When Infrastructures and Ecological Actors Meet: Resituating "Green" Infrastructures through the History of the Willow Tree

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Mathilda Rosengren *

Abstract: *»Wenn Infrastrukturen und ökologische Akteure aufeinander treffen: Neuaufstellung ‚grüner' Infrastrukturen über die Geschichte des Weidenbaums«.* Not only do infrastructures put matter in motion, they also provide salient accounts of political struggles and everyday accommodations. Today, many municipalities promote them as part of "green" and "sustainable" solutions for the future. Concurrently, the more-than-human social sciences are going through their own "infrastructural turn," with an impetus to acknowledge actors beyond the human – that is, the ecologies of plants, animals, and fungi. This paper joins the call to include the ontic-epistemic realities of lively, other-than-human beings. Homing in on one ecological actor, the white willow (*Salix alba*), in Malmö and Scania, Sweden, I show that more-than-human infrastructural relations are far from novel occurrences. By adopting a ligneous, relational dialectic of agency, I account for the willow's shifting spatiotemporal positions and how the tree connects Scania's and Malmö's infrastructural past, present, and potential futures to wider discourses of sustainability and urban change. In Malmö, such discourses reflect the current implementation of a "green" infrastructure of "eco-pathways" (*Ekostråket*). Focusing on the willow, I question the municipal promise of "green" infrastructure as a panacea for humanity's challenges in the Anthropocene.

Keywords: More-than-human infrastructures, green infrastructures, willow tree, *Salix alba*, ecological actors, plant agency, Malmö.

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1. Introduction

Infrastructures are always more than material articulations. Rather, in being "matter that enable[s] the movement of other matter," in anthropologist Brian Larkin's words, their "peculiar ontology lies in the facts that they are things and also *the relation between things*" (2013, 329, my emphasis). If read as such, this intermediary relational status that infrastructures inhabit may unveil unexpected constellations of actors – of humans, other lively beings, and non-lively matter. This manifests particularly clearly in cases of infrastructural disruptions and disuses: from human beings stepping in and "becoming" the infrastructure that a state fails to provide them with (Simone 2004) to trees reappropriating geopolitically contested inner-city railways (Kowarik and Langer 1994). Nevertheless, less disputed or exceptional forms of what we may call "infrastructural relations" can also be responsible for molding physical landscapes, shifting socio-political trajectories, and reframing cultural-historical conceptions. As many have shown, constructions and everyday utilizations of infrastructures capture certain human projections and imaginaries of the future, from the promise of modernity of the water systems in the 19th century (Swyngedouw 1999) to today's hope of a quick fix for the climate crisis through "green" pathways and "sustainable" modes of transportation (Lorimer 2015, 167). If we take a closer look at these infrastructural relations, as Larkin argues, they all tell us stories beyond that of simply matter in motion. Instead, they provide us with salient accounts of both political struggles and everyday accommodations of the past, present, and, perhaps, potential futures.

Today, in these uncertain times of climate breakdown, reading infrastructures through how they simultaneously embody and facilitate the link between lively and non-lively matter, political visions, and socio-ecological imaginaries also reflects the pressing need to include other-than-human beings in the narratives of co-habitation in the Anthropocene (Tsing et al. 2017). This is true everywhere, but perhaps becomes especially apparent in environments most explicitly influenced by human ideas and intentions, such as cities and their urban-rural peripheries. As scholarship across the natural and social sciences has shown, ecologies of plants, animals, and fungi form a part of life in cities, as well as those urban materialities that enable it (Barua and Sinha 2017; Gandy and Jasper 2020). Taking this into account, geographer Jamie Lorimer calls for a "mapping [of] nonhuman topologies," as it "opens experience to the rich diversity of more-than-human ways of being on the planet – or what might more aptly be termed *nonhuman mobilities*" (2015, 177, emphasis in original). Here, infrastructures, urban and otherwise, become pertinent examples of how more-than-human relations between human and other-than-human actors arise, move, and dissolve. Testament to this

significance, the more-than-human social sciences have in recent years been going through their own "infrastructural turn," in which the impetus lies in highlighting how lively ecologies, human intentionalities, and technologies are invariably entangled (Krieg, Barua, and Fisher 2020). This paper joins this "turn" that posits other-than-human beings as subjects and recognizes their agential capabilities (more on this below). It does so with the proposition that it offers an alternative, important lens through which to rethink anthropocentric narrations of both the past and the present, assess how other- and more-than-human abilities to act through infrastructural relations have co-shaped our physical and political landscapes, and critically approach the so-called sustainable infrastructural practices of today.

In an account situated at the nexus between more-than-human urban geography, multispecies ethnography, and environmental history, I add an articulately historical and temporal dimension to the "infrastructural turn" by homing in on one other-than-human ecological actor – the willow tree (*Salix alba*) in the city of Malmö and the wider region of Scania, Sweden. In the first section, I outline the benefits of the so-called ecologizing of infrastructures for a wider, more-than-human research canon, especially regarding how it provides explicit examples of an expanded understanding of agency. Such expansion, I argue, forms a cornerstone for adjusting to a less anthropocentric form of sustainability thinking (something I return to in the final section). Then, in the following sections, I draw on historical accounts of the willow tree to show that more-than-human infrastructural relations are far from novel occurrences – nor are they exclusively urban or modern phenomena. By accounting for the shifting positions of the willow in time and space, I show how the tree effectively ties Scania's