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Archaeologies Of Roads: An Introduction

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Roads are peculiar among archaeological objects, in that they dissolve the boundaries between what is knowable and what is not. Few artifacts have the same substance, transcendence, and immanence as roads—words that might help us think about them through a philosophical lens. An object of the past is rarely valued or used for the purpose its bearers originally imagined: today, artifacts are displayed behind glass windows, statues greet visitors in museum corridors, and deserted settlements are turned into archaeo-parks.¹ There are no more scheduled plays in ancient theaters; when there is an event, the spectator is perfectly aware that they are occupying a space from and of the past. The mixing of temporalities is intentional, adding to and altering the meaning of the performance. The modern observer in an ancient theater is constantly reminded of the anachronisms at play. But roads exhibit a different form of spacetime.

A road can be both ancient and modern *at the same time*. Tourists walking the streets of Pompeii are using the same infrastructure that existed in Roman times. Their modern feet are adding to the ancient use wear, even though only a few share with the paving stones the same admiration they have for the standing architecture. The streets of Pompeii become invisible as time and space mix along them. Roads stretch not only in space, but also in time: in Greece, wayfarers still use Ottoman-period *kalderimia*—cobblestone roads built mainly for the use of hooved animals that facilitated rural transportation up until the 1970s (Forbes 2007:90); in the United States of America, Hopi still use parts of their ancestral trails on foot and horseback (Snead et al. 2009a:26).

We shift our attention to the pilgrims across the globe who most clearly exemplify the mixing of space and time. Pilgrimage spans a range of agencies, from those of individuals to those of complex

¹ Ancient settlements with modern occupation might be a prime exception to this argument. Here we can draw a distinction between the archaeologist who visits a place periodically for work and the dweller who continuously inhabits the place.

institution(alisms). The road somehow marks a beginning and an end at the same time. The hope for some form of change² weighs on the pilgrims in Tinos, Greece; some even crawl on their knees up toward the hilltop church. Faith, penance, and perseverance blend space and time, and the pilgrim's road becomes spaceless and timeless. Yet, the complete opposite is true for the day-to-day roadside vendors as they advertise their merchandise (Dubisch 1991:3). The on-site ritualistic performance and the off-site economic performance—one heavenly and one earthly—coexist side by side around the road. The same also goes for more secular settings. Overall, Klaeger (2012) labels these activities as “dromocentric,” whereby the ephemerality of interaction between travelers and roadside people contributes to the structuring of a rhythm of life.

Whether it be a sacred path in the woods that gives an eerie sense of a fairy having just passed by or a loud six-lane highway with behemoth machines racing to arrive somewhere, the road purges the landscape and marks a seemingly empty space. We do not often see objects intentionally situated in the middle of a road.³ People tend to make sure roads are “clean,” as if they want to keep them invisible, to keep them out of the way. However, through the act of cleaning, a road attains one of its first meanings; the emptiness of a road is by design, and for that very reason, no road is empty. The road is not only a container for an action, but also the action itself.

The opposite is also possible. Objects that slow down, control, or stop an otherwise naturally continuous flow can appear in the form of checkpoints, palace guards, stop signs, bollards, automated gates, or electronic passes. The traveler's gaze is cast ahead to look for future obstructions; a future impasse (in both space and time) will change the course of travel, even at the journey's onset. It seems like objects of control are a semantic violation—against the road's invisibility.

The road itself can also become an act of violence in the form of infrastructure (Rodgers and O'Neill 2012). Roads broadcast the societal message of a stable and prospective future (Reeves 2017:717)—but a future that is created by and for the group that holds the power of building, appropriating, and controlling the roads.⁴ For this reason, the

² A form of metamorphosis, perhaps; see the discussion of metafores below.

³ This is probably why archaeologists can only rarely locate objects that can be used to (relatively) date roads, unless they carry a special meaning, such as inscriptions on milestones (see Ordozgoiti, this volume).

⁴ See Amarashinghe, Kalaycı, and van Aerde, this volume.

road requires not only material conditions, but also fantasies (Larkin 2013:333). Reaching a destination is conditioned upon engineering (im)possibilities, but also histories, an agreement about those histories, and the spatio-politics challenging these agreements (Reeves 2017:712).

