, while Article III concentrates on the roles of prominent actors whose positions either enabled the formation of clusters or build bridges between them. The perspective in Articles II and III is comprehensive, while Article I complements the picture by concentrating on one case organisation—the Scout movement—only. However, in all the studies, structuralist observations were constantly discussed in relation to qualitative data, which enhances the reliability and accuracy of the conclusions.

3   Research data

3.1   Mixed methods design

Even though network studies combining qualitative and quantitative methods of data collection and analysis have been carried out for a long time, only during the past decade have there been attempts to formalise the approach.[2] Mixed methods network studies share the following characteristics:

- make use of both qualitative and quantitative data;
- apply both qualitative and structuralist strategies for data analysis; and
- at some stage of the research process, there is the integration of data, analysis or results (Hollstein, 2014, p. 5).

The reasons for using this approach in the present study are twofold. As has been noted earlier, there has been criticism towards purely formal approaches to disregard the effects of the actors' intentions, values and mutual orientation (Caruso, 2017, p. 272). Although network researchers have often not been particularly interested in investigating the substantive meaning of relations (Fuhse, 2009, pp. 51, 58), the situation is changing, and the deficits of purely formal network modelling have given rise to a more phenomenological interpretation (Schipper & Spekkink, 2015, pp. 5–22). Second, network properties are often somewhat imprecise when it comes to identifying people's roles in historical trajectories. Düring (2016, p. 100) proposed that network measures, such as degree and betweenness centrality, can be useful in historical studies to narrow down the list of potentially influential actors, but they fail to identify the same list of influential actors as identified using other methods. Moreover, de Valeriola's (2021, 121) analysis revealed that centrality measures, when used with historical data, are robust and that particularities of the field of application need to be considered when choosing the methods. Using qualitative analysis along with network analysis allows for validating the observations and, at the same time, providing some further material for the discussion about the accuracy of historical network analysis.

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[2]   In essence, network analysis is neither qualitative nor qualitative. Rather, it is relational, a third epistemological approach, to describe the reality (e.g., Carrington, 2014, p. 35). However, the term qualitative is used to follow the original sources.

Mixed methods designs differ in the ways at which stage of the study qualitative and quantitative approaches are used and integrated. Two of the designs have been used in the present study. Article I follows the explanatory sequential design that starts with the quantitative analysis, which is then followed by a qualitative strand. The qualitative inquiry is meant to further elucidate the results obtained at the earlier stage, or a quantitative strand is used to locate cases to be examined more closely (Hollstein, 2014, p. 13). Both functions are present in the substudy. In the Article, the qualitative analysis produces a division into two subgroups among the reformers and identified the most central persons within these subgroups. The qualitative analysis that followed is informed by the prior stage, both in terms of focus and content. Historical sources are gathered about the person identified as prominent, and the material is analysed to observe if the hypotheses of temporal changes and division into subgroups received confirmation from documentary evidence.

Articles II and III follow the conversion design. Even though mixed methods studies utilise two kinds of data, this does not necessarily mean that both qualitative and quantitative data are actually collected. Making use of two data types may also take the form of data conversion. This approach involves mixing qualitative and quantitative parts at all stages, and the data are quantitised or analysed in its original qualitative form as needed (Hollstein, 2014, pp. 5, 17). In the Articles, the network analysis is based on affiliation data collected from documents. The same documents that provided information about memberships and their duration included background information, their significance, and the circumstances in which the roles have taken place. This information is not analysed as a separate stage but in connection with each research question at the same time as quantitative data. Therefore, the research follows a data-as-taken approach in which the data constitute the researcher's representation of phenomena. In its original form, the data is neither qualitative nor quantitative. The researcher decides whether the target of investigation is best represented, at each stage of the study, by numbers or words. (Sandelowski et al., 2009, p. 209). The research design applied in the present study is illustrated in Figure 1.
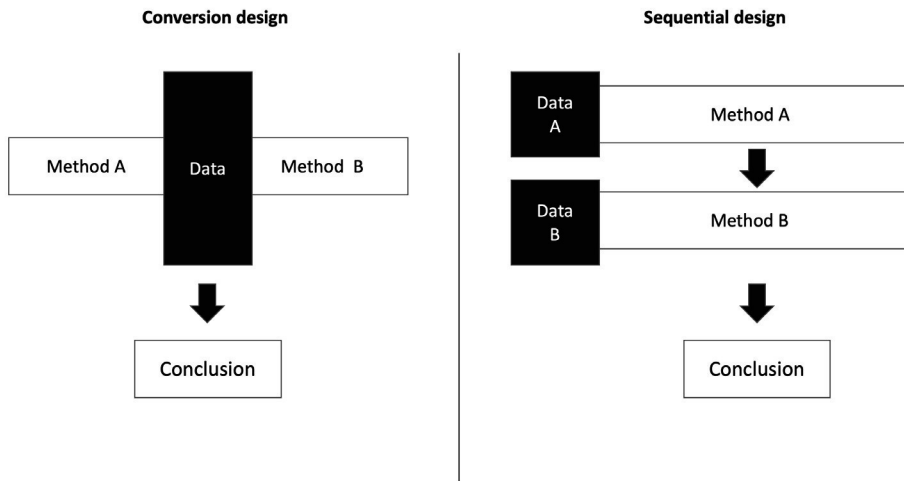
Figure 1. Illustration of research design applied in the work.

3.2   Sampling

Lauman et al. (1983; see also Borgatti et al., 2018, p. 39; Scott, 2017, p. 47) have divided network research into two schools: the realist school restricts itself to studying only those groups in a sociological sense, while the nominalist school also studies networks that are not formally defined as groups. For the realist school, the characteristics of groups are that they are recognised by their members and that the group has boundaries that separate members from nonmembers.

The present study follows the nominalist school. Rather than studying networks within a well-defined group, the present study draws the social boundaries of the group united only in its opposition to the schooling system at the time. In formally defined groups, the typical sampling method is positional, where the persons constitute all—or at least as many as possible—members of the group. In the present case, the boundaries of the group are imprecise, so reputational sampling has instead been used. In this method, the list of nominees is produced by knowledgeable informants, and the researcher studies all or some of them (Borgatti et al., 2018, pp. 38–41; Scott, 2017, pp. 48–50).

There are five sourcebooks that leading scholars have frequently mentioned as seminal sources of New Education (see Aldrich, 2009, pp. 487–9; Brehony, 2001, p. 415; Cunningham, 2001, pp. 437–8; Howlett, 2013, pp. 8–9). Richard Selleck has

contributed two reference works: *the New Education* (1968), which was ordered according to ideas, and *English Primary Education and the Progressives* (1972), which was arranged by chronological phases. Chronological ordering was also applied in *English Progressive Schools* (1969) by Robert Skidelsky. William Boyd and Wyatt Rawson's *The Story of New Education* (1965) was partly based on their own experiences as members of New Education Fellowship, whereas William Stewart's religious leanings led him to highlight the contributions of Quakers and Theosophists in *Progressives and Radicals in English Education* (1972).

The books were published between 1965 and 1972. The authors were able to speak with the people about whom they were writing, and in some cases, they were also personally involved in the events covered. In many cases, there are more recent accounts about the events discussed in the sourcebooks and some interpretations of New Education have evolved. However, the five sourcebooks are the most precise documents about people's involvement in the New Education Movement, which is what they have been used for. The goal of the present study is to assess participation in organisations. Because most of the societies operated between 1875 and 1935, this time period is the period covered. All the persons mentioned in the books are listed if they operated during the mentioned period. The list is based on indexes of the books, and some minor errors, such as names missing from the index even though mentioned in the book, are corrected. These reference books mentioned 948 individuals who were active during the period covered. This basic list of reformers is referred to in the text as R-948 and is used in this format in Article I.

The reference books provided information about people's affiliations, but this information is apparently incomplete, and additional information had to be collected manually. Before that, irrelevant persons must be weeded out. Only one person, pioneering school founder Homer Lane, was mentioned in all five books, and 10 others were mentioned in four books. In total, 757 people were mentioned in just one book. Because the sourcebooks had slightly different emphases on time and content, the number of mentions has not been used as the sole criterion for selecting reformers for closer examination. Instead, the list was shortened using cascading exclusion criteria.

Excluding individuals who contributed mainly before or after the period covered or who were not presented as relevant eliminates 781 persons. Some were mentioned as prominent in one source, but their significance was not confirmed in any other source. Another 36 persons contributed primarily to a country other than the UK. Investigating their domestic and transnational networks would not only significantly increase the scope of the study, but would also be unnecessary for the purpose of uncovering the structure of the movement in the UK. Twenty-two persons were authors who were not so much part of the movement but rather inspired it through their texts. Finally, 51 persons made contributions considered local or momentary.

After these exclusions, the final list consisted of 58 persons. The exclusion process is described in Table 1, and the list of all reformers included is presented in Appendix 1.

New Education was characteristically a movement with equal participation of both genders. However, only 21% of the reformers identified as reputational in the study were female. This study follows a line of research that focuses on the movement's elites, and it appears that women played a smaller role in the leadership of the movement than among its rank-and-file members.

Table 1. Cascading process whereby reputational list was shortened by excluding less relevant groups of people

	Number of persons
Original data	948
- irrelevant persons	781
- foreign reformers	36
- authors	22
- momentary contributors	51
Final research data	58

3.3 Collecting affiliation and other data

The method of collecting names from sourcebooks and their memberships thereafter from biographies has been famously applied by N. Rosenthal et al. (1985, p. 1027). The material of the present study consists of well-known figures who were the subjects of several biographies and lesser-known people about whom little information is available. To avoid information availability influencing data quality, a multisource method was used. Biographies and journal articles of the persons were consulted. Educational references, such as the initial sourcebooks or *Dictionary of British Educationists* and general references, such as *Oxford Dictionary of National Biography,* were also used. If lesser material was available of a person, the British Newspaper Archive was consulted to make sure all the relevant affiliations had been found.

The aim of the data collection was to uncover which schools, associations or interest groups each person was affiliated with as members, officials or employees. These communities of various kinds are hereafter referred to as 'organisations'. As new organisations emerged during the data collection, published sources about that

organisation were consulted to see whether other reputational members were affiliated with it. This process enabled managing the varying quality of the source material. If there was less material available about some organisations, information about memberships could be gathered from individual biographies and vice versa. The books usually provided indexes both about the persons and organisations mentioned, or the books themselves were available in digital format allowing text searches. Printed versions were available in a single point at the British Library, allowing convenient usage. The process was stopped when no new connections could be found, and every organisation with at least two shared members was included in the final research data. The data on reformers and their connections consisted of 58 persons (referred to in the text as RC-58). The number of affiliations gathered from secondary sources was 203, constituting an average of 3.5 affiliations per person.

Some organisations were somewhat informal and vague, and the authors might have had different understandings of whether somebody was a member or not. For example, Principal John Badley has been referred to as an 'active Fabian' by Scott (2014, p. 149), while a more thorough study said that 'to the best of our knowledge [Badley] never joined the Fabians' (Wake & Denton, 1993, p. 289). In this case, the latter information was assessed as more reliable. In general, agreement about memberships was good, and the same information was often confirmed by several sources.

Wurpts (2020, p. 74) argued that researchers should be explicit about what they think network ties represent. When studying commercial relations as a two-mode network, he interpreted the links on capital transfers as signs of shared risks and, therefore, trust. As has been noted in section 1.1, nonprofit interlock can be considered as representing seeking out status and legitimacy. Unlike corporate interlock studies, which have often assumed that interlocking members transmit information between each other, this mechanism is not seen as very relevant in the present study. Even though members of organisations assumably became aware of the same reformatory ideas through an organisation's communication, persons who shared a membership were not always participating concurrently, so it is not known how actively they were involved. Rather, the links represent shared interests manifested by joining a social movement. From the organisation's side, the links also represent an opportunity to raise status. As Opsahl (2013, p. 159) pointed out, tie formation is a mutual process where the directors must first be invited to join the board and then accept the invitation. In the material, there were narrations of consideration of suitable members (e.g., Brooks, 1998, p. 76), refusals to join (e.g., Hutchinson, 1914, p. 226) and resignations (e.g., Taylor, 1992, p. 255). The organisations tried to have members that could boost their reputation, and the people

considered where, considering for which causes, they wanted to spend time, or at least lend their names to the organisations.

This interpretation of the memberships is strengthened by what has been said about the memberships in the source material. Positions, such as vice-presidentships, were sometimes rather ceremonial. In the case of the Charity Organisation Society, vice-presidents 'took little active part of the Society beyond lending it the support of their names and purses' (Mowat, 1961, p. 20). Influential names attached to society gave weight to its utterances and helped attract even more influential supporters. Connections can be considered binary, and no assessment has been made about how active the membership was or how important the position the person was holding. This information would not be sufficiently comparable or reliable. However, there had to be hard evidence about formal membership, and persons who 'supported' or 'participated' an organisation were excluded.

