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Associations and Interactions in Urban Networks of the Roman Near East

ABSTRACT Relational approaches have profoundly changed archaeology and related fields in recent years. This has shifted focus from agents to the interaction between them. Past processes, however, are finished and gone, and the only way to investigate them is through their outcomes as preserved in the archaeological record. Every edge (tie) in a network graph describes relations and associations between the entries in the dataset, not within the societies that produced them. In order to move from description to explanation of past processes, the nature and dynamics of connections need to be addressed. In this article, the possibilities and problems connected with this are discussed from the vantage points of four common and time-tested qualitative approaches to relational data: ethnographic analogies, semiotics, Actor Network Theory, and outcome analysis, each briefly exemplified on urban networks in the Roman Near East.

KEYWORDS Networks; network analysis; Palmyra; Roman Near East; Actor Network Theory.

George Bailey Leaves the Matrix

In Frank Capra's movie classic *It's a Wonderful Life* (1946) George Bailey has sacrificed personal ambition, career, and freedom for a life in service of his local community. Facing bankruptcy, prison, and public scandal over an error committed by someone else, he decides to take his own life. An angel sent to prevent him from the act allows him to experience what life in the small town of Bedford Falls would have been like had George Bailey never lived. George, unsurprisingly, has problems accepting the reality of this exercise. Two tactile experiences are instrumental in convincing him of his disappearance from and subsequent reintegration into the social matrix of Bedford Falls: the rose petals given to him by his daughter earlier the same day disappear from and later reappear in his pocket, reminding him of how she also does not exist in the alternative reality without George Bailey. The loose newel cap in the old house he has restored together with his wife has annoyed him for years and has become a symbol for the constraints of family life. In the penultimate scene of the film its significance changes to become a tactile reminder of familial bliss. Both examples highlight how things may manifest and symbolize social ties (Appadurai 1986; Boivin 2008; Damsholt, Simonsen, and Mordhorst 2009), and the latter, in a mundane way, also the friction that invariably characterizes any interaction with the material world (Fletcher 2004; 2010).

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The Relational Turn

In the early twenty-first century the humanities and social sciences, including most branches of historical and archaeological studies, have partaken in what arguably amounts to a 'relational turn'. Emphasis has moved from the study of different kinds of human- and non-human agents to that of their interaction (Brughmans, Collar, and Coward 2016; Brughmans 2013; Knappett 2011; Rollinger 2020; Teigen and Seland 2017). In the fields of urban and related archaeologies this has materialized either as applications of network theory, e.g. those of Emanuel Castels (1996), Bruno Latour (2005), or Michael Mann (1986), or of the diverse set of methodologies available for network analysis, including those suitable for the investigation of social networks, spatial networks, transport networks, affiliation networks, and commodities networks (Broodbank 1993; Brughmans 2013; Brughmans, Collar, and Coward 2016; Brughmans, Keay, and Earl 2015; Graham 2006; Hodder 2012; Knappett 2011; Knappett, Evans, and Rivers 2008; Sindbæk 2007). If there has indeed been any such thing as a relational turn it builds on insights from the earlier spatial, linguistic, and material turns, emphasizing that archaeological objects are structured in space as well as in time, and that they carry meanings and can be interpreted as signs. Furthermore, they are not merely sums of form, function, and signification, but result from dynamic processes of interaction between people and their physical and cultural environments (Brughmans and others 2019; Damsholt, Simonsen, and Mordhorst 2009; Fletcher 2010; Knappett 2005).

This poses a fundamental challenge to scholars working with archaeological data from a relational perspective. We cannot assume per se that our evidence provides a representative record of either social, or material aspects of the past, because cultural as well as physical environments impose restraints on material as well as human agents. Roland Fletcher calls this problem 'inherent non-correspondence' (Fletcher 2004, 115). Words are often pitifully inadequate in describing thoughts and feelings as well as objects and places. Similarly, archaeological floor plans and settlement maps as well as physical remains of past dwellings only to a limited degree provide accurate information about the activities that once took place there and the people who lived there (Fletcher 2010, 462–67).