As fantasies bring unruliness and open-endedness (Reeves 2017:716), the material road finds its way in the immaterial, and so the road becomes metaphor. The Greek word μεταφορές (*metafores*) maps to the English word “transportation.” It is no surprise, then, that one must take a metaphor to go from one place to another (de Certeau 1984:115). In the same vein, Larner (2004:70) sees the “same startling word painted on the side of one truck after another, the word *metaforai*.” And trains, among other means of transportation, also carry metaphors around (see Kurt, this volume).

So, the road is also the bearer of many metaphors: “[t]o learn the Way is to learn the self” (Heisig et al. 2011:708). Religious and spiritual texts mention the road favorably. One *hadith*⁵ reports: “while a man was walking in the road, he found a thorny branch in the road and he moved it aside. Allah appreciated his deed and forgave him” (Sahih Muslim 1914). It seems even the gods like to keep the roads clean. Taoism literally means “The Way.” Shinto can be translated as “the way of the *kami* (god, divinity, or spirit).” According to Kōsaka Masaaki, “Words are the expression of people; roads are the expression of the earth. In words people occupy the center; in a road, the earth is central” (quoted in Heisig et al. 2011:711).

And we shift our focus away from humans. Roads are not exclusively human phenomena. At times, people preferred to settle along existing animal corridors (e.g. Purtil 2017). It is no surprise that animals and humans can share geographical knowledge, especially when it comes to migratory routes (e.g. Stépanoff 2012). At other times, animals became the road-makers and created unique landscapes of movement. In Upper Mesopotamia, for instance, centuries-long movement of flocks incised the soil and formed “hollow ways” (Wilkinson 1994); these roads are still visible in satellite imagery millennia later (Ur 2003).

Roads can also be exclusively non-human phenomena. Wato and colleagues (2018) argue that African elephants have knowledge of scarce water resources and, thus, create specific movement patterns

⁵ In the Islamic doctrine, a *hadith* is a report about what the prophet Muhammad said or did.

especially during dry seasons. In fact, studies of spatial memory and navigation suggest that a wide range of animals can follow paths ([Atkinson et al. 2002:134](#)). Plants are also on the move, but their paths are mainly constricted by other agents. For instance, during the summer and fall, dark green *Prosopis* steppe weeds stretch along the hollow ways ([Wilkinson et al. 2010](#)). The rhythm of animals moving in the past, guided by humans, created a rhythm for today's plants to follow—all along the same road.

The Classification Problem

So far, we have purposefully collapsed all types of movement media under the umbrella “road” and, in doing so, possibly violated a series of semantic norms, which only further complicates an already complex matter. There is a plethora of words to describe or label a road one way or another: trails, paths, trackways, hollow ways, corniches, causeways, gravel roads, motorways, pavements, and runways—to name only a few. This rich nomenclature reflects efforts to classify the phenomenon of movement and may be based on material, location, economics, traffic, topography, or multiple other cascading differences.

The classification of roads is a problem in other research domains, too. For instance, Adafer and Bensaibi ([2017](#)) classify roads based on their seismic vulnerabilities. As they focus on physical characteristics, their parameter set ranges from landslide potential to compaction quality. Similarly, D’Andrea and colleagues ([2014](#)) suggest a functional classification, but one that is based on fuzzier boundaries. Examples are numerous, and a technophysical classification is almost always possible, especially when roads are transformed into digital objects. Yet, sociotechnical classification remains open to challenges.

Realizing this complexity for historical and archaeological contexts, Snead and colleagues ([2009b:275](#)) offer a set of comparative variables:

1. Amount of construction/ over what time
2. Technology of movement
3. Characteristics of terrain
4. Points/ places of access (terminal points, resources, facilities, shrines)
5. Ownership/ access/ stewardship
6. Functions
7. Form/ network organization
8. Scale
9. Meaning

The type/class of a road or movement is satisfactory if one can touch upon all these (and other) key variables. And in archaeology, maybe due to the lack of “classifier data,” road classes appear to have their origin in oppositions. A binary framework helps the archaeological narrative flow. A public road implies there is also a private one. An emergent (bottom-up) road network suggests a planned (top-down) form also exists. Simple dirt tracks call for the possibility of building imperial highways in the future, when the technology reaches some form of maturity.