The method that has been applied is called quantitation, where data are converted from documents. One of the most famous studies in this respect was Davis et al. (1941), who studied women's stratification by class in Mississippi in the 1930s by collecting systematic data on 18 women's attendance in 14 informal social events using interviews, guest lists, and newspapers. The data collected has been used in two dozen research articles using two-mode network analysis methods (Freeman, 2003, p. 40). The method, on the other hand, has not been imitated recently, even though the availability of source material has dramatically increased.

Besides this basic list of connections used in all substudies, additional research question-specific material was used in each article. In Article I, the people Baden-Powell referred to and additional data about his educational thought were collected from the columns he wrote between 1909 and 1922 in a Scout magazine *Headquarters' Gazette*. This material was supplemented by his main monographs to allow the tracking of network relationships from 1900 through 1939. Baden-Powell's correspondence relationships were studied using the collections of the Scout Association Archives (Gilwell Park, London).

In all substudies, when a closer look was taken at individual reformers, the network data were supplemented with selected primary sources, which included writings in monographs and journals and, in some cases, archived correspondence, including the collections of the University of California Los Angeles Library, USA, and the University of Strathclyde Archives and Special Collections, Glasgow, UK.

3.4   Creating phases

Historians are typically interested in change and continuity across time. In network research, division into phases can be performed in various ways. The time frame to be studied can be divided into equal length periods, or the cutting points between the

periods can be derived from changes in structuralist properties or drawn from the literature. For example, a network can be divided into two subsets before and after an important historical event (e.g., Ochab, 2022; Stevenson & Crossley, 2014, p. 84). Stevenson and Crossley made a detailed comment on the usability of existing methods and the stability of the nodes for studies covering a long period of time (2014, pp. 72–6); they pointed out that change of social movement has not been studied much in the past, a research gap partly addressed in the present study.

The material, which covers 60 years, implies certain peculiarities. The network at the beginning of the period consisted of different people than the network at the end. Hence, methods and visualisations that require stability among the nodes are not applicable (Borgatti et al., 2018, pp. 132–7, 166–9). Second, the exact years of joining and resigning the organisations are seldom available. The years a person has attended an organisation can often only be determined through the precision of a time period.

During the first decades of the twentieth century, the movement became institutionalised. Reformers who had been on the periphery of institutionalised agencies launched their own editorial vehicles and social and scientific events as a means of acquiring influence and testing theories. Many remarkable organisations were founded at the time, such as the Montessori Society in 1912 (Brehony, 2004, pp. 734–5; Selleck, 1972, pp. 75, 84). This development might also have been powered by the rise of educational studies and of the psychology of education, which took place at the end of the nineteenth century (McCulloch & Covan, 2018, pp. 18–22). Hence, a division into preinstitutional (1875–1905) and institutional phases (1905–1935) was formed. The institutionalisation of the movement provided a useful dividing line for the movement: as new organisations were formed, they attracted members who had not previously been involved in the movement. Simultaneously, pioneering reformers, many of whom had been active since the 1870s or 1880s, had retired or passed away. In some cases, the organisations where the preinstitutional phase reformers had operated were already dissolved by the beginning of the institutional phase. The distribution of people, organisations and connections between the phases is demonstrated in Table 2. Out of the 58 reformers included in the sample, 11 held active memberships during Phase I but not thereafter. Another 30 reformers held active memberships during Phase II only, and 17 reformers held active memberships during both phases.

The principle of distribution is a combination of the methods applied in past studies. Both phases are of equal length, making a comparison of them easier. It appears, for example, that all three properties were significantly higher during Phase II than during Phase I, which is a sign of the intensification of the reform. On the other hand, this distinction produces minimal overlap in the connections between phases. Only 20 out of all 203 connections (10%) persisted from the first into the

second phase. All the others either ended by the start of the second phase or arose thereafter. The networks between the phases were quite distinct of each other, reflecting the generational change among the reformers, new reformatory ideas that have travelled to the UK from abroad and the emergence of new organisations that enabled the institutionalisation of the reform.

Table 2. Distribution of data subjects between the phases

	Phase I only (ca. 1875 – ca. 1905)	Both phases	Phase II only (ca. 1905 – ca. 1935)
PEOPLE	11	17	30
ORGANISATIONS	15	10	24
CONNECTIONS	59	20	124

4 Methods

4.1 Two-mode analysis for the subgroups

Two-mode networks are networks where there are two sets of nodes and connections between node sets are not possible. Many real-life phenomena are two-moded, so there is growing interest both in generating more methods for analysing them and in creating practical applications. There is, for example a recent book about the applications of two-mode analysis in political studies, including studies of social movements (Knocke et al., 2021).

Traditionally, there are three ways to analyse two-mode data. In bipartite analysis, the network is analysed as if it is one-moded. This allows for the use of all analysis methods, but some measures can be misleading because connections between modes are not possible (Borgatti et al., 2018, p. 277).

In projection analyses, two nodes of the same mode are connected if they share the same second-mode connection. Projected analysis has certain shortcomings because each connection is not created independently and because each node connects automatically to everyone else who is connected to the same second-mode node. Therefore, projected networks have a much larger number of fully connected cliques than random graphs, and various network measures are affected (Burchard & Cornwell, 2018, p. 13). Structural information is also lost, because it is possible to have two different networks with the same projection. For example, if three people form a triad, it is not known whether all three belong to the same organisation or whether there are three organisations to which they belong in pairs. This has previously been handled by introducing a dual projection method in which both modes are analysed independently and then combined (Everett, 2016; Everett & Borgatti, 2012). Besides losing structural information, the projection method also loses node level information. If two individuals are connected through a shared membership, what the organisation is and what the members might stand for are sometimes interesting. However, projection has certain application areas. In the present study, it is used for visualisations. It can also be useful when two-mode relationships are to be used as one variable of a multilayer network and other variables are one-moded (Lalli et al., 2020, p. 1135).

Because of the limitations of bipartite and projection approaches, new methods are constantly created to allow similar analysis methods that can be applied for one-mode networks. New native methods (i.e., methods that allow analysing the data in its native two-mode format without a conversion) for calculating such measures have been proposed and created to identify key players (Duxbury, 2019) or brokers (Jasny & Lubell, 2015). Improved methods for community detection in large bipartite networks have been created both for valued and binary bipartite networks and for detecting overlapping communities (Beckett, 2016; Chang et al., 2019; Zhou et al., 2018). The Louvain algorithm, which groups nodes into clusters that maximise the total modularity, has been used with the large projected data of interlocking civil society organisations (Ma & DeDeo, 2018, p. 131). Despite the well-documented limitations of bipartite and projection methods and the introduction of new methods to overcome them, projection is still a dominant method in historical studies. To the best of our knowledge, all recent works on historical two-mode networks have used projection (Bingenheimer, 2018; Jackson, 2017; Levine, 2021; Lintunen & Elo, 2019; Ochab et al., 2022; Wilson et al., 2018). Therefore, the present study makes a pioneering contribution to applying newly developed native methods in historical settings.

In two-mode networks, the cohesion of a social circle is not founded on the direct, face-to-face contacts of its members but rather on the existence of the short chains of indirect connections that bind them together (Scott, 2017, p. 131). In the present study, identifying subgroups within a two-mode network is one of the main questions. The methods described above are more suitable for large networks with many subgroups. If applied to the present material, they might identify groups that are not of practical significance. Therefore, a factioning algorithm was applied even though it has some limitations. The algorithm constitutes precisely two subgroups and assigns all persons to one of the subgroups, even if their preference is not entirely clear. Overlapping memberships are not possible. The strength of the algorithm in this research setting is transparency: the reasons why each person has been placed in one of the subgroups is very intuitive, making it easy to continue the analysis with a qualitative phase and assess the reliability of the results and the eventual need to perform further analysis using more sensitive methods.

Ordinary factioning is not applicable to affiliation networks where within-mode connections are not possible; hence, an adjusted method was created by Borgatti and Everett and implemented in the UCINET programme (Borgatti et al., 2018, pp. 223–7; Borgatti & Everett, 1997, pp. 263–8). In the process, both individuals and organisations are placed into one of the factions with the goal of maximising the density of connections within the faction and minimising the density of those between the factions. The goodness of the grouping can be demonstrated through correlation to ideal, which indicates how similar the grouping is to ideal grouping.

More detailed analysis can be performed by comparing the densities of people's within-faction and cross-faction connections.

The algorithm seeks to find the maxima of the cost function, and there may be a number of alternative partitions that also produce the maximum value. It is also possible that the routine terminates at a local maximum and does not locate the desired global maxima. Therefore, the routine was run several times with different starting configurations. Persons who had an equal number of connections to both factions are not consistently placed into the same faction when the routine is run several times. In the present case, these people had few contacts, so they were considered as persons with an unstable subgroup membership rather than brokers between the factions as precedented by Ylä-Anttila et al. (2020). When equally good groupings existed, we considered the version where the people were placed into the same faction with the organisations to which they had the most active relationship.

Because the networks were relatively small, the results could also be assessed manually. In Articles I and II, the subgroups were validated using qualitative material; the subgroups also had meaningful interpretation from a substantial point of view. Thus, the present study provides some confirmation that the factioning method is suitable for retrospective detection of subgroups using co-affiliation data. This is a relevant observation because this type of analysis has not been performed previously. Moreover, identifying groups of nodes from two modes is a matter of academic debate and there is no consensus about the best methods (Batagelj, 2022). A meta-analysis has shown that the most widely used methods produce somewhat different outputs (Freeman, 2003, pp. 21–5). New methods are created frequently to address the limitations of existing ones (Alzahrani & Horadam, 2016). Considering the state of the methodological discussion and relatively small size of the present research data, factioning is an optimal procedure for this purpose. Because the output of the algorithm, that is, maximising the densities, is very intuitive, it is easy to continue the process by assessing the validity of grouping using qualitative data. Variations between grouping methods is usually not related to the fundamental structures but rather to defining how to locate people who are on the edge of a faction. Therefore, even though subgroups are relatively stable, their members might be somewhat uncertain, so memberships in a faction should not be regarded as the stable characteristics of a person.

4.2   Interpreting the subgroups

The two-mode approach has been found to be useful in cases where one-mode data are not available and cannot be collected. Besides historical studies, this approach has been found useful for studying criminals, deceased persons and the business

elite, with whom making surveys is not a feasible option (e.g., Duxbury & Haynie, 2020; Levine, 2021; Opsahl, 2013).

Moreover, preserving the duality of people and events allows for studying not just individuals, but also their interactions with the environment. The two-mode approach expands the possibilities of network research to connect social actors to other nonhuman entities, such as technology items or, as in socio-semantic network analysis, the concepts they put forward. Although two-mode social network analysis focuses on the relationships between people and organisations, other research traditions concentrate on cultural and social dualities and people's relations with cultural objects or meanings (Basov et al., 2020, pp. 3–5). These approaches share the interpretation of the world as a space where the interactions between individuals are sometimes mediated by nonhuman objects. The organisations that people are affiliated with are temporal and spatial arrangements that allow people to meet each other, but they are also cultural objects the members have decided to establish or join to promote their shared interests. In the current study, affiliations are discussed from both perspectives.

Some authors have argued that two-mode connections are incarnations of person-to-person connections. Burchard and Cornwell stated that 'two-mode social networks emerge through many of the same social processes as do one-mode networks, such as focused social interaction and homophily' (2018, pp. 11–20). Field et al. added that 'the events may serve as objects through which actors express pre-existing commonalities or the events may serve as experiences that socialize a set of actors' and continued that 'the events can serve as foci through which group phenomena may be manifest' (2006, p. 98). Obviously, these observations are content specific. Attending the same events is often considered a social relationship, but as Borgatti et al. (2018, p. 269) pointed out, in larger events, this can be questionable.

As was noted in section 3.2, the present study does not limit itself to groups the members have identified by themselves. Nevertheless, it is useful to assess groupings defined by social interaction with those identified in past studies or by the persons involved. An example of the former is the distinction between Froebelians and Montessorians, which has been described as tensioned (Cunningham, 2001, p. 433). Contemporary texts, in contrast, have occasionally assessed the distinctions into camps that do not re-emerge in retrospective discussions. One of these observations was made by M.L.V. Hughes, advocate of educational humanism, who argued in 1915 that 'a recent review of several new educational books ranges them in two camps, *either* that of Professor Dewey *or* that of Mr. Holmes and Madame Montessori' (Hughes, 1915, p. 45, emphasis in original). Groups that are based on participation in a social movement are built on the social capital and pre-existing networks of the participants and do not necessarily reflect much on their societal

views. In addition, the distinction into ideological camps, such as those described above by Hughes, does not necessarily lead to people having similar views to form social bonds with each other. In some cases, ideological differences are equally likely to take place within a social group than between them. One of the most well-known ideological tensions of the research data was that of Beatrice Ensor and A.S. Neill, who were, at the time, both senior officials of the same pressure group: the New Education Fellowship (Howlett, 2013, pp. 169–70).

Except for the general understanding of social movement dynamics provided by past research, no predefined assumption has been made regarding whether the subgroups observed are based on social ties or similarities in reformist thought. Both aspects are considered in the current study's analysis. Hence, the work follows the idea of Borgatti et al. (2018, p. 39), who considered that there are two questions related to groups: whether the boundaries define a meaningful group and how to interpret the subgroups. It is also acknowledged that, even though the analytical methods applied in the study create groups with clear-cut boundaries, in real life, the boundaries are often more complex and fluid.