Every edge (tie) in a historical or archaeological network graph, as every association described in a qualitative network analysis, presupposes past interaction, which is more often than not taken for granted. This information, however, is not contained in the data. These describe relations and associations between the entries in the dataset, not within the societies that produced them (Hodder and Mol 2016, 1067). In order to move from description to explanation of past processes, the nature and dynamics of connections need to be addressed. Below the possibilities and problems connected with this are discussed from the vantage points of four common qualitative approaches to relational data: ethnographic analogies, semiotics, Actor Network Theory, and outcome analysis, each briefly exemplified on urban networks in the Roman Near East. The aim is neither to do justice to a large field of epistemological theory, nor to offer any easy ways out of complex problems, but to call for explicit reflection about the nature of ties reflected in archaeological network analyses in order to narrow or bridge the gap between formal/quantitative and qualitative network approaches, between network analysis and network theory/network thinking (Knappett 2016).

Analogies

Ethnographic analogy has held the pride of place among archaeological explanations since the nineteenth century (Hodder 1982, 31–40), and rightly so. As Ian Hodder points out, every explanation rests on analogy (Hodder 1982, 11–27), and it is only fair to make it explicit. In the subdiscipline of ethnoarchaeology analogy has been formalized as method in order to move from correlation to explanation (Cunningham 2009; Hodder 1982, 28–46; Roux 2007). The lessons learned there can also be employed in the investigation of relational data drawn from other sources. Valentine Roux suggests distinguishing between static and dynamic phenomena, which may be approached by way of simple and complex analogies respectively (Roux 2007, 155–57). Static phenomena are not context-dependent and thus the same regardless of empirical setting. In a study of the Roman-period caravan route between Palmyra in Syria and Hit in Iraq, Jørgen Christian Meyer and I plotted 244 water sources between the two places using Cold War military maps (Meyer and Seland 2016). With GIS-software we imposed 20 km buffers around each source building on the static fact, gathered from nineteenth- and twentieth-century military handbooks, that 40 km is the approximate distance that humans as well as camels are able to walk in a day without detrimental effects over time. Wherever the buffers overlapped it would be possible for caravans to move, provided that they were familiar with the terrain. Importing the dataset into a graph-visualization suite we created connections between all waterholes that were within a day's dis-

tance of each other. Still waterless stretches of up to 100 km remained. Interestingly, approximately halfway along these gaps, fortified outposts identified during archaeological surveys in the 1930s existed (Gregory and Kennedy 1985; Poidebard 1934). Here water was gathered and stored in now defunct cisterns, providing the water storage not offered by nature.

Our argument, and thus each of the *c.* 1500 ties in our dataset, was based on two simple analogies based on static phenomena. The biological constraints imposed on people and animals were the same in the Roman period as today, and water supply, determined by climate and topography, was sufficiently similar for the methodology to work. Methodologically it is quite straightforward to falsify the study by challenging either of these analogies. Empirically it will be harder if water distribution and the capabilities of men and beast have indeed remained unchanged over the 1700–1800 years that passed between the phenomena we study and our proxy data.

Dynamic phenomena are a different matter, which, again according to Roux, requires complex analogies (Roux 2007, 166–69). In my studies of Palmyrene caravans, I have employed the voluminous recorded experiences of European sixteenth–eighteenth-century travellers in the Syrian Desert in order to understand the organization of Palmyrene caravans, only known through approximately thirty inscriptions. By using the analogy of the Ottoman-period caravan — an ad hoc organization, which is a social network formed by merchants and headed by a caravan leader (Turkish: *Caravanbashi*) — we can make a hypothetical reconstruction of how Palmyrene merchants (Greek: *emporoi*, Aramaic: *tgry'*) formed their own networks under the leadership of a caravan leader or head merchant (*synodiarches / archemporos / rb syrt'*) (Seland 2014; 2016, 98–112). No assertion is made that Palmyrene and Ottoman caravans were identical, but that they represent related, even similar responses to similar environmental, geopolitical, and socio-economic environments, a claim which is impossible to falsify, but that might be replaced by better models of Palmyrene caravan trade built on stronger analogies.