Without a doubt, these binaries are instrumental for studying a road. But, we should remember that a road also spans everything in between, and that it can even be self-contradictory. With time, roads may shift in meaning, or two different meanings may take hold at the same time. In the end, roads are the objects of both fascination and terror (Masquelier 2002:831). Roads are filled with perils and possibilities (Klaeger 2013:448). Roads constrict environmental damage while also facilitating destruction (Diener and Batjav 2019:789). If the assertion is correct that roads span everything between binaries, then it is also possible to suggest that roads are *open places*—they are both physically open and conceptually open to change, transformation, subversion, and revolution. For instance, in his analysis of the Boudiccan Revolt (60–61 CE), Witcher (1998:68) suggested that “by using Roman roads to move through a Roman landscape, to Roman places, the rebels were issuing a devastating ideological message to the Roman authorities.” In an instant, a top-down plan was utilized from the bottom up. It should come as no surprise, then, that roads are one of the main platforms for transformation, since their appropriation as public space (i.e. in the phrase “take to the streets”) appears to be one of the next steps toward change across the globe (e.g. Baykan and Hatuka 2010; Fisher et al. 2019; Holston 2014; Traugott 1993).

Roads-as

Categorizing roads into particular types is a limiting framework. In this section, the aim is to perform a mental exercise with the hope of expanding the existing framework used in (ancient) road studies. We approach the road phenomenon by stepping *away* from classifications and *toward* thematizations. To tackle the large corpus of roads, we study them —as something else. So, a double metaphor is born: whatever we intend to map onto a road (e.g. transportation of staples,

least-cost paths), we instead map to a broader class (e.g. infrastructure, digital object). In doing so, one can argue that the specificity of roads is naturally reduced.

We pick one of two mappings: *roads-as-infrastructure* and *roads-as-digital-object*. There is no doubt that selecting one of these themes is an authoritarian exercise, if not an arbitrary one. Yet, the exercise can be productive; as in other mapping processes, we acknowledge that an authorship of the map is unavoidable. But the broader the thematization, the shallower the power.

Roads-as-Infrastructure

It is generally accepted that roads provide access to goods, facilitate services, increase societal association, and fulfill many other beneficial functions; overall, roads improve the conditions of life. Even a simplistic introductory chapter like this one can immediately cite multiple examples of why we build roads and the complexities associated with them. One key issue lies in the institutional and everyday habits of and motivations behind the movement praxis. Roads concretize the politics of ethnicity (e.g. [Mains and Kinfu 2016](#)), of labor and employment (e.g. [Diener and Batjav 2019:786](#)), and of the individual (e.g. [Dalakoglou 2012:578](#)). In this regard, the axiom that roads are always beneficial and necessary for human progress is also part of the modernist discourse at large ([Harvey and Knox 2015:4–9](#)). But, as we connect the core with the periphery, the domestic with the public, the urban with the rural, or the archaeological site with the surrounding landscape, we also need to ask if and why “roads bring lower transaction costs, greater prosperity and an easier, more secure, way of life” ([Wilson 2004:526](#)). To answer these critical questions, our starting point could be to consider the road *as-infrastructure*. In fact, archaeologists are already familiar with these “infrastructure projects” in the form of the Achaemenid Road, the Roman Road, the Inka Road, and so on.

In order to gain a different perspective on the modernist discourse, we can follow Rodgers and O’Neill as they build a critical framework of infrastructure projects. They suggest there may be two types of violence associated with infrastructure: active and passive ([Rodgers and O’Neill 2012:407](#)). As an active form of violence, infrastructure can be built or utilized for surveillance, intimidation, and collective punishment. With respect to roads, for instance, violence may be materialized in the form of roadblocks; Israeli checkpoints in the occupied West

Bank constitute one of the most visible examples (Amir 2013; Naaman 2006; Tawil-Souri 2011). In the past, checkpoints were probably similarly deployed for security, taxation, or other purposes (e.g. Abudanah et al. 2020). Roads connect people, but they can also facilitate systematic social disaggregation or displacement, a rather frequent occurrence in developmental programs (e.g. Hibszer 2013). In extreme and traumatic cases, mass deportations must have had significant impact on future generations while adding historicity to the roads used in these forced exoduses. Examples of this are, unfortunately, myriad.⁶

In passive violence, infrastructure is not maintained well (or at all), and any investment that is made favors one group over others (e.g. Burgess et al. 2015). This violence may come under the guise of select improvements, and roads may exclude disadvantaged communities by proxy since the integration of these groups into a road network requires additional steps (Demenge 2015:3). Exclusionary and uneven development can also stem from a selective flow within the networks of social, economic, and political power. By the 1870s, for instance, it was possible to travel between London and Cambridge in an hour, but it would still take almost a day to journey 50 miles east of Cambridge. Similarly, London was connected to Paris by phone long before it was connected to Bristol (May and Thrift 2003:17–18).