In the current study the groups are defined in a similar way as Ludwig Fleck. His theory of thought collectives has occasionally, especially in German-speaking circles, been taken as a framework for interpreting the groups in network settings. Fleck's thought collectives have several concentric circles, in which the inner circle defines the thought style of the collective and receives feedback from the less stable outer circles (Fangerau, 2009, pp. 218–9; Douglas, 1986, pp. 12–3). Although the New Education movement certainly did not consist of stable and nonoverlapping groups, the past research of tensions, the camps and contradictory ideologies within the movement provide a reason to believe that there are some thought collectives within the movement that emerge in parallel and that are surrounded by a more or less stable outer circle of supporters.

4.3   Prominence of nodes

Although the first two articles deal predominantly with subgroups and network change, the third article is about the prominence of individual nodes. Prominence means having a strategic location within a network. It can be manifested in different ways, and various measures have been developed for its identification (Wasserman & Faust, 1994, p. 169). The prominence of reformers is relevant for the research goals for various reasons. First, it has been hypothesised that the New Education movement was fuelled by two kinds of networks: horizontal networks built on the authority of individual innovators and help to bring like-minded people together, while vertical networks assisted in gaining official sponsorship for the innovations (Cunningham, 2001). This idea is in line with what has been mentioned about leaders

and brokers in social movements (e.g., Diani, 2003) and, therefore, is worth testing empirically.

The second motive is more theoretical. In Article I, it was argued that the New Education movement was, in its different phases, tied together through various relationships but also divided into groups based on ideological differences. These are network-level properties, but these are essentially caused by individuals who take different roles within the network. The extent to which individual educational reformers took the role of holding a cluster together or building bridges between the clusters deserve a closer look.

The methods for identifying important nodes in two-mode networks have not been fully established, and many articles discussing the question were merely theoretical than empirical. Thus, it is useful to assess the applicability of the methods for historical real-life data. Recent authors have asserted that centrality measures, when used with historical data, tend to produce false negatives and false positives, hence requiring further clarification. Centrality measures are useful in historical studies to narrow down the list of potentially influential actors, but they fail to identify the same list of influential actors as those identified using other methods (Düring, 2016; de Valeriola, 2021). These observations have been made in the context of one-mode data; their applicability to two-mode data has not been discussed in the literature.

Other limitations also emerge regarding the methods that have been used in prior studies. It has been recommended that betweenness centrality should be used to identify influential actors within networks (Wasserman & Faust, 1994, pp. 215–9). However, as a global measure, betweenness centrality is sensitive to missing or patchy data, which is not uncommon in historical studies. Because betweenness considers all the connections in the network, the scores are affected for those nodes distant from the location from which the data are missing. This feature reduces its applicability for historical studies.

When trying to identify different kinds of prominence, it should be considered how much variation there is between different centrality measures. In some historical studies, the betweenness and degree centralities identified different forms of prominence (e.g., Bingenheimer, 2018, p. 60), while other studies pointed to the same persons (e.g., Levine, 2021, pp. 201–2). The same duality applies to social movement research (Diani, 2003). The measures are not fully independent from each other because high degree centrality increases the likelihood of a node scoring high in betweenness centrality. This is especially remarkable in networks with uneven degree distribution. In the present study, which has used data created through reputational sampling, all the nodes are prominent in some way. Therefore, the goal is not to separate prominent actors from less prominent actors, as in some other studies, but to identify different kinds of prominence. Along with centrality

measures, the clustering coefficient is also applied to have a wider variety of perspectives on actor's prominence in networks.

The concept of triadic closure, which demonstrates the extent to which node's alters are connected with each other, was introduced more than a hundred years ago (Simmel, 1908). The tendency of people to connect with those who are also connected with each other has since then been observed in many real-life social networks. A measure for the presence of triadic closure is the clustering coefficient, which was introduced for two-mode networks in 2013 in a widely cited article by Tore Opsahl. It has also been implemented in the *tnet* library for statistical package R. Nevertheless, it has not been used in historical or social movement studies. The measure is formally defined as follows:

$$C^*(i) = \frac{\tau_{i,\Delta}^*}{\tau_i^*}$$

where τ_i^* is the number of 4-paths around node i and $\tau_{i,\Delta}^*$ is the subset of these paths in which the first and last nodes of the path share a common node that is not part of the 4-path. Hence, the clustering coefficient provides another view of intermediation than betweenness centrality. Betweenness demonstrates a node's ability to intermediate by being located on the shortest path between two other nodes on the whole network level. Meanwhile, the clustering coefficient observes a node's ability to connect to other nodes in its neighbourhood that would otherwise be disconnected. Although both perspectives are important, the present analysis aims to identify which one is the most usable for identifying New Education reformer's roles in the network in a way that is consistent with the observations made using other methods.

The analysis of the most prominent nodes finalises the study of the R-948 data. The previous parts of the study concentrated on the subgroups within New Education and the interconnectedness of such groups that enabled the emergence of a unified movement. The analysis of prominent nodes reveals the individual choices of action fostering the network formation observed in the earlier parts of the study. These choices are manifested either by being part of a close-knit group or by linking otherwise unconnected parts of the network. A summary of the substudies and the methods and data used in them is presented in Table 3.

Table 3. Summary of research data and methods

	Article I	Article II	Article III
RESEARCH QUESTIONS EXPLORED	Q2: Scout movement's relationship with New Education Q3: Consistency between qualitative and network analysis	Q1: Structure and change of New Education Q2: Scout movement's relationship with New Education Q3: Consistency between qualitative and network analysis	Q1: Structure and change of New Education Q3: Consistency between qualitative and network analyses
SAMPLING	Snowball: People included in or affiliated with R-948	Reputational: RC-58	Reputational: RC-58, Phase II only
DATA	$n_1 = 26$ $n_2 = 21$	$n_1 = 58$ $n_2 = 49$	$n_1 = 42$ $n_2 = 31$
ANALYSIS	Normalised two-mode centralities Two-mode factions	Two-mode factions Strong ties Removal of most central nodes	Two-mode centralities Two-mode clustering coefficients Key player metrics
LONGITUDINAL ANALYSIS	Year of first connections as a node variable	Division into two phases	None
MIXED METHODS DESIGN	Sequential explanatory	Conversion	Conversion
QUALITATIVE DATA	Biographies Published primary sources Archives	Biographies Published primary sources Archives	Biographies Published primary sources
ILLUSTRATION	Person projection	Bipartite Organisation projection	Bipartite Scatterplot of network properties
TOOLS	UCINET	UCINET	UCINET, R, tnet

5 Overview of the substudies

5.1 Article 1

Luoto, L. (2022). Shaping alternative education for all: Baden-Powell's affiliation network of educational reformers, 1900–1939. *History of Education, 51*(4), 541–559. 10.1080/0046760X.2021.2002432

The article aimed to reveal Robert Baden-Powell's (1857–1941) networks with educational reformers. Having a background as a military general, the connections through which he got ideas and support for his Scout scheme for citizenship education have remained unresolved within the academic community. Influencers were sought using three criteria: First, people whom Baden-Powell cited were gathered from his writings in *Headquarters Gazette* and from his books. Second, the Baden-Powell archives in Gilwell Park, UK, were used to find out with whom he corresponded. Finally, biographies were used to track people with whom he cooperated. Connections were considered binary. If any of these connection types were observed, the connection was registered. Because most of his connections were not directly relevant for educational reform, only those who were mentioned in the R-948 list of reformers were initially taken for closer examination, and their affiliations to organisations were collected from respective biographical sources. Here, a snowballing sampling was performed because there were persons who attended the same organisations with reformers and had a connection to Baden-Powell, even though they were not mentioned in R-948. Collecting the connections and snowball sampling ended when new connections could not be found. The connection list comprised 26 people and 21 organisations. All the persons had a connection to Baden-Powell and shared at least one membership with the other persons listed.

The data were treated as a two-mode network and analysed by native unprojected two-measures using UCINET. Betweenness and degree were measured to identify influential actors. Factions were constructed to identify subgroups. The year of the first connection with Baden-Powell was considered a node variable, where those connections before and after 1911 were differentiated. The analysis demonstrated

that the people were divided into two factions: Baden-Powell's connections with social reformers had often started before 1911, while connections with new educationalists had emerged thereafter. A leader for each group was identified based on centrality measures.

The article followed a sequential design in which the structuralist observations were analysed using qualitative material. It was observed that there was a break in relations between Baden-Powell and John Howard Whitehouse, the leader of the social reformers' faction, in 1910. At about the same time, Baden-Powell became interested in New Education reforms and became aware of the possibilities for the Scout movement to align with formal education. He built an increasing number of connections with reputed educationalists and Michael Sadler, the leader of the new educationalist faction. Although the break in relations with social reformers has been well covered in the literature, the other developments described were previously undiscovered and potentially important when placing the Scout movement in the field of education. Both methods used in the sequential design provided similar results, which enhanced the confidence in the results.

5.2 Article 2

Luoto, L. (2023). The social nature of New Education: An affiliation network analysis of the movement's evolution, 1875–1935. *Paedagogica Historica*, *59*(1), 36–54. 10.1080/00309230.2022.2095874

The article formalised the previously expressed idea of treating the British New Education movement as a social movement and network. Leaning on the literature of networks and social movements, the aim was to test whether the observations of the movement's structure, evolution and subgroups, as presented in the literature, could be expanded using this method.

Unlike Article I, this article followed a conversion mixed methods design, where structuralist observations were compared with qualitative evidence at several points. The outcomes of the previous step informed the following steps. In the article, reputed RC-58 data were used. The data were divided into two phases based on minimal overlap in connections, and the year 1905 was set as the cut-off point. Using qualitative analysis, several changes in the network, including the retirement of pioneering reformers, emergence of educational professorships and establishment of new organisations, validated the distinction and demonstrated that there was a transition from the preinstitutionalised to institutionalised phase of the reform.

During both phases, the existence of subgroups was investigated to see if there were similar groupings as described in the literature. During the preinstitutional

phase (1875–1905), a two-faction structure emerged, and reformers were divided into social reformers and school reformers. The former group was behind the founding of the first progressive school, Abbotsholme, while the latter group promoted the status of teacher profession and schooling of women. The differing interests of the factions were discussed based on the qualitative material. During the institutional phase (1905–1935), no stable factional structure was found. However, a strong link analysis showed a somewhat similar bifurcated structure as was seen during the preinstitutional phase. A further analysis was performed in which the most central organisations—New Education Fellowship and New Ideals in Education—were removed from the sample. Many recent studies have concentrated on the role of these umbrella organisations, but only minimal changes in the network arose as a result of their removal. The analysis has helped challenge the assumption that, during the institutional phase, New Education was fragmented and characterised by tension. Rather, several friendships and other relations between the reformers demonstrate that the movement was built on the social capital of its members. Moreover, the study showed that the relations between reputed reformers, rather than umbrella organisations, were the glue holding the movement together.

5.3   Article 3

Luoto, L. Identifying prominent actors in historical networks: The case of the New Education movement. In review.

Following the observations of Article II about the emergence of subgroups among New Education reformers, the focus of Article III was on the roles of prominent individuals. The high level of interconnectedness observed among the reformers was ultimately caused by individuals having different network roles. The article followed the hypothesis expressed, but not tested, in the literature that the New Education movement was built on two distinct roles, one of which collected like-minded people together and another bridging ideologically separate groups. Utilising the RC-58 database, persons having multiple affiliations during the institutional phase were used as the research data (n_1=42, n_2=31). Thus, the analysis also helped in understanding what kind of dynamics enabled the high connectivity observed in Article II after 1905.

The use of two-mode data has grown within historical studies. However, the analysis was performed using projection, which has some methodological disadvantages. Many historical network studies have aimed to identify prominent nodes. Several methods have been used, but no consensus about the most suitable methods has been reached, and several limitations have been observed in the literature. The article aimed to contribute to this methodological discussion by

applying native two-mode methods and, aware of the disadvantages of global centrality measures when used with historical data, demonstrate the use of a local clustering coefficient and key player metrics. As a distinction from many prior studies that aimed to distinguish important actors from less importance, the article aimed to identify different kinds of prominence. The material consisted of reputational members of the reform who were, by definition, all important actors.

A combination of one-mode degree and global clustering coefficient created a bifurcated structure where the reformers had either dense and small or diverse and large networks. The groups were called the *conveners* and the *mediators*, respectively. Given the mixed results obtained in previous studies on how well network measures identify the same prominent actors as historians, various network measures were analysed in parallel with qualitative material. The distinction presented above was confirmed by both qualitative and quantitative data. Brief biographies were constructed about some of the reformers to demonstrate the different network positions observed in the structuralist analysis.

The study provided further information about the development of New Education from 1905–1935 while contributing to the methodological discussion on the use of historical two-mode data and the identification of prominent actors out of it.