Semiotics

In many cases, written records or obvious ethnographic parallels are missing. In *Thinking through Material Culture* (2005), Carl Knappett discusses how semiotics can be used to argue intentionality or meaning in artefacts, even in such cases. Knappett builds on the semiotics of Charles Sanders Peirce, who, unlike Ferdinand de Saussure, held that signs do have material aspects and thus carry meaning

also independent of language (Knappett 2005). He discusses how material objects might function as signs of a referent either as an icon, based on similarity, as an index, based on physical characteristics, or as a symbol, based on cultural convention (Knappett 2005, 87–99). One of Knappett's cases is drinking vessels and liquid-containers, from modern to Minoan periods, which might be studied from all these angles (Knappett 2005, 111–22). Turning to the Roman Near East, archaeological traces of cult activities in arid landscapes might serve as an example. From the Syrian Desert, the Hauran, and the Decapolis, a significant number of depictions of deities mounted on horses and camels, appearing sometimes alone and sometimes in pairs, are known (Weber 1995). The deities have long been associated with a nomadic lifestyle and with the caravan trade (Rostovtzeff 1932; Schlumberger 1951, 126–28; Seyrig and Starcky 1949, 236–40; Teixidor 1979, 77–92; Weber 1995). As these are figurative depictions, their intended use as icons, in the semiotic sense of visual similarity with their referents (a range of deities), is not controversial. Modern observers might protest the actuality of the referent, but for the people who produced the depictions this was hardly an issue. The depictions might also serve as signs in the sense of indexes. Their find distribution points towards association with the desert, where pastoralism was the only really viable mode of subsistence, and the depictions of camels, horses, and lances are certainly conceivable, although not unquestionable semiotic indexes of nomadic lifestyle. Of course these depictions might well have worked as signs in the symbolic sense as well. This, however, is perhaps even better demonstrated by the aniconic stelae that are widespread in connection with nomadic campsites from north Semitic settings, which served as makeshift symbols of deities (Avner 2001; Patrich 1990, 59–70; Seland 2019). In this case, we also have ethnographic and epigraphic material at hand that underpins the interpretation of these depictions as signs of cult associated with nomadism, but arguably it is possible to build a case from semiotics alone. This material might be employed in reconstructing political, religious, and economic networks in the region, but only if the nature of the ties connecting the network are explicitly discussed, thus facilitating falsification by means of alternative explanations.

Sassurean semiotics, understanding signs as independent of material objects, of course might also inform analyses of urban networks. Adam Schor utilizes social and cultural cues expressed in terminology in order to identify affinity and lack of such between members of the epistolary network of Theodoret, bishop of Cyrrhus in the fifth century

AD (Schor 2011). Mattias Brand investigates religious networks in fourth-century AD Egypt interpreting significant terms as speech acts expressing religious identity (Brand 2017). Epigraphic texts and the use of artistic and architectural templates might reasonably also be interpreted as ways of connecting with social networks. When a city in the Near East erected a statue in honour of the Roman emperor and accompanied it with an inscription, it signified affiliation with Roman imperial political networks. When a mosaic from third-century AD Palmyra depicts the local ruler, Odaenathus, conquering the Sasanian king Shapur depicted as a chimera, it signifies active boundary drawing towards Sasanian networks (Gawlikowski 2005).

Actor Network Theory and Entanglement

Archaeological applications and adaptations of Actor Network Theory (ANT) are common ways of dealing with such situations, exemplified for example in the work of Knappett (2005; 2011; 2016) and Hodder (2012). In ANT, within archaeology primarily associated with the work of Latour, no distinction is made between human and other agents, including animals, objects, spaces, and natural environments (Latour 1993; 1996; 2005). Each such actant, as they are called in ANT terminology, assumes a role in establishing the web of relations that constitute the network, which has no existence independent of these relations. Chains of associations can be isolated and studied as networks in their own right, but actor networks are by definition infinite. Hodder operationalizes this insight by means of the analytical tool of the tanglegram, which allows the systematic exploration of entanglement between humans and things, among humans, and among things (Hodder 2012; Hodder and Mol 2016). The example used to introduce and illustrate the method is the thing–thing associations of clay at the Neolithic settlement of Çatalhöyük. This single resource is associated, or entangled, with forty-nine others, ranging from wild animals to burials and clean water (Hodder 2012, 181). Each association is based on the interpretation of evidence, the nature of which might vary from case to case (Hodder and Mol 2016, 1072). While entanglement approaches complexity by investigating each constituent part of a relational web, it might be argued that formal network analysis does the opposite by emphasizing the whole structure. Despite this and other differences, Ian Hodder and Angus Mol (2016) have demonstrated that network analysis might fruitfully inform studies of entanglement. The opposite is also