The argument so far has been about how roads-as-infrastructure require a closer look at the ways in which they may be fantasized and built. In this regard, there is significant scholarly critique (e.g. Alvey 2014; Strauch et al. 2015). Yet, Bennett (2018) also reminds us that the relationship between road construction and resistance to development is complex and that the process contains ample opportunisms and compromises. No space is neutral, and some form of negotiation is always necessary so that material and immaterial fantasies can be told. Through these negotiations, the periphery can gain access to goods and services that were produced in the core. Roads are spaces where actors' "social relations cluster and adhere" (Wilson 2004:529)

⁶ For instance, see the deportation route taken by the Dadrian family during the Armenian Genocide by the Ottoman Empire. Vahram Dadrian's (2003) diary includes a narrative woven around the road. Also see Oded (1979) for the infamous deportations during the Neo-Assyrian Period. The "Trail of Tears"—the ethnic cleansing and displacement of Native Americans by the United States government—is a more recent example with a direct reference to the route of the death march.

and where multiple unstable forces operate in tandem to create a sense of stability. In return, infrastructure in general and roads in particular gain the capacity to enchant (Harvey and Knox 2012:525).

We continue unpacking the modernist discourse of infrastructure-based development using Virilio's influential work *Speed and Politics*. There, the author describes the conditions of modernity, coins the term "dromocratic society," and emphasizes governance by speed (Virilio 2006:12). Since roads transcend space and time, is it not possible to extend Virilio's dromocratic society back in human history? Constructing a road (whether emergent or planned) brings "modernity" to the landscape. Here we refer not to the modernity of the West, but rather to the sociological concept; at the end of the day, modernity is not a description of our time alone (James 2015:32), and we can construct a developmental discourse for any period of human history. For example, when the Achaemenid Empire built an efficient postal system to overcome the problems of access in a vast state (Colburn 2017:875), they "modernized" the landscape. Within this historical context, it is possible to utilize the development discourse not in terms of quantitative, but rather qualitative changes (James 2015:38). Following this argument, the imperial states of the Romans, Chinese, or Ottomans were all dromocratic societies, but so were the Early Bronze Age societies of Upper Mesopotamia, where the movement network likely had an emergent/bottom-up form (Ur 2009); here the thematization once again dissolves oppositions. Therefore, it is further possible to claim that the politics of infrastructure not only are a modern phenomenon, but also are visible in archaeological contexts where many actors ranging from individuals to states played their very own roles. In 50 BCE, Curio's proposal to take over a road program was rejected by the late Republic Senate, despite the fact that the Republic had both the means and the finances to take on such a program. "In the cut-throat political atmosphere of the late Republic, it seemed better to do without new roads than to give any one man the struggle for political power" (Wiseman 1970:151).

The "modernization" of ancient landscapes by the imperial power affected local labor and productive relations. The Inka state had engineers and supervisors whose jobs included road construction and maintenance. Staff were strategically located so that roads were always functional (D'Altroy 2018:11–12). However, the laboring class in charge of building and maintenance was the *mitmaquna*, who were removed from their ancestral lands by the Inka and involuntarily settled

in other places to perform specific tasks (D’Altroy 2005; Jenkins 2001). In Amaybamba (modern Qochapata, Peru), *mitmaqkuna* came from the Chachapoyas and were put in charge of maintaining the roads and clearing them from encroaching vegetation. For them, the road had little to do with movement. In fact, the road was constructed in such a way that it required maximum maintenance (Wilkinson 2019:39–41).

Exclusivity through prohibition or limiting of use was common on imperial roads (D’Altroy 2018:10). But what was envisioned by the top of the imperial hierarchy did not always match reality on the ground. In early modern Japan (1603–1868) the centralized feudal system prohibited the private use of roads, and travel was possible only with permits. Nevertheless, individuals kept using the imperial roads by purchasing permits or through deception, or alternative “side roads” emerged (Vaporis 2012:99). In a similar case, roads were supposed to serve the Classical Era Chinese state (323–316 BCE), but powerful families instead profited from the roads by setting up their own transportation and courier services along them (Nylan 2012:44).