6   Main findings and discussion

6.1   Social bounds built New Education

Both historians and contemporary writers have identified the British New Education movement as fragmented (e.g., Cunningham, 2001; Selleck, 1968). These studies aimed to identify whether, behind this fragmentation, there were social structures that could explain its progress. In terms of the temporal boundaries of the movements, the study demonstrated long trajectories. Recent studies have often concentrated on the events that took place during the first decades of the twentieth century (e.g., Hofstetter & Schneuwly, 2009; Hai et al., 2020). Nevertheless, the present study demonstrated that many remarkable figures and forums of New Education thought started in the last decades of the nineteenth century. The change that occurred around 1905 had three driving forces, here according to a joint analysis of networks and biographical information. First, there was a generational shift among reformers. As many first-generation reformers retired, the new generation of leaders, who were already embedded in the reform through their affiliations, had new priorities. New legislation, such as the 1906 Education Act, aimed to diminish the tensions in society, and gradual improvements had been made to girls' schooling and teacher education. These developments redirected the reformers' attention in new directions. Remarkably, at the turn of the century, many of the influential reformers became professors of education. As new chairs were established, they received new accepted roles, vehicles, and audiences to promote the reformers. The reform was further fuelled by new ideas and methods that came from overseas, such as those of Montessori and Dewey. International influences were formally outside the scope of the analysis. Analysing the role of domestic networks, however, provides some view of the role of international networks. Popular ideas, such as those of Dewey and methods like the Dalton plan and Montessori method, all of which came from overseas, started to have some importance in the UK starting in the 1910s. These undoubtedly had a remarkable influence on institutionalisation. The present analysis showed that the movement started to emerge as a domestic project and that overseas ideas fed the already existing network rather that creating it. In the early 1900s, as

the letters quoted in Article II demonstrate, John Dewey was getting inspiration from UK thought leaders rather than inspiring them.

Another catalyst was the founding of umbrella organisations such as the New Education Fellowship and New Ideals in Education. These developments were discussed in the earlier literature (e.g., Brehony, 2004; Howlett 2017b). To complement the picture, a few remarks can be made based on the present analysis. In this study of reputed reformers, the structure of the network changed only very slightly if the New Education Fellowship and New Ideals in Education were removed. The analysis suggests that, despite the massive importance these organisations had in spreading the word to practicing teachers and the wider public, the network between central reformers was formed independently through other forums and, in many cases, much earlier.

Many earlier studies have concentrated on one organisation or piece of network at a time, which understandably promotes the role of the organisation in question and might strengthen the impression of fragmentation. Not much recent literature about wider networks could be found. The tensions and fragmentation observed in the literature often took place within that between the organisations. Moreover, the tension observed in the literature, such as division between Montessori's individual and Dewey's societal views, romanticism versus rationalism or the six schools of thought identified by Selleck, did not appear to have made the reformers of similar views convene together and remove themselves from people with opposite views. These observations are in line with studies of social movement showing that movements are often built up around social ties rather than common agendas (e.g., Putnam, 2000). Remarkably, many of the reformers were friends with each other.

One distinction does appear throughout the study: between social reformers and another group of reformers, who focused more strictly on educational questions. Baden-Powell's personal networks were divided into these two groups, as was the pre-1905 New Education network. After 1905, when there was more interconnectedness between the reformers than during the previous phase, a similar structure could be seen from an analysis of strong connections, as measured by multiple reputational members in common. These three analyses consisted partly of the same persons or organisations, so the observations cannot be considered independent from each other. Nevertheless, the continuous emergence of the distinction demonstrates that, during the preinstitutional phase, the New Education movement was somewhat divided. Rather than from tension, this distinction grew from the fact that the interests of the reformers were different at the time. As the social movement literature suggested, once initiated, activism can find new targets that have few or no substantial connections to the original cause. As New Education took root, the significance of the distinction between social and educational reformers decreased and it became barely recognisable.

6.2　Baden-Powell's New Education connections

However, much has been written about Robert Baden-Powell, and the present study was a small piece to fill a relatively big research gap. Most of the educational models and organisations founded during the turbulent era of New Education have become marginalised and appear today, if at all, under the term 'alternative education'. Baden-Powell's Scout movement has demonstrated a different approach to dissemination and adaptation. By—in a way—attempting to provide alternative education for all, it has crossed the complex and fluid boundaries between informal and formal education and attracted stable multimillion global membership. This anomalous trajectory has remained unnoticed.

Often dismissed as recreational or militaristic, the Scout movement has barely attracted the interest of scholars. The situation has been affected by the fact that the most accessible sources about his educational scheme are experience rich, theory poor. The present study concentrated on the networks and the views educationalists in Baden-Powell's network had about the value of the movement. In an age of concerns about juvenile delinquency, demands to offer public schooling for more children and implement new child-centred approaches to education, the Scout movement turned out to be a useful pedagogical product. This term has been introduced in the literature regarding the expansion of the Montessori method and Dalton plan. The Scout movement, which was founded in 1908, is the earliest example of pedagogical products that are schemes publicised and sold to the most appropriate sector of the population by means of designing communication strategies and seeking out the most suitable channels for distribution and dissemination (del Pozo Andrés & Braster, 2018, pp. 840–4). The current study has provided additional evidence that the creation of pedagogical products of this kind was one of the mechanisms that enabled dissemination during the institutionalised phase of the New Education Movement.

This frame of interpretation is followed throughout Article I. A network analysis showed that, until 1911, people affiliated with Baden-Powell were members of social reformers, yet after this point, connections with new educationalists increased. This observation is elaborated through documentary evidence, showing that the turn cannot be claimed to be a change in his educational thought. Rather, he was seeking the most appropriate way of promoting his pedagogical product for citizenship training. This shift was summarised in three developments. First, there was a break in relations between Baden-Powell and the leading social reformers in 1910. Second, collaboration with Michael Sadler and the practices of the foreign Scout organisations, which Baden-Powell became aware of during his European tour in 1911, showed him the possibility of aligning with educational authorities. Third, in the early 1910s, the establishment of self-governing schools and emerging public debate on the 'New Education' reforms were of interest to Baden-Powell, creating

new potential allies who shared Baden-Powell's advocacy for young people's agency.

The founding of the Scout movement took place around the point of institutionalisation of New Education identified in Article II, illustrating the changing needs and views that emerged at the time. Baden-Powell's networks were deeply rooted in preinstitutional phase organisations. Social critic John Ruskin, who inspired the social reformers at the time, was a family friend of Baden-Powell. Robert Baden-Powell's mother, Henrietta Grace, and sister, Agnes Baden-Powell, were especially inspired by Ruskin and acted actively within the Scout movement in its first few years. Henrietta Grace was also a board member of Girls Public Day School Trust and Women's Educational Union, both of which were included in the pre-1905 network. In 1910, there was a break in relations between Baden-Powell and Ruskin's disciple, John Whitehouse, leading to the founding of independent Scout organisations that followed more strictly progressive lines than those of Baden-Powell but only attracted modest membership. At about the same time, Baden-Powell became aware of the New Education reform and started to refer to its members. Hence, this was a process where Baden-Powell took some distance from the values and practices losing their popularity and reshaped his pedagogical product to meet the needs of the new political and educational environment while taking advantage of new opportunities it provided.

6.3   Identifying prominent actors

Different centrality measures have been proposed as a way to identify influential actors within a network. Measures, such as betweenness and degree centrality, have been found to identify quite well the same influential actors as other historical methods. However, they can include both false positives and false negatives. Historical network studies using two-mode data have predominantly been analysed as projected, even though it loses structuralist information. Studies that identify prominent actors in unprojected two-mode networks are rare. The present study has attempted, in part, to contribute to this need.

It has been hypothesised that the development of the New Education movement was facilitated by two kinds of networks: (1) horizontal networks building on the authority of individual innovators derived from the persuasiveness of arguments and a coalescence of mutual concerns and shared ideals, hence bringing like-minded people together, and (2) vertical networks, in which the influence of innovative approaches are enhanced by the positions of power that their advocates occupied and by official sponsorship of innovation. The present study aimed to operationalise this distinction and validate it with documentary evidence.

The ability of the centrality measure in identifying different kinds of prominence was analysed in terms of Baden-Powell's network in Article I and the post-1905 New Education network in Article III. Both cases showed that highly central persons are also relevant from a substantial point of view and that different centrality measures identify the same persons and, therefore, fail to identify different kinds of prominence.

In the case of Baden-Powell, the most central persons, both in terms of two-mode degree and two-mode betweenness, were headmaster J.H. Whitehouse and Professor Michael Sadler. It has been argued that Baden-Powell tried to hire Whitehouse, who had shown support for the movement, as his manager to enhance the credibility of his organisation and that Whitehouse, instead, joined an independent pacifist Scout organisation in 1909; at this point, their cooperation discontinued. The structuralist analysis, while supporting the earlier observations of Whitehouse's role, provides further information about the dynamics of the movement. The Vane rebellion, as the episode has been called, caused only a small amount of practical damage to the movement (Jeal, 2001, pp. 404–8). However, the fact that their cooperation was discontinued with the most central person of the group of social reformers, who had been a group from where Baden-Powell had sought support, might have forced him to seek new allies. So besides the pull factors behind Baden-Powell's turning to new educationalists, there were remarkable push factors.

The identification of Michael Sadler as one of the most central persons on Baden-Powell's network is more surprising because he has not been mentioned in the literature as having any connection with Baden-Powell. Although identification as central in the present research setting is not alone a sign of a close relationship between Baden-Powell and Sadler, this observation gave a reason to observe him more closely. During the process, it was found that, as one of the only established educationalists on the board of the Scouts, Baden-Powell had high hopes for him. A previously undiscovered letter from Baden-Powell that began their active collaboration was quoted at some length in Article I, illustrating the background of their collaboration. Therefore, while not providing ready answers, the network method informed how to proceed in the study.

Regarding the post-1905 New Education network, Article III showed that centrality measures, particularly one-mode degree, well identify people who are presented as remarkable in the literature. As in Article I, betweenness centrality and degree centrality can identify more or less the same persons. Therefore, the observation is different from some other studies (e.g., Diani, 2003) arguing that degree and betweenness centralities could be used to identify two distinct roles: people who bring like-minded groups together and people who build bridges between these groups. The current study suggests that different historical research designs might require different methods. The present data are characterised by a

relatively small size, where the number of nodes is tens rather than thousands, as in some other studies (e.g., Ochab, 2022; Bingenheimer, 2018). In affiliation networks, the degree distribution is more even than in networks where the creation of new connections does not require the remarkable use of time from the data subject. The present study has provided some confirmation of the idea that degree centrality is suitable for identifying remarkable actors. Combined with a qualitative assessment, it can be a useful part of a mixed methods research design. In addition, it showed that betweenness centrality does not, in a research design like this, provide additional information compared with degree centrality. As a theoretical and global measure, betweenness centrality does not hold, like degree centrality, a traceable counterpart in historical reality through which the property could be validated using qualitative data. It is also vulnerable to missing data, which is not uncommon in historical studies. These factors reduce its usefulness in historical studies.

The two-mode clustering coefficient, even though it was introduced in 2013 (Opsahl, 2013), has not been applied in historical studies. In real-world affiliation networks, nodes with high degree centrality are more likely to score high also in terms of clustering coefficient. Therefore, it should not be used as a sole indicator of prominence but rather as a measure to be examined in connection with other variables. The identification of potentially prominent nodes, whose prominence is further evaluated using other methods, is another promising use for this measure.

A combined analysis of the local clustering coefficient and one-mode degree centrality demonstrated a bifurcated structure where some reformers have small and dense networks while some others have created large and fragmented networks. Although this distinction is not exactly similar to the one described earlier by Cunningham (2001), the present analysis provides some confirmation of the idea that New Education was fuelled by two kinds of networks, both of which had a distinct role.

7 Limitations and reliability

7.1 Data acquisition

In this section, reliability and some research ethical issues are discussed. The discussion proceeds according to the stages of the study, starting with data collection and continuing with issues related to analysis and reporting.

For each study, a dataset appropriate for the research questions was constructed. Because all the datasets were samples and some cases were left out, this fact must be taken into account as a limitation when interpreting the results. Snowball sampling was used in Article I as part of the data collection. Although this increased the complexity of research design and added just four new names to the list, it is justifiable for two reasons. In network studies, individuals might be important if they create connections between existing clusters. The persons who were included through snowballing were all involved in youth organisations competing with Scouts or inspiring them and were often mentioned in the literature. They include the American naturalist E.T. Seton, utopian thinker John Hargrave, reverend W.B. Forbush and Major Francis Vane. Including these persons enables connecting the study to existing discussions on the subjects while demonstrating the connectedness of educationalists and youth organisations. On the other hand, the sampling method leaves some people outside. Major-General Roberts, Baden-Powell's military supervisor, is a good example of someone not included in the sample, even though they probably had some importance for the networks. Indeed, Major-General Roberts introduced Baden-Powell to Seton and accompanied him in some visits (Jeal, 2001, p. 377) but did not share any memberships. The same applies to his family members, especially his mother Henrietta Grace and his siblings George and Agnes Baden-Powell, who significantly affected him but did not share any memberships. Although the sampling reflects well Baden-Powell's links with educational reformers, it does not cover all the persons who were involved in building this network.