true, as each tie in a network should also in principle be based on the interpretation of evidence revealing association. Taking this challenge to urban networks in the Near East, tanglegrams can be used to explore micro-level associations on house, street, or city level. The method could also, however, be adapted to study how different elements of architecture, city plan, and epigraphic record relate to other cities or to supraregional social networks or cultural templates (Seland 2021). In Palmyra, some buildings, like the (probable) amphitheatre (Hammad 2008), are associated with imperial Roman culture. The vast investment in the 1.2 km colonnaded street reflects a conscious effort to enter into a competitive peer-polity network with cities like Apamea, Jerash, and Aelia Capitolina (Jerusalem) that also made similar investments (Burns 2017). The obviously conscious use of different language and different content of inscriptions in the *necropoleis*, main temple, colonnaded street, and agora of Palmyra also reveal associations with different and overlapping social networks that existed in the Near East in the first centuries of the Common Era (As'ad, Yon, and Fournet 2001; Seland 2021).

Friction, Non-Correspondence, and Outcome

Fletcher criticizes approaches as those outlined above, which presuppose predictable and identifiable correlations between the social and material aspects of the human past (Fletcher 2004; 2010). He points to the friction and non-correspondence between the two caused by frequently imperfect, dysfunctional, and destructive interaction between humans and their environment (Fletcher 2004, 467–77), and also the untenability of applying ethnographic analogies of the kind described as complex above, since social practices in past societies might have been different, less effective, and even defective compared to those observed in the present (Fletcher 2010, 476–77). He illustrates this challenge as a triangle (Fig. 9.1), where the corners represent materiality, 'social action and verbal meaning', and outcome (Fletcher 2004, 115). We cannot assume that the material or textual records correspond with the social world of the past as no deterministic relationship between verbal or material expression and social behaviour exists. What we are left with are outcomes that are results of often suboptimal interaction between humans and their material surroundings (Fletcher 2004, 115). Fletcher's examples are from settlement archaeology, and he explains outcomes as 'describable in terms of a community's duration, magnitude, and degree of sustainability' (Fletcher 2010, 476–77). The concept can be trans-
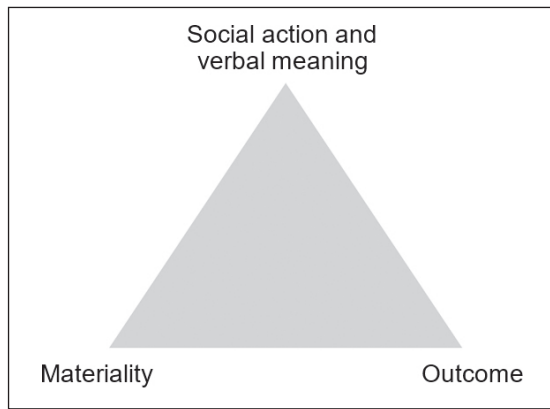
Figure 9.1. The outcome triad. After Fletcher 2004, 134.

respondence, but I only follow the conclusion half-way. While we will never know for sure whether our ethnographic analogies, semiotic interpretations, or reconstructed entanglements adequately reflect the past we are studying, they might still help us make sense of the material signs that have come down to us from the past for our own times and our own purposes. Interpretations might easily be replaced as correspondences are better understood, due to more or different data, or more sophisticated theories and methods. In this, the outcome corner of the material–social/verbal–outcome triad is clearly a critical element that has largely been missing from past studies of materiality, and thus of archaeological network analysis.

Summary and Conclusion

Far from offering a quick fix for the challenges of reconstructing social networks from material proxies, I have called for archaeological network analysis to explicitly incorporate qualitative discussion of the nature of ties or associations that constitute networks. I argue for a pragmatic use of analogies, semiotic analysis, studies of entanglements and associations, and outcome analysis, which in my opinion represent practical ways of bridging gaps between network theory/network thinking and network analysis, thus operationalizing the former and adding explanation to description in the latter.

ferred to urban networks, which may be described in the same terms. The example of Palmyra is again near at hand. The Palmyrene network had remarkable success for three centuries, and spanned from the Rivers Tyne to Indus at its height, but disappears with the Roman strike at its centre in 272–273 AD. Despite its strengths, it evidently also embedded vulnerabilities that prevented it from outliving the military reduction of its central hub, unlike Jewish networks that survived the sack of Jerusalem and subsequent dispersal (Seland 2013). Explaining such divergent outcomes, however, returns us to the challenge of interpreting the nature of the ties constituting the networks we study. In this, I accept Fletcher's criticism regarding problems of friction and non-cor-

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