The focus on roads-as-infrastructure attempts to reveal the flow of power. Even though the discussion provided here is a simplified version of a complicated, intertwined relationship between actors and roads, it reminds us that a road is not always the container of action—it can also be the action itself. And for this reason, the road may be considered a heterotopic object (Foucault 1986). So, while it is necessary to investigate the material processes that assign objective meanings to space and time (Harvey 1989:204), we should also move beyond this dualism (May and Thrift 2003:1). The concept of roads-as-infrastructure dissolves the boundaries of arbitrary oppositions: of past and present, and of time and space.

Roads-as-Digital-Objects

Digital archaeology has emerged as a new paradigm, and there is a vast body of literature that explores its advantages and pitfalls while building a dedicated theory or theories (e.g. Daly and Evans 2006; Huggett 2015). As digitalism transforms the archaeological object, the unique nature of archaeology also “calls for a re-examination of [an] epistemology outside of the realm of positivism and scientism” (Dallas 2016:319). Defining the digital object is an immense metaphysical task (see Hui 2016), which we do not attempt here. However, we do offer a brief description in order to build the argument that follows.

Roads are turned into digital objects when they are remotely sensed, digitized, mapped, and modeled. In terms of documentation, the technological progress we have achieved within the last few decades is basically to pixelate or vectorize roads on screens rather than to ink them on paper. When it comes to analysis, we continue to rely on algorithms and mathematical equations that are based on grand generalizations. On the other hand, scholarship continues to make significant advancements: for instance, in object representation. At the object level, 2D inked pottery profiles are replaced by digital reconstructions that give a researcher full ability to measure and experiment with the digital object. At the landscape level, virtual and augmented reality applications offer a means for contextualizing archaeological data through digital representations.

Due to their monumentality and distinctive shapes within complex backgrounds, roads were detected by airborne sensors very early. Zammit (1928) reported probably the earliest aerial evidence for tracks while working in Malta. Poidebard (1934) mapped road systems, among other landscape features, in Syria. Archaeologists were quick to deploy electronic sensor systems for the documentation of roads. Lyons and colleagues (1976) investigated Landsat imagery to map the historical road network in Chaco Canyon and applied image enhancement techniques to reveal parts of the movement network. Today, we have much more sophisticated methods for detecting roads, such as object-based image analysis (Maboudi et al. 2018). Nevertheless, even after four decades, scholars are mainly using sensor data only to make the process of road detection and mapping easier.

The advent of Geographic Information Systems (GIS) was a game changer for digital archaeology. Studies of movement also greatly benefited from this technology, due not only to the mapping capabilities of GIS, but also to the tools the software provided for conducting spatial analysis for modelling. Among these, least-cost analysis (LCA) has become one of the most common techniques. LCA uses a series of parameters based on environment (e.g. slope, vegetation cover), background (e.g. barriers), object (e.g. age, sex), and subject (e.g. cultural attraction) in order to predict potential movement paths through a given landscape. The technique is prevalent in studies of movement in archaeology, but it is not free of methodological issues (Herzog 2014).

The second primary process by which roads are transformed into digital objects is space syntax, a term that encompasses a series of theories and methods for analyzing the configuration of space. Space

syntax studies build mathematical syntactic generators while searching for a societal logic of spaces (Hillier and Hanson 1984). With regard to roads, they capitalize on the axially of these features by representing roads as axial lines and segments (Batty 2004). Therefore, space syntax is more suitable for the analysis of streetscapes where, for instance, it is claimed that angles between street axes have a logic behind them because people prefer minimizing angles as they move toward a destination (Dalton 2003).

There is criticism of studying movement using least-cost analysis (e.g. Lock and Pouncett 2017:133) and space syntax (e.g. Pafka et al. 2018), as these methods tend to be reductionist in how they represent and model movement. This reductionism stems from the simplicity of spatial primitives (in the case of GIS) and shape-free syntactic generators (space syntax); therefore, the criticism mainly highlights the inability of these techniques to attach meanings to spaces, such that they cannot become places.⁷ We do not even broach the topic of how to marry the complexity of roads-as-infrastructure with roads-as-digital-objects. Yet, one can open another door for a different type of question: is the digital road not advanced enough to represent its inherent complexities, or is it that only particular capacities are selectively highlighted over others? This is more of a science and technology studies question, so we touch upon it only briefly so as to not lose sight of the main topic.