Regarding the RC-58 data, snowball sampling was not used. Even though reference books for the data were written in the 1960s and 1970s and assessments

about reformers' legacy have certainly evolved since then, over the course of collecting the connections, no new names emerged that were not yet included in R-948. In some cases, the authors of the reference books had the opportunity to interview the reformers or were personally involved in the events they wrote about. Some of the archival sources they used have not survived for today's researchers. For these reasons, the source books were used as primary sources when collecting the list of reformers, and their network connections were traced using the most recent texts available. As Stevenson and Crossley (2014, pp. 76–77) pointed out, constructing two-mode datasets from secondary sources might be a practical way to capture the leadership of social movements, which have more diffuse structures than formal organisations. However, this method is subject to several limitations. Different naming practices and emphases across the authors can cause bias, which was managed by cross-referencing. Data availability bias can exist in two ways. Biographers are more likely to mention subject's affiliations they think are familiar to readers, therefore increasing the prominence of well-known people in the network. Regarding well-known people, there are also more sources available, which increases the likelihood that all their affiliations are recorded. Nevertheless, affiliations were often mentioned in several sources, which increased the confidence to trust the coverage of the data collections. Despite some limitations, the use of secondary sources turned out to be a practical method for studying the movement's elite; it helps avoid typical issues that emerge when analysing full membership lists, such as the same-name-different-persons problem that has been documented both in the methodological literature (Scott, 2017, p. 58) and previous works studying the New Education networks (Read, 2012, p. 162).

In the present study, reputational sampling has been adapted in a way where people have not been included solely based on how many sources have mentioned them, but also based on in what kind of context they have been mentioned. Weight has also been given to how important their contribution to the movement was. The sampling method was very selective, and only a small section of all persons included in the initial name list were chosen for the sample. This has two implications. First, it is important to note that the observations were merely related to the leaders, not the wider movement. Second, the way the selection method is used could affect the results and this effect must be carefully considered. The exclusion criteria, which are described in detail in section 3.2, were transparent and assessed throughout the process. Having selected a larger sample would probably not have significantly affected the structuralist properties observed. As is typical in any real-world social network, degree distribution is quite uneven, so a minority of people are responsible for most connections. Many of the excluded persons had, according to available information, at most one contact. Having included more persons in the sample whose relevance was not as generally agreed upon by the authors as those included could

have reproduced the selection bias of individual authors, thus losing the benefits of using cross-referencing.

Single missing or inaccurate connections or nodes can cause more errors in the results of a structuralist analysis than in some other social science methodologies. This is especially true if the inaccuracies are related to nodes in central positions. This issue has been managed in two ways: The connections have, when applicable, been validated with qualitative data, as proposed in the methodological literature (Borgatti et al., 2018, pp. 42–45). Moreover, the methods of analysis applied, especially degree centrality, factions or clustering coefficients, are not as vulnerable to single missing values as global measures such as betweenness centrality or average path length. It has also been noted that the problem related to missing data is not always as remarkable with real-life archival data as in theory (Ryan & Ahnert, 2021).

7.2   Accuracy of analysis

The difference between strong and weak ties has been a widely used concept since they were famously introduced by Mark Granovetter (1973). Strong ties exist between close-knit members with frequent interactions, such as family and close friends. In contrast, weak ties are typified by distant social relationships and infrequent interactions, which are commonly observed between acquaintances or strangers (Granovetter, 1973). Board memberships are generally considered weak ties (Scott, 2017, p. 107). However, the actual meaning of a tie must be considered separately in each research setting. Although sharing a board membership with a group of people can be considered a predictor of a social relationship between the members, with larger groups, a similar assumption would be questionable. In the present analysis, it was not assumed that all board-linked reformers had a social relationship. Whenever they had, it was indicated in the text, but as a main rule, the links represented shared interests that were manifested by joining a social movement. This kind of interpretation has been used in past scholarship. In some application areas of two-mode analysis, people having a connection to the same nonhuman nodes have been regarded as culturally similar in a certain respect rather than as socially related. For example, in marketing studies, consumers can be linked to their purchases in a bipartite network, which might create meaningful interpretations, even though the consumers themselves do not identify themselves as members of the groups the researcher has created (Basov et al., 2020, p. 3; Borgatti et al., 2018, p. 269).

Qualitative analysis of the present study has demonstrated that sharing a membership is frequently a predictor of a social relationship, such as friendship. However, this cannot be said for all people. What can be said is that membership is

a sign of some interest in the same goals. Knowing what the organisations are and what they stand for provides an interpretative framework for understanding these aims. The basic units of the analysis are people and the organisations they have intentionally joined. In this respect, two-mode analysis addresses, to some extent, the criticism expressed by Caruso (2017, p. 272), who, in the context of the history of education, considered that network analysis disregards the effects of the actors' intentions, values and mutual orientation.

Obviously, it would be possible to analyse different connection types in parallel. In some historical studies (e.g., Levine, 2021; Lintunen & Elo, 2019), several connection types, such as living in the same place and attending the same societies, have been taken as one variable, allowing for assessing the diversity of connection types; however, this inevitably makes the interpretation of relationships more complex. Another obstacle here is the availability of material. Krischel and Fangerau (2013, p. 54) combined common memberships with, among others, citation relationships. It is, however, likely that, among the reformers, there were practitioners, like school founders, who wrote little or nothing, while others contributed mainly to the field through their text. Analysing citations could lead to a distinction between 'writers' and 'doers' rather than providing information about the reformers' dependencies.

The problem related to a single-angle view provided by using only one variable has been well covered in network literature and can be solved using multilayer approaches. In this approach, each variable is located on a separate layer, and the layers are then analysed independently, merged or analysed in their original form, depending on the requirements of the study (Dickison et al., 2016, pp. 39–42). In the present material, there were mentions of several connection types, such as the sibling relationships of women's education activists Maria Grey and Emily Shirreff and nursery school pioneers Margaret and Rachel McMillan. On several occasions, people who joined the same causes developed friendships, as observed by their biographers, while some others had tense relationships. Sir Robert Morant, Permanent Secretary of the Board of Education, admitted that he and Margaret McMillan had 'a rich friendship' and that they were both members of Froebel Society at the turn of the century. At around the same time, Morant's relationship with Professor Michael Sadler, to whom he had been a 'very close friend' and colleague, significantly cooled down because of professional disagreements (Mansbridge, 1932, p. 63; Sadler, 1949, pp. 192–6). These parameters are not comprehensive and comparable enough to be used in structuralist analysis, but they are discussed as part of qualitative analysis. On a general level, it seems that, in knowing the dynamic nature of social movements, people having kinships or friendships with each other often joined the same organisations. Data on interlocking

relationships also capture some notions of the more informal relationships and, therefore, have been used as the sole data source.

The research data of the present study consisted of binary information of who were or were not members of an organisation during the period studied. In this research design, network analysis is complemented with documentary analysis, which diminishes the possible adverse effect of having such robust data. It is still important to discuss whether the network analysis does justice to actors' purposes and motives.

It is not known, for example, what the motives are for joining or not joining the societies. There were cases where people indicated support as a cause but were unable to join officially because of their roles as public servants (Ellsworth, 1979, pp. 214–5). Some people attended the organisation without being formally members. Even though membership is factual binary information, there might be reasons why somebody's membership status would not reflect their actual intentions. Despite these minor observations, membership has been taken as the only indicator because biographers' interpretations about support or participation would be an unreliable, not commensurate, source.

In longitudinal studies, it is good to note that people do not often resign, even if their participation has died away. In the present study, the longitudinal findings were based on the founding of new organisations and the retiring of their officials. Although it can be of interest when somebody joined an organisation, the fact that they have not officially resigned cannot usually be used as a sign of active involvement. Therefore, in Article I, years of first contact were used to separate early contacts from later ones, but no further sophisticated analysis of timing was performed. In Article II, all the contacts were divided into two phases. Contacts that persisted from Phase I to Phase II were based on documentary evidence showing active involvement during Phase II. The observation that the network changed across time cannot alone be considered a sign of causality with any coincidental societal events, which is true in the direction that the network changes have caused the event and in that the events caused the changes. The temporal changes have been reported as such, and their possible consequences have been discussed. The relationship between network change and historical events is, in this case, two-directional and complex. It would not be possible to create any model capturing this complexity. However, the combined use of network and documentary evidence helps make it more understandable.

As with constructing the subgroups out of the data, multiple methods are available, and they provide somewhat different results. Some methods allow nodes not to be assigned to any subgroups, while others allow overlapping memberships. In a meta-analysis of 21 clusters (Freeman, 2003), it was observed that, although there was good agreement between the methods regarding to which cluster the

majority of nodes should be assigned, some nodes were assigned differently, depending on which clustering method was deployed. In Articles I and II, where clusters were constructed using a two-mode factioning function, the subgroups were validated using qualitative evidence. In both cases, documentary evidence provided a meaningful interpretation for the clusters, hence validating the results and providing some confirmation for the applicability of the method. Nevertheless, and considering the observations of Freeman (2003), the stability of clusters does not guarantee that the assignment of each person to a cluster is unquestionable. This especially applies to people located near the edge of the faction. The articles mostly concentrated on the factions rather than on its members. People's assignments to the factions were only referred to for illustrative purposes, and here, central persons whose memberships were clear were used. However, besides performing the analysis correctly, it is important to report the results in a way that provides a correct impression of each person's role. The questions of preserving the research subject's posthumous reputation and following good research ethics in the reporting are discussed in the following section.

7.3   Reporting and research ethics

Since its inception in 2019, the General Data Protection Regulation (GDPR) has significantly affected the collection and use of personal data. With the goal of protecting natural persons regarding the processing of personal data and free movement of such data, persons who have passed away are excluded from the scope of the regulation (Regulation 679/2016). Nevertheless, the fact that the research cannot ask for deceased persons' consent to participate in the research and the lack of a binding legislative framework or preacceptance required by the university do not mean there would not be a need to safeguard the privacy of the research subjects. The researcher must take care that posthumous dignity, including posthumous privacy, is respected.

Ethics of the research of the past has gained increasing interest (e.g., Nys, 2021, pp. 4–6). The emergence of digitised sources and quantitative methods has initiated questions, such as the ethics of the reuse or combination of data that have traditionally not touched historians. In recent years, the approach has enjoyed increasing attention because of the wider availability of digitised materials that are often searchable, allowing for the use of big data applications (Lemercier and Zalc 2019, 19–22). Recently, the emergence of natural language processing has increased the collection of historical data (e.g., Franzosi, 2017) and network data (Błoch et al., 2022) from less-structured documents, increasing the importance of this method of information acquisition. Ethical considerations regarding the present study are, therefore, related to a larger discussion in the domain.

If the subjects of the study are deceased and the data are publicly available, it does not mean there would not be any ethical concern, even though all of the ethical compliance procedures would not be applicable. As Charles Kadushin argued in his article on the ethics of social network research, it should be assessed whether the hazards to the individual outweigh any benefits to 'science' or the research subjects (2005, p. 143). In the case of analysis using public records, the data were already there for 'all to see', but, without first collecting the data from various sources and putting them in a database and only then analysing and graphing them, the data would have remained invisible (Kadushin, 2005, p. 142). The archives used in the present study are well managed, and restrictions of their use are implemented if there is, for example, a need to protect the privacy of the still living relatives of the data subjects. Even though the archives are, in principle, open to anyone, making the material available to a wider audience requires considering the benefits and possible defects, including the eventual harm caused to living persons (Tesar, 2015, pp. 101–114).

Even though data are already openly available in archives or libraries, by publishing it, the data become more accessible to others, resulting in diminished information privacy for research subjects. The researcher must carefully consider the consequences of publishing. It should also be considered in which light the data are made visible and if it puts their posthumous reputation in the correct light. As personal, and sometimes short-lived, participation in a reform movement is taken as the basic unit of the present research data, this information might be, while important and valid for understanding the development of the movement at a certain point in time, insignificant in terms of a person's career and contribution as a whole. It is not sufficient that the analysis method is valid and used correctly. The study should be reported in a way that helps avoid misinterpretations from the reader's side.

Contradictory to this interest is the pursuit of making the research process traceable. Traceability means that the reader can see where the groups come from and assess their validity. Because reputational sampling with cascading exclusion criteria has been applied, the reader should be able to see who has been selected in the sample. In Article II, the main point of the analysis was to identify subgroups, and naming all members of the subgroup was somewhat unnecessary. Nevertheless, both in Articles I and II, all the persons included in the analyses were named to allow the reader to assess the accuracy of the observations and enable eventual further research. These goals were assessed as primary to protecting research subjects' privacy. In Article III, which discussed the individual's roles in the movement, only those actors were named whose role was discussed in detail in the text. Although the aim of the article was to identify typologies for participation using individuals as the research data, drawing the reader's attention to each person would probably not have correctly shown their roles. If, for example, a person joined two organisations, this

is a valuable piece of information regarding the interconnectedness of the movement. However, if no further information about the motives for joining the organisations were available, naming the person could encourage misinterpretations.