If we pay attention to the technopolitical dimensions of creating digital objects, we could argue that digital reductionism is not merely a natural consequence of the inability of mathematics or technologies to reflect the complexity of roads. We also have to consider that these tools build upon the modern sociopolitical necessities of territorialization and, in a way, are the very tools that enable particular means of territorialization. So, we can speculate that roads-as-digital-objects not only contribute to the production of a particular type of place (contrary to the argument that they are reductionistic), but they also deliberately transform spaces into uncontested and seemingly neutral territories. The status quo can remain so long as it annihilates, distorts, and codifies spaces of potential change, such as roads. A different outlook, then, can be possible only when we reveal the current power dynamics of digital production and, in turn, dismantle their technopolitical oversight.

⁷ For an overview of the issue of representationalism in GIS, see Hacıgüzeller 2012.

Archaeologies of Roads

The contributions to this book highlight the inherent multiplicity of (ancient) roads, with meanings ranging from cosmogonic to militaristic. They show that any effort to classify roads will likely fall short when we consider these peculiar objects in their totality. The authors' work reveals that contemplating roads “-as” can be a productive exercise. In this book, we encounter examples of roads-as-infrastructure or -as-digital-objects, but also we see the authors evaluating roads as objects that are symbolic, persistent, militaristic, and more. Needless to say, it is possible to read them in other ways, following the form “roads-as-[descriptor].” This thematic lens to interpreting roads seems to be potentially creative. And now we discuss the chapters in alphabetical order, taking a different path than where the table of contents potentially directs us.

[Amarasinghe, Kalaycı, and van Aerde](#) study the Silk Road network as an object of political infrastructure. Their aim is to shed light on the modern “Belt and Road Initiative” (BRI) project led by China. The authors begin their investigation by highlighting the Silk Road's intricate history, composed of multiple agents ranging from individuals to empires. They scrutinize the normative historiography of the Silk Road and pinpoint the problematic areas in the narrative. Their focus is mainly to identify the Chinese contributions to this Eurasian project, as well as how the current narrative is selectively exploited by the BRI project as a proxy for China's ambition to achieve global governance.

[Burigana, De Guio, and Magnini](#) discuss the road-as-infrastructure in northern Italian prehistory. According to the authors, in arranging their territory and as a response to increasing population numbers, past inhabitants “followed a number of hyper-coherent spatial/functional rules” related to “a top-down power hierarchy.” Therefore, they suggest the construction and maintenance of the dense road network (i.e. infrastructure) required labor that was controlled by the elite, hinting at the neo-Wittfogelian “flow of power” hypothesis. Their work is a prime example of a comprehensive remote sensing study of roads-as-digital-objects. The study also includes hydrological modelling to enhance the interpretations about the road network. The authors conclude that some parts of the network might have had a double functionality: connectivity (via roads) and land-use protection (via embankments). The message is clear: while roads are invaluable

sources in and of themselves, it is only through a thorough documentation and analysis of (archaeological) landscapes that we can grasp their meaning and function.

[Cimadomo, Di Palma, and Scardozi](#) explore roads-as-transient-objects and roads-as-objects-of-interrelation in the Roman Near East. While there are indications of militaristic motivations behind road-building in this area, their militaristic use eventually ended and the system probably fell into disuse. But the authors claim more about these roads. The network of forts and, therefore, roads connecting them together entailed a division of worlds: the worlds of sedentary farmers and (semi-)nomadic pastoralists. Their argument also implies that the road was a material manifestation of the usual binary: inside vs. outside or domestic vs. wild.

[Crépy, Manière, and Redon](#) highlight the challenges in considering roads-as-digital-objects. The authors successfully apply least-cost path models to document the ancient road networks of the Eastern Desert of Egypt. The strength of their work lies in its reliance on various well-chronicled travelers' accounts. They are also mindful in their detailed analysis of the model's limitations. In particular, they remind us of the importance of understanding the agents in a model. In mathematical terms, different agents bring about different model parametrization, an issue that is widely overlooked in movement modelling. Otherwise, we contribute to the risk of not differentiating between "an actual or purely hypothetical road." Thanks to their reflexive attitude, however, we also realize that these purely hypothetical digital roads, which do not align with the actual objects, nevertheless open up new research avenues.

[De Gruchy and Lawrence](#) guide us through the history of research across greater Mesopotamia as they consider roads-as-scholarly-objects. Their work reveals a deep-rooted interest in questions about who moved, why they moved, and how they moved. We read about a rich arsenal of methods, ranging from the study of historical and ancient texts to spy satellites, and from early forms of network modeling to modern ethnographic studies of roads. But the authors also remind us that land transportation is only one side of the coin; the unique and extensive system of canals and channels in southern Mesopotamia must have been used by boats. Thanks to the authors, we also contemplate the limitations of current research: what are the modern algorithms optimizing for, or why do we generally assume that travelers were pedestrians?