Respecting deceased research subjects does not, however, mean that not naming them is a default option in all cases. Besides sacrificing the possibility of reusing the research data, naming the individuals may provide a context for their contribution, thus making their voice heard more clearly (Moore, 2012, pp. 331–340). These considerations are especially important regarding those who are less well known and about whom there is no other information available in contemporary scholarship. The people included in the present study were somewhat well known. They were, after all, named at least briefly in several books. If the conclusions of the present study were too straightforward in some ways because of the research approach applied, an interested reader could consult other sources for a more comprehensive view. In the future, if network analysis is increasingly applied, as Fuchs (2007, pp. 185–197) has called, to focus on members of minorities and other actors that tend to be neglected in the studies of the history of education, the question of balance between traceability and privacy will grow in importance.

Sometimes, a two-mode network approach has been used to obtain data that could not be collected directedly. For example, people's sexual behaviour has been predicted based on an affiliation network composed of venues, such as clubs or web sites or the target group frequented (Niekampa et al., 2013, pp. 225, 235). Criminologists have sought to identify which actors in a criminal network can be arrested to maximally disrupt the behaviours of a criminal organisation. Two-mode data have been created, for example, of mafia members attending summits of their organisation (Basu & Sen, 2021; Duxbury, 2019; Duxbury & Haynie, 2020). Although the uses described above have an acceptable societal function, such as public health promotion and increasing safety, these methods have possible uses that are more questionable. Tracking information indirectly about the connections the subjects would not voluntarily give requires a necessity assessment.

Article I was partly motivated by the observation that the research subject, General Baden-Powell, and his relatives and associates destroyed parts of his correspondence and edited documents to affect his legacy. The study demonstrated some aspects of the changes in his educational networks and thought that have been unnoticed by previous authors. This was largely because of the application of the two-mode method. Even though the observations were eventually verified by documentary evidence, network analysis helped create hypotheses and locate the people to be examined.

These results are of general interest because Baden-Powell was a public figure, and the observations were related to his educational thought and action. Nevertheless, because the method proved useful for following traces that had been

attempted to be destroyed, it would probably be possible to find scientifically less justified uses of it. Tracking intimate relationships of deceased persons is one such opportunity. Although two-mode network methods are powerful tools for historical studies, the researcher must consider if uncovering events or connections the research subject has intentionally tried to hide is always the right thing to do.

8 Implications and future endeavours

8.1 Theoretical and practical implications

The immediate contribution of the current work was to provide social explanations to some existing historical debates. These included uncovering the invisible contributors behind Baden-Powell, as they were called by Dedman (1993), and uncovering the social structure of the New Education movement that held this ideologically fragmented reformatory group together. Moreover, the work provided some confirmation of the hypothesis set by Cunningham (2001) about the two distinct roles among the reformers.

Besides these direct results, the present study made a versatile contribution to wider and more recent discussions. By treating New Education as a social movement and studying it through theories and methods commonly applied in social movement research, the work not only uncovered new aspects of New Education, but also provided a theoretical framework for analysing other educational reforms that were rooted in civil action and grassroots discontent. One of these aspects was the role of leadership among New Education reformers. The movement was fuelled both by dense networks that channelled the initial enthusiasm and by diverse networks whose leaders were able to bring ideologically disjointed reformers together. Although this idea of 'bridging' and 'bonding' is well known in the social movement literature, it has barely been applied to understand the trajectories of educational reforms.

The emergence of different forms of leadership enabled the institutionalisation of the reform that took place during the first decades of the twentieth century (Hofstetter & Schneuwly, 2009, p. 453). Modelling the networks during the preinstitutional and institutional phases of the reform articulated some of the factors that built up the institutionalisation, including the introduction of first academic chairs in education, which were quickly occupied by leading New Education reformers. Hence, the present study provided both some new perspectives on the process of institutionalisation in the UK and an analytical framework for studying similar processes elsewhere.

New Education was partly rooted in the struggle of women to be admitted into the public sphere and the sphere of paid work. The professionalising project of women benefitted from the development of teacher education, which enabled

upward mobility for many young women from lower middle-class and professional homes. Concurrently, the growing political awareness of the working class added pressure to raise the school leaving age and challenged pedagogy based on submissive obedience and Bible teaching. Describing the development of the New Education movement reveals how these major societal challenges were addressed by the civil society, first by founding pioneering institutions and later by aligning resources to increase political capital for the fulfilment of the wider reform. Eventually, as the central demands were echoed by the government, the movement lost much of its importance.

In recent years, most studies of New Education have been transnational or comparative in nature, concentrating on networks through which the new ideas attracted new audiences from across national borders. The present study has complemented the picture by modelling the process of national dissemination. The process involves increasing political capital for the fulfilment of the reform and is separate, though closely connected, from the process of cross-border dissemination. One concept that unites these two perspectives is that of 'pedagogical product', introduced by del Pozo Andrés and Braster (2018), here with respect to the Montessori method and Dalton plan. Pedagogical products are easily deployable concepts that address some topical issue in the current educational landscape and are systematically promoted using the most suitable channels for distribution. By applying these concepts to the early development of the Scout movement, the present study has revealed a dual contribution. Since the Scout scheme was introduced several years earlier and with more enduring results than the pedagogical products referred to earlier, the current discussion reasserts the importance of pedagogical products as a tool for the reforms of the time, expanding the discussion across the fluid boundaries of formal and informal education. Many recent texts have referred to Baden-Powell as a militaristic utopian. Although not fully rejecting these aspects in his thought, this work showed that his scheme was seen by his contemporaries as a more relevant approach for solving the educational issues of the time than what is recognised today. Considering that some accounts of noted scholars (e.g., Scott & Bromley, 2014, pp. 150–5) described Baden-Powell's contribution mainly by echoing the tones of his contemporary critics, the present study provided some new and underrepresented perspectives to the discussion.

The dissemination of educational models and ideals has been, especially from a transnational perspective, a well-researched area both in historical and contemporary perspectives. The growing role of global organisations, such as UNESCO, in the dissemination of educational models stresses the importance of understanding the networks through which influences spread, as well as the methodologies to analyse them (Marcella, 2018). Regarding contemporary educational reforms, the importance of networks is well regarded and has recently gained increasing attention

(Finnigan et al., 2018, pp. 151–160). Thus, historical studies can benefit from how today's networks are studied and vice versa, unifying the educational research community methodologically.

Because the potential influences of the present study are relatively diverse, amid increasing numbers of high-quality academic publications, special attention is needed for new ideas to reach the appropriate audiences. During this project, the dissemination of the results was promoted in multiple ways. The studies forming the current dissertation have been presented, among others, at the conferences of the International Network for Social Network Analysis (INSNA) and the International Standing Conference for the History of Education (ISCHE), hence building modest bridges between the communities of history of education and network scholars. In addition to academic activities, a popular account of the themes discussed in Article I was published in the periodical of the Finnish Scout Museum Foundation, which reaches practicing Scouts better than scholarly journals (Luoto, 2022).

8.2 Methodological implications

The use of social network analysis in historical studies has increased over the past decade. Because network data cannot usually be depicted afterwards using standard historical sources, such as correspondence, attention has often been directed at more accessible resources, such as membership lists and other affiliation data. These data, such as people's coappearance in public documents, has then been analysed as a two-mode network. The present study aimed to address several limitations of previous research and test novel research designs that make the method more reliable and usable.

The prevailing way to analyse the data has been to make a projection out of it, even though this method has long been known to waste structuralist information. Because the links in projected data are not formed independently but through conversion, the assumption of independence required for methods based on random networks is also violated. Recently, new and improved methods for analysing two-mode data in its original form have been introduced, and it has been argued that there should no longer be a need to project network data (Knoke et al., 2021, p. 37). The present study demonstrated the use of a nonprojected approach and some of the benefits of keeping the duality of people and events. Although some of the methods used, such as two-mode clustering coefficient, have been available to researchers for some time, their one-mode counterparts have instead been applied in recent historical works (e.g., Ochab, 2022, p. 5; Opsahl, 2013).

The increased popularity of historical network analysis has initiated the discussion about how well the observations obtained through network measures are

in line with the assessments made by historians. Although the methods have proven to be accurate, they produce both false positives and false negatives. The present research design, where structuralist observations are validated using qualitative material, can provide researchers with a new tool for identifying eventual measurement errors as part of the same study instead of leaving the validation of observations for further research. Combining qualitative and quantitative perspectives also addresses the critique expressed by some educational historians, who have suggested that network analysis ignores the account of the values and motives of the actors. A mixed methods design, where both approaches have equal weight, makes it possible to obtain an overall picture of complex phenomena and provide new potential uses for network analysis within the history of education. So far, the expectation expressed in a special issue of *Paedagogica Historica* 16 years ago that the history of education could profit from network methods developed in other disciplines has been realised to a small extent (Fuchs, 2007).

Finally, the present study demonstrated the applicability of reputational sampling and generating network data from biographies. Although both methods have been well documented in the methodological literature and have been used in empirical studies decades ago, more recent authors have preferred using precollected data. Published name lists and databases that have been compiled in the context of a larger research project are valuable resources for network researchers but inevitably limit the use of the method to cases where such data are available. The present methodology, in contrast, enabled contributions to a wider variety of discussions. People affiliated with Baden-Powell or the New Education movement have been extensively discussed in published sources, but no single source could provide sufficient information for a network study. Collecting the information in a systematic way from less-structured sources enabled this work and could be applicable to other similar needs.

8.3   Directions for future research

The boundaries of the present study indicate some natural topics for further research. The international dissemination of ideas was excluded mainly for data availability reasons and to keep the research scope manageable. Although these connections have been studied earlier and extensively so in terms of individual networks and the role of umbrella organisations, there are still unfollowed paths regarding how the reformatory ideas travelled between the UK and other countries (e.g., Brehony, 2004; Howlett 2017b). Reformers, whose role is not covered in the literature in detail, include, among others, Laurin Zilliacus, who acted as renowned teacher both in Finland and the UK.

Concentrating on the movement's elite, this work left the social structure of the rank-and-file members unstudied. Conducting such research would probably require a different research method than the present one but could provide an important complementary perspective to the findings presented here. Besides these actors, the present study also left intellectual influences untouched and many undeniably remarkable persons out of the scope. Cocitation analysis would complement the picture by illustrating the role of authors who did not take part in the social activity but were involved in creating the progressive thought.

Major accounts of Baden-Powell have predominantly used his published works and remarkable archives as sources (for a list of manuscript collections, see Jeal, 2001, pp. 588–590). Hence, new perspectives on his educational thought and action could be created by turning to other sources. Previously underutilised resources included the letters of Baden-Powell that are stored in the collections of their recipients rather than the sender, as well as discussions about the Scout movement in newspapers. Both were only selectively used in the current work. Substantially, Baden-Powell's views on the role of education in empowering youth closely resemble the concept of service learning and could be studied from this perspective. His views on religious upbringing and opposition to direct moral education, in turn, mirror those of the moral education movement at the time. Further study of these similarities could be of interest for understanding the relationship between religions and the Scout movement of today.

In the current dissertation, two-mode factions, centrality and clustering coefficients were discussed in relation to the content of the documents from which the network data were initially converted. Replicating similar analyses with different data would provide further information about the usefulness and eventual limitations of the method in understanding the past. Networks are, as described in a recent book, 'a category of study that cuts across traditional academic barriers, uniting diverse disciplines through a shared understanding of complexity in our world' (Ahnert et al., 2021, p. 4). Carrying out new studies that combine structuralist analysis with close reading of the documents in an appropriate way helps bring the field in the above-mentioned direction. Bridging different methodological traditions not only improves the validity of the results, but it also narrows the gaps between different sections of network research and researchers.

Abbreviations

R-948   List of reputational reformers
RC-58   List of reformers and their connections condensed from R-948

List of References

Ahnert, R., Ahnert, S., Coleman, C., & Weingart, S. (2021). *The network turn*: *Changing perspectives in the humanities. Elements in publishing and book culture.* Cambridge University Press. https://doi.org/10.1017/9781108866804

Aldrich, R. (2009). The New Education and the institute of education, University of London, 1919–1945. *Paedagogica Historica, 45*(4–5), 485–502. https://doi.org/10.1080/00309230903100882

Alzahrani T., & Horadam K.J. (2016). Community detection in bipartite networks: Algorithms and case studies. In J. Lü, X. Yu, G. Chen, & W. Yu (Eds.), *Complex systems and networks*. *Understanding complex systems* (pp. 25–50)*.* Springer. https://link.springer.com/chapter/10.1007/978-3-662-47824-0_2

Basov, N., Breiger, R., & Hellsten, I. (2020). Socio-semantic and other dualities. *Poetics, 78.* https://doi.org/10.1016/j.poetic.2020.101433.