[Kerr](#) focuses on Australia's legendary Birdsville Track, a road-as-an-object-of-fantasy. The author discusses how and why a road might attain legendary status, and in this process how the road becomes a medium for bolstering some identities while forgetting others. Many used the Birdsville Track: the drovers, settlers, and mail carriers, but also Aboriginal peoples, European missionaries, and Afghan cameleers. It is through the amalgamation of their stories that we understand the multi-layered history of the road and realize it is both tangible and intangible at the same time. In the earlier journeys, the physical road was crosscut by the songlines that guided the performer toward food, water, and shelter in a desert environment. Today, the road mainly attracts tourists hoping to experience the "genuine" outback life in the "wilderness"—thus, a new fantasy is born from the shifting memories of the road.

[Kozhukhovskaia](#) treats roads as symbolic objects. In her words, "[a]s roads pass from the physical world into the metaphysical, geographical space becomes mythological." The Pontic–Caspian steppe populations of the past utilized the concept of the road in such a way that it became a cognitive mapping of both this world and beyond. The Axis Mundi was not only a two-dimensional path, but also a vertical symbolism that ran between the upper world and the underworld. It is none other than the tumulus that formed this vertical symbolism, while at the same time acting as road sign, a *sine qua non* for nomadic life in a vast open steppe. Burying the dead with wagons and chariots, especially in dismantled form, was the perfect Bronze Age steppe symbolism. We observe a similar phenomenon in Greek mythology when the deceased boards Charon's boat, and in the Mesopotamian mythological figure of Urshanabi, the ferryman of the Hubur, which means both "river" and "netherworld" at the same time. It is not much of a surprise, then, that the steppe cultures embraced the river as a representation of the afterlife journey. In her words again, "the river was a symbolic replica of the world axis."

[Kurt](#) highlights the road-as-infrastructure-building in the Ottoman Empire. For this infrastructure to be realized, two distinct fantasies had to be embraced by the state and its contractors: the better mobilization of troops and the opening of markets. It was only when these two imaginations aligned that construction of the road became viable. Yet, an unexpected result was brought about in everyday life: the project facilitated easy travel and further opened up the Empire to foreign visitors. This fact that would eventually shape the practice of

archaeology within the Empire. Kurt's article also reminds us that the transportation network is much more than the roads themselves, as the building of other relevant infrastructure is often a complex matter.

Lewis tackles roads-as-digital-objects and challenges how roads are digitalized and conceptualized in least-cost path studies. The case study from Cumbria, England, cascades the landscapes of movement with the landscape of cairns. Lewis starts with a basic but powerful axiom that "direction-dependent visibility limits potential visibility to the confines of humans' field-of-view." Especially for a road like a ridgeway, a walking agent's field-of-view naturally becomes an important part of the movement practice. Thanks to archaeologists' constant interest and ever-growing experience in least-cost analysis, there is a rich body of literature on least-cost-path-informed interpretations of roads; nevertheless, there is a gap in knowledge about the ways in which we treat roads as digital objects, and this is a gap that Lewis sets out to patch. And as with any other digitalization, the process is open, and the model is subject to improvement. The peculiarity of roads again becomes visible here: a single digital line (or a corridor of numbers) can contain multiple actions actions—in this case, both movement and sight.

Lopez Garcia takes us to the western Roman provinces in his discussion of the road-as-infrastructure. His work is exemplary in the sense that it combines on-the-ground research with epigraphic and remote sensing data. It is through the intricate combination of these datasets that we can achieve some level or sense of informational accuracy and further appreciate the marvel of Roman road-building. Though born out of militaristic, socioeconomic, or political needs (or a combination of the above), "[t]he construction of roads depended absolutely on the nature of the landscape." Here, we can imagine the labor time necessary to carve grooves into the rock or to build stone supports for slopes.

Ordozgoiti takes us to the eastern Roman provinces in discussing the road-as-political-object. Through this study, we realize that roads were materialities upon which the image of the ruling Roman families was reflected. The author studies inscriptions on statue bases, architectural elements, blocks, and especially milestones, and he explores the balanced dynamics between local populations and Roman imperial families. In particular, Ordozgoiti notes that "the milestones exemplified here the central power's authority (e.g. the power to repair and modernize roads), and for this reason the Latin language was used,

while the Greek language was used on statue pedestals, plaques, or tombstones—features that imperial and local elites used for self-representation.” This suggests that the local approach to imperial motivation is compromising when it comes to road-building and maintenance, but preservationist in more private settings. And maybe also thanks to this pragmatic resistance, the Licinia family, the ruling family at the time, “suffered a debacle in the promotion of its personal image.”

Pakkanen and Donati focus on the road-as-digital-object in their search for construction standards. Their case study is Mantinea, an important city in the central Peloponnese, Greece. The authors make use of the results of geophysical prospection, which revealed an extensive portion of the city layout. Using cosine quantogram analysis, they aim to find a standardized unit length that the city builders might have utilized, and they argue against the blind use of foot-units (e.g. the “Doric” or “Samian” foot) in the analysis of ancient town planning. Their analysis suggests that “ancient town planners derived the design module from a five-multiple of the cubit standard of 0.495–0.504 m and applied it to the dimensions of a single housing unit. This single unit was then used as a basis for implementing much, if not all, of the orthogonal street system.” Even though there are some varying block lengths and the measurement bias exceeds the standards, they are able to put forward a convincing history of an ancient city-planning process. In doing so, they highlight the role of *planners* themselves as opposed to the act of *planning*.

Serventi and Vuković introduce the road-as-persistent-object. Thanks to their meticulous documentation of the road network in southern Liburnia, Croatia, we are able to trace past movement from prehistory onward, with great temporal depth. In the road palimpsest we can observe many agents, ranging from ancient traders to modern shepherds and from transhumant pastoralists to settled communities. In their work, we also realize that roads are objects of intuition. In a complex and challenging terrain like Velebit Mountain, and especially when trade and safety are the prime concerns, the authors seek (as do we all) “the shortest and most convenient crossing,” “the most logical and simplest passes,” or a “reasonable and safe passage,” with the motivation of controlling the “central pass” or “alternative passes.” After all, humans have been traveling since time immemorial, and they hope to make their journey the easiest and least costly. This intuition, however, is the product of our present time. Their work is a reminder that it would be wrong to assume people always moved in the same

way and with the same motivations. As the authors show, the prehistoric inhabitants chose direct, but steep, trails to cross over Velebit, but by Roman times, and up until more recent periods, people preferred low and probably longer routes to avoid steep slopes. We must always explore roads in spacetime.

[Stefanakis](#) explore roads-as-economic-objects on the southwest coast of Rhodes, Greece. Archaeological surveys suggest that the ancient deme of Kymissaleis operated in a dynamic, productive landscape. So, if there was a site, there must also have been a road. While this is a trivial statement to make, it also reveals how much evidence we lack when it comes to documenting ancient roads—especially in a complex Mediterranean geography. In Kymissaleis, roads “form a substantial part of the local economy,” despite the fact that there is limited material evidence for roads. The rugged Mediterranean topography is also significant because of the ways in which it constrains movement; the ruleset behind building a road appears to be the same for ancient roads and paths—welcome news for practitioners of least-cost analysis.

[Vorsanger](#) shows how roads can operate as objects of necessity, politics, and sacredness all at the same time. The author convincingly argues that the making of Archaic Athens went hand-in-hand with the formalization of a road network: milestones were erected, myths were created, boundaries were sharpened. Along the roads, herms offered education for the country folk, perhaps another attempt to unify lands in the midst of competition between city-states. As these road markers came to dot the landscape, the centrality of Athens was further asserted; the road network assisted in territorial unification. In particular, the road between Athens and Eleusis—the Sacred Way—helped Athenians to assert their authority over the landscape, especially since the region of Eleusis was the source of border conflicts between Megara and Athens. In this amalgamation of things, how can one actually atomize a road and pinpoint the makers of it? And was it that the politics of the Athenians cultivated the sacredness of an already-important road, or rather that the sacredness of the road facilitated the development of Athenian identity?

A Shortcut to the Beginning

This introductory chapter aimed only to reveal the apparent complexity of the road, be it a modern or an ancient one. The starting argument was that roads crosscut space and time such that they can be both ancient and contemporary, simultaneously. The suggestion was that contradictories might be naturally dissolved in the spacetime continuum, allowing us to avoid classification. For instance, the road-as-spacetime-object can be both planned and emergent simply because it is not only the container of actions, but also the generator of actions. And we argue further that the road is an object in which the dualism of body and mind is less visible. “The Road goes ever on and on”

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