Basu, K., & Sen, A. (2021). Identifying individuals associated with organized criminal networks: A social network analysis. *Social Networks, 64*, 42–54. https://doi.org/10.1016/j.socnet.2020.07.009

Batagelj, V. (2022). Analysis of the Southern women network using fractional approach. *Social Networks, 68*, 229–236. https://doi.org/10.1016/j.socnet.2021.08.001

Beckett, S. J. (2016). Improved community detection in weighted bipartite networks. *R. Soc. open sci. 3*(1). http://dx.doi.org/10.1098/rsos.140536

Bingenheimer, M. (2018). Who was 'central' in the history of Chinese Buddhism? A social network approach. *International Journal of Buddhist Thought & Culture, 28*(2), 47–67. https://doi.org/10.16893/IJBTC.2018.12.28.2.45

Błoch, A., Filho, D., & Bojanowski, M. (2022). Networks from archives: Reconstructing networks of official correspondence in the early modern Portuguese empire. *Social Networks, 69*, 123–35. https://doi.org/10.1016/j.socnet.2020.08.008

Borgatti, S., & Everett, M. (1997). Network analysis of 2-mode data. *Social Networks, 19*(3), 243–269. https://doi.org/10.1016/S0378-8733(96)00301-2

Borgatti, S., Everett, M., & Johnson, J. (2018). *Analysing social networks*. Sage.

Boyd, W., & Rawson, W. (1965). *The story of the New Education*. Heinemann.

Brehony, K. (2001). From the particular to the general, the continuous to the discontinuous: Progressive education revisited. *History of Education, 30*(5), 413–32. https://doi.org/10.1080/00467600110064717

Brehony, K. (2004). A New Education for a new era: The contribution of the conferences of the New Education fellowship to the disciplinary field of education 1921–1938. *Paedagogica Historica, 40*(5–6), 733–55. https://doi.org/10.1080/0030923042000293742

Brooks, R. (1998). *King Alfred School and the Progressive Movement, 1898–1998.* University of Wales Press.

Bulatov, I. (2021). Russian emigrant Scouts and their activities regarding the construction of national identity. *History of Education*, *50*(2), 161–181. https://doi.org/10.1080/0046760X.2020.1825833

Burchard, J., & Cornwell, B. (2018). Structural holes and bridging in two-mode networks. *Social Networks, 55*, 11–20. https://doi.org/10.1016/j.socnet.2018.04.001

Carrington. P. (2014). Social network research. In S. Domínguez, & B. Hollstein (Eds.), *Mixed methods social network research: Design and applications* (pp. 35–64)*.* Cambridge University Press.

Caruso, M. (2017). Disruptive dynamics: The spatial dimensions of the Spanish networks in the spread of Monitorial schooling (1815–1825)*.* *Paedagogica Historica, 43*(2), 271–82. https://doi.org/10.1080/00309230701248412

Chang, F., Zhang, B., Zhao, Y., Wu, S., Zou, G., & Niu, S. (2019). Overlapping community detection in bipartite networks using a micro-bipartite network model: Bi-EgoNet. *Journal of Intelligent & Fuzzy Systems, 37*(6), 7965–76. https://doi.org/10.3233/JIFS-190320

Cunningham, P. (2001). Innovators, networks and structures: towards a prosopography of progressivism. *History of Education, 30*(5), 433–51. https://doi.org/10.1080/00467600110064726

Cunningham, P. (2018). Progressive biographies: Relating the lives of educational innovators. *History of Education*, *47*(1), 125–131. https://doi.org/10.1080/0046760X.2017.1364435

Davis, A., Gardner, B., & Gardner, M. (1941). *Deep South: A social anthropological study of caste and class*. University of Chicago Press.

Dedman, M. (1993). Baden-Powell, militarism and the invisible contributors to the Boy Scout scheme 1904-1920. *Twentieth Century British History, 4*(3), 201–23. https://doi.org/10.1093/tcbh/4.3.201

del Pozo Andrés, M. & Braster, S. (2018). The power of networks in the marketing of pedagogical ideals: The Dalton Plan in Great Britain (1920–1925). *History of Education, 47*(6), 840–64. https://doi.org/10.1080/0046760X.2018.1493749

de Valeriola, S. (2021). Can historians trust centrality? Historical network analysis and centrality metrics robustness. *Journal of Historical Network Research, 6*(1), 85–125. https://doi.org/10.25517/jhnr.v6i1.105

Diani, M. (2002). Network analysis. In B. Klandermans & S. Staggenborg (Eds.), *Methods of social movement research* (pp. 173–200)*.* University of Minnesota Press.

Diani, M. (2003). 'Leaders' or brokers? Positions and influence in social movement networks. In M. Diani, & D. McAdam (Eds.), *Social movements and networks: Relational approaches to collective action* (pp. 105–22). Oxford University Press.

Dickison, M., Magnani, M., & Rossi, L. (2016). *Multilayer social networks.* Cambridge University Press.

Douglas, M. (1986). *How institutions think?* Syracuse University Press.

Duxbury, S. (2019). Identifying key players in bipartite networks. *Network Science, 8*(1), 42–61. https://doi.org/10.1017/nws.2019.62

Duxbury S., & Haynie, D. (2020). The responsiveness of criminal networks to intentional attacks: Disrupting darknet drug trade. *PLoS ONE, 15*(9), e0238019. https://doi.org/10.1371/journal.pone.0238019

Düring, M. (2016). How reliable are centrality measures for data collected from fragmentary and heterogenous historical sources? A case study. In T. Brughmans, A. Collar, & F. Coward (Eds.), *The connected past - Challenges to network studies in archaeology and history* (pp. 85–102). Oxford University Press.

Düring, M., Eumann, U., Stark, M., & von Keyserlingk, L. (2016). *Handbuch Historische Netzwerkforschung: Grundlagen und Anwendungen*. Lit Verlag.

Ellsworth, E. (1979). *Liberators of the female mind*. Greenwood Press.

Esparza, N., & Jeon, S. H. (2013). Interlocking boards of trustees and grant acquisition among homeless service organizations, *Public Performance & Management Review, 36*(4), 637–664. https://doi.org/10.2753/PMR1530-9576360407

Everett, M. (2016). Centrality and the dual-projection approach for two-mode social network data. *Methodological Innovations, 9*. https://doi.org/10.1177/2059799116630662

Everett, M., & Borgatti, S. (2012). The dual-projection approach for two-mode networks. *Social Networks, 35*(2), 204–210. https://doi.org/10.1016/j.socnet.2012.05.004

Farrell, J. (2012). Foreword. In E. Vallory, *World Scouting (pp. xi–xv)*. Palgrave.

Fenwick, T., & Edwards, R. (2011). Considering materiality in educational policy: Messy objects and multiple reals. *Educational Theory, 61*(6), 709–726. https://doi.org/10.1111/j.1741-5446.2011.00429.x

Ferchhoff, W. (2013). Romantisierung. Protest und Ideologie bei den Pfadfindern und der Bürgerlichen Jugendbewegung in der historischer Perspektive. In M. Witte & Y. Niekrenz (Eds.) *Aufwachsen zwischen Traditions- und Zukunftsorientierung: Gegenwartsdiagnosen für das Pfadfinden.* Springer VS.

Field, S., Frank, K., Schiller, K., Riegle-Crumb, C., & Muller, C. (2006). Identifying positions from affiliation networks: Preserving the duality of people and events. *Social Networks, 28*(2), 97–123. https://doi.org/10.1016/j.socnet.2005.04.005

Finnigan, K., Luengo-Aravena, D., & Garrison, K. (2018). Social network analysis methods in educational policy research. In C. Lochmiller (Ed.), *Complementary research methods for educational leadership and policy studies.* Palgrave Macmillan. https://doi.org/10.1007/978-3-319-93539-3

Franzosi, R. (2017). A third road to the past? Historical scholarship in the age of big data. *Historical Methods, 50*(4), 227–44. https://doi.org/10.1080/01615440.2017.1361879

Freeman, L. (2003). Finding social groups: A meta-analysis of the Southern women data. In R. Breiger, K. Carley, & P. Pattison (Eds.), *Dynamic social network modeling and analysis* (pp. 39–77). The National Academies Press.

Fuchs, E. (2007). Networks and the history of education. *Paedagogica Historica, 43*(2), 185–97. https://doi.org/10.1080/00309230701248271

Fuhse, J. A. (2009). The meaning structure of social networks. *Sociological Theory, 27*, 51–73. https://doi.org/10.1111/j.1467-9558.2009.00338.x

Galaskiewicz, J., Bielefeld, W., & Dowell, M. (2006). Networks and organizational growth: A study of community based nonprofits. *Administrative Science Quarterly, 51*(3), 337–380. https://doi.org/10.2189/asqu.51.3.337

Gerr, H. (1981). *Baden-Powells Entwurf einer Erziehung durch Scouting. Einflüsse und Entwicklungstendenzen.* Julius-Maximilians-Universität zu Würzburg.

Granovetter, M. (1973). The strength of weak ties. *American Journal of Sociology, 78*(6), 1360–1380. https://doi.org/10.1016/B978-0-12-442450-0.50025-0

Fangerau, H. (2009). Der Austausch von Wissen und die rekonstruktive Visualisierung formeller und informeller Denkekollektive. In H. Fangerau & T. Halling (Eds.), *Netzwerke. Allgemeine Theorie oder Universalmetapher in den Wissenschaften?* (pp. 215–46). Transcript.

Hai, A. A., May, H., Nawrotzki, K., Prochner, L., & Valkanova, Y. (2020). New education: An experimental era. In A. A. Hai, H. May, K. Nawrotzki, L. Prochner, & Y. Valkanova (Eds.), *Reimagining teaching in early 20th century experimental schools* (pp. 1–25). Palgrave Macmillan. https://doi.org/10.1007/978-3-030-50964-4_1

Hofstetter, R., & Schneuwly, B. (2009). Contrasted views of new education and its transformation. Anticipation of a new mode or ambivalence? *Paedagogica Historica, 45*(4–5), 453–4. https://doi.org/10.1080/00309230903100841

Hollstein, B. (2014). Mixed methods social network research: An introduction. In S. Domínguez & B. Hollstein (Eds.), *Mixed methods social network research: Design and applications* (pp. 3–34)*.* Cambridge University Press.

Howlett, J. (2013). *Progressive education.* Bloomsbury.

Howlett, J. (2017a). *Edmond Holmes and progressive education.* Routledge.

Howlett, J. (2017b). The formation, development and contribution of the new ideals in education conferences, 1914–1937. *History of Education, 46*(4), 1–21. 10.1080/0046760X.2016.1268215

Hughes, K. L. V. (1915). *Citizens to be.* Constable.

Hutchinson, H. (1914). *Life of Sir John Lubbock Lord Avebury* (Vol. 2). Macmillan.

Jackson, C. (2017). Using social network analysis to reveal unseen relationships in medieval Scotland. *Digital Scholarship in the Humanities, 32*(2), 336–43. https://doi.org/10.1093/llc/fqv070

Jasny, L., & Lubell, M. (2015). Two-mode brokerage in policy networks. *Social Networks, 41*, 36–47. https://doi.org/10.1016/j.socnet.2014.11.005

Jeal, T. (2001). *Baden-Powell*. Yale University Press.

Kadushin, C. (2005). Who benefits from network analysis: Ethics of social network research. *Social Networks, 27*, 139–53. https://doi.org/10.1016/j.socnet.2005.01.005

Knoke, D., Diani, M., Hollway, J., & Christopoulos, D. (2021). *Multimodal political networks.* Cambridge University Press.

Krautmacher, J. (2013). Vorwort. In M. Witte & Y. Niekrenz (Eds.), *Aufwachsen zwischen Traditions- und Zukunftsorientierung: Gegenwartsdiagnosen für das Pfadfinden* (pp. 5–6). Springer VS.

Krischel, M., & Fangerau, H. (2013). Historical network analysis can be used to construct a social network of 19th-century evolutionists. In H. Fangerau, H. Geisler, T. Halling, & W. Martin (Eds.), *Classification and evolution in biology, linguistics and the history of science* (pp. 45–56). Franz Steiner Verlag.

Lalli, R., Howey, R. & Wintergrün, D. (2020). The dynamics of collaboration networks and the history of general relativity, 1925–1970. *Scientometrics, 122*, 1129–1170. https://doi.org/10.1007/s11192-019-03327-1

Lauman, E., Marsden, P., & Pensky, D. (1983). The boundary specification problem in network analysis. In R. Burt & E. Minor (Eds.), *Applied network analysis: A methodological introduction* (pp. 18–87). Sage.

Lemercier, C., & Zalc, C. (2019). *Quantitative methods in the humanities: An introduction*. University of Virginia Press.

Levine, M. (2021). Post WWI Chinese revolutionary leaders in Europe. *Journal of Historical Network Research, 5*(1), 187–232. https://doi.org/10.25517/jhnr.v5i1.125

Lintunen, T., & Elo, K. (2019). Networks of revolutionary workers: Socialist red women in Finland in 1918. *International Review of Social History, 64*(2), 279–307. https://doi.org/10.1017/S0020859019000336

Lundberg, B. (2022). Localized internationalism: Camping across borders in the early Swedish boy scout movement. *The Journal of the History of Childhood and Youth, 15*(1), 75–92. https://doi.org/10.1353/hcy.2022.0004

Luoto, L. (2022). Erilaisia syöttejä erilaisille kaloille: Robert Baden-Powellin rooli kansalaiskasvatuksen kehittäjänä [Different bait for different fish: Robert Baden-Powell's role as a developer of citizenship education]. In S. Alvesalo (Ed.), *Suomen Partiomuseon vuosikirja 2021* (pp. 52–63). Suomen Partiomuseo.

Ma, J., & DeDeo, S. (2018). State power and elite autonomy in a networked civil society: The board interlocking of Chinese non-profits. *Social Networks, 54*, 291–302. https://doi.org/10.1016/j.socnet.2017.10.001

MacDonald, R. (1993). *Sons of the empire. The frontier and the Boy Scout movement 1890-1918* University of Toronto Press.

Macleod, D. (2009). Original intent: Establishing the creed and control of Boy Scouting in the United States. In N. Block & T. Proctor (Eds.), *Scouting frontiers. Youth and the scout movement's first century* (pp. 13–27). Cambridge Scholars Publishing.

Mansbridge, A. (1932). *Margaret McMillan. Prophet and pioneer*. Dent.

Marcella, M. (2018). Global polity in adult education and UNESCO: Landmarking, brokering and framing policy'. In J. Resnik (Ed.), *The power of numbers and networks: Understanding the mechanisms of diffusion of educational models (pp. 53–76).* Routledge.

McCulloch, G. (2019). *Educational Reform Legislation in the 20th Century.* Routledge.

McCulloch, G. (2011). *The struggle for the history of education.* Routledge.

McCulloch, G., & Covan, S. (2018). *A social history of educational studies and research*. Routledge.

Mills, S. (2013). An instruction in good citizenship: Scouting and the historical geographies of citizenship education. *Transactions of the Institute of British Geographers, 38*(1), 120–34. https://doi.org/10.1111/j.1475-5661.2012.00500.x

Moore, N. (2012). The politics and ethics of naming: Questioning anonymisation in (archival) research. *International Journal of Social Research Methodology, 15*(4), 331–340. https://doi.org/10.1080/13645579.2012.688330

Mowat, C. (1961). *The Charity Organisation Society 1869-1913*. Methuen.

Niekampa, A-M., Merckenc, L., Hoebe, C., & Dukers-Muijrers, N. (2013). A sexual affiliation network of swingers, heterosexuals practicing risk behaviours that potentiate the spread of sexually transmitted infections: A two-mode approach. *Social Networks, 35*(2), 223–236. https://doi.org/10.1016/j.socnet.2013.02.006

Nitschke, C. (2016). Die Geschichte der Netzweranalyse. In M. Düring, U. Eumann, M. Stark, & L. von Keyserlingk (Eds.), *Handbuch Historische Netzwerkforschung: Grundlagen und Anwendungen* (pp. 11–29). Lit Verlag.

Nys, L. (2021). 'I am F. B.': Historians, ethics and the anonymisation of autobiographical sources. *Paedagogica Historica*, *58*(3), 424–38. https://doi.org/10.1080/00309230.2021.1989604

Ochab, J., Škvrňák, J., & Škvrňák, M. (2022). Detecting Ottokar II's 1248–1249 uprising and its instigators in co-witnessing networks. *Historical Methods, 55*(4), 189–208. https://doi.org/10.1080/01615440.2022.2065397

Opsahl, T. (2013). Triadic closure in two-mode networks: Redefining the global and local clustering coefficients. *Social Networks, 35*(2), 159–67. 10.1016/j.socnet.2011.07.001

Padgett, J., & Ansell, C. (1993). Robust action and the rise of the Medici, 1400-1434. *American Journal of Sociology, 98*(6), 1259–319. https://doi.org/10.1086/230190

Putnam, R. (2000). *Bowling alone*. Simon & Schuster.

Read, J. (2012). *The Froebel movement in Britain 1900–1939* [Doctoral dissertation, University of Roehampton]. EThOS. https://ethos.bl.uk/OrderDetails.do?uin=uk.bl.ethos.570411

Regulation 679/2016. *General Data Protection Regulation*. https://eur-lex.europa.eu/eli/reg/2016/679/oj

Rosenthal, M. (1986). *The character factory*. Pantheon

Rosenthal, N., Fingrutd, M., Ethier, M., Karant, R., & McDonald, D. (1985). Social movements and network analysis: A case study of nineteenth-century women's reform in New York State. *American Journal of Sociology, 90*(5), 1022–54. https://doi.org/10.1086/228175

Ryan, Y., & Ahnert, S. (2021). The measure of the archive: The robustness of network analysis in early modern correspondence. *Journal of Cultural Analytics, 6*(3), 57–88. https://doi.org/10.22148/001c.25943

Sadler, M. (1949). *Michael Ernerst Sadler. A memoir by his son*. Constable.

Sandelowski, M., Voils, C., Knafl, G., & Vogt, W. (2009). On quantitizing. *Journal of Mixed Methods Research, 3*(3), 208–22. https://doi.org/10.1177/1558689809334210

Schipper, D., & Spekkink, W. (2015). Balancing the quantitative and qualitative aspects of social network analysis to study complex social systems. *Complexity, Governance & Networks, 2*(1) 5–22. https://doi.org/10.7564/15-CGN23

Scott, J. (2017). *Social network analysis*. Sage.

Scott, J., & Bromley, R. (2014). *Envisioning sociology*. State University of New York Press.

Selleck, R. (1968). *The new education. The English background 1870–1914.* Sir Isaac Pitman.

Selleck, R. (1972). *English primary education and the progressives, 1914-1939*. Routledge.

Simmel, G. (1908). *Soziologie: Untersuchungen über die Formen der Vergesellschaftung*. Duncker & Humbolt.

Skidelsky, R. (1969). *English progressive schools*. Penguin Books.

Stevenson, R., & Crossley, N. (2014). Change in covert social movement networks: The 'inner circle' of the Provisional Irish Republican Army. *Social Movement Studies*, *13*(1), 70–91. https://doi.org/10.1080/14742837.2013.832622

Stewart, W. (1968). *The educational innovators* (Vol. 2). Macmillan.

Stewart, W. (1972). *Progressives and radicals in English education, 1750–1950.* Macmillan.

Tesar, M. (2015). Ethics and truth in archival research. *History of Education, 44*(1), 101–114. https://doi.org/10.1080/0046760X.2014.918185

Taylor, A. (1992). *Annie Besant: A biography*. Oxford University Press.

Verbruggen, C. (2007). Combining social network analysis and prosopography. In K. Keats-Rohan (Ed.), *Prosopography approaches and applications: A handbook* (pp. 579–601). University of Oxford.

Wake, R., & Denton, P. (1993). *Bedales school. The first hundred years*. Haggerston Press.

Warren, A. (1986). Sir Robert Baden-Powell, the Scout Movement and citizen training in Great Britain, 1900-1920. *English Historical Review, 101*(399), 376–98. https://doi.org/10.1093/ehr/CI.CCCXCIX.376

Warren, A. (2009). Foreword: Understanding Scouting and Guiding after a Hundred Years. In N. Block & T. Proctor (Eds.), *Scouting frontiers: Youth and the Scout Movement's First Century* (pp. xi–xxii). Cambridge Scholars Publishing.

Wasserman, S., & Faust, K. (1994). *Social network analysis: Methods and applications*. Cambridge University Press.

Wilson, J., Buchnea, E., & Tilba, A. (2018). The British corporate network, 1904–1976: Revisiting the finance–industry relationship. *Business History 60*(6), 779–806. https://doi.org/10.1080/00076791.2017.1333106

Wu, X. (2022). Why Boy Scouts? The prevalence of the scouting movement for child training in Republican China, 1911–1925. *History of Education*, 51(5), 670–689 https://doi.org/10.1080/0046760X.2022.2033330

Wurpts, B. (2020). The value of network analysis in historical sociology: Economic and social relations in medieval Lübeck. In F. Kerschbaumer, L. von Keyserlingk-Rehbein, M. Stark, & M. Düring (Eds.), *The power of networks: Prospects of historical network research* (pp. 56–84). Routledge.

Ylä-Anttila, T., Gronow, A., Karimo, A., Goodman, J., & da Rimini, F. (2020). Breaking the Treadmill? Climate Change Policy Networks and the Prospects for Low Carbon Futures in Australia and Finland. *Society and Natural Resources*, 33(11), 1380–1398. https://doi.org/10.1080/08941920.2020.1802540

Yoon, N. (2021). The antecedents of nonprofit board interlock: A longitudinal examination on network structure, homophily and organizational attributes. *Nonprofit and Voluntary Sector Quarterly, 52*(1), 196–221. https://doi.org/10.1177/08997640211067519

Zhou, C., Feng, L., & Zhao, Q. (2018). A novel community detection method in bipartite networks. *Physica A: Statistical Mechanics and its Applications, 492*, 1679–1693. https://doi.org/10.1016/j.physa.2017.11.089

Appendices

Appendix 1. List of reformers included in the sample

Ensor, Beatrice (née de Normann) (1885–1974), Founder of New Education Fellowship
Hahn, Kurt (1886–1974), Founder of Gordonstoun
Rawson, Wyatt, Board member of New Education Fellowship
Neill, A.S. (1883–1973), Founder of Summerhill
Burt, Cyril (1883–1971), Vice-president of New Education Fellowship
Russell, Bertrand (1872–1970), Founder of Beacon Hill
King, Isabel, Principal of Frensham Heights
Badley, J.H. (1865–1967), Founder of Bedales
de Lissa, Lillian (1885–1967), President of Nursery School Association
Rennie, Belle (1875–1966), Honorary Secretary of Dalton Association
Curry, William (1900–1962), First headmaster of Dartington Hall
Montague, George (Earl of Sandwich) (1874–1962), Board member of Little Commonwealth
Tawney, Richard Henry (1880–1962), President of Workers' Educational Association
Simpson, James Herbert (1883–1959), Headmaster at Rendcomp
Harvey, Thomas E. (1875–1955), Committee member of New Ideals in Education
Whitehouse, John Howard (1873–1955), Founder of Bembridge
Hawker, Bertram (1868–1952), Founding member of Montessori Society
Mansbridge, Albert (1876–1952), Founder of the Workers' Educational Association
Ballard, Philip (1865–1950), President of Association of Inspectors and Educational Organizers
David, Albert Augustus (1867–1950), Headmaster of Clifton College
Rice, Charles E. (1865–1949), First headmaster of King Alfred School
Isaacs, Susan (1885–1948), Principal of Malting House
Kimmins, Charles William (1856–1948), Chief Inspector for the London County Council
Lytton, Victor Alexander (Earl of Lytton) (1876–1947), Chairman of New Ideals in Education
Grant, Cecil (1870–1946), Founder of St George School
Arundale, G.S. (1878–1945), President of Theosophical Fraternity in Education
Nunn, Percy (1870–1944), Professor of Education
Temple, William (1881–1944), President of Workers' Educational Association
Sadler, M.E. (1861–1943), Professor of Education
Wicksteed, Joseph H., Headmaster of King Alfred School
Mackenzie, Millicent (1863–1942), Professor of Education
Baden-Powell, Robert (1857–1941), Founder of Scout movement
Woods, Alice (1849–1941), Principal of Maria Grey Training College
Findlay, J.J. (1860–1940), Professor of Education
Russell, John (d. 1937), Headmaster of King Alfred School
Holmes, E.G.A. (1850–1936), His Majesty's Inspector of Education
Adams, Sir John (1857–1934), Professor of Education
Besant, Annie (1847–1933), President of Theosophical Society

Geddes, Patrick (1854–1932), President of King Alfred School

Reddie, Cecil (1858–1932), Founder of Abbotsholme

McMillan, Margaret (1860–1931), Founder of Nursery School Movement

Carpenter, Edward (1844–1929), Abbotsholme fellow

Lane, Homer (1875–1925), Founder of Little Commonwealth

Bosanquet, Bernard (1848–1923), Prominent member of Charity of Organisation Society

Green, John Alfred (1867–1922), Founder of the Journal of Experimental Pedagogy

Mather, William Sir (1838–1920), Chairman of Froebel Institute

Morant, Sir Robert (1863–1920), Permanent Secretary of the Board of Education

Gorst, Sir John (1835–1916), Vice-President of the Committee on Education

Barnett, Samuel (1844–1913), Warden of Toynbee Hall

Lubbock, Sir J. (Lord Avebury) (1834–1913), Member of Parliament

Fitch, Sir Joshua (1824–1903), His Majesty's Inspector of Education

Ruskin, John (1819–1900), Prominent social critic

Shirreff, Emily (1814–1897), Co-founder of the Women's Education Union

Huxley, Thomas Henry (1825–1895), Member of London School Board

Buss, Frances Mary (1827–1894), First woman fellow of the College of Preceptors

Quick, Robert Hebert (1831–1891), Council member of Teachers' Training and Registration Society

Kay-Shuttleworth, James (1804–1877), Vice-president of Women's Education Union

Payne, Joseph (1808–1876), Chairman of the Women's Education Union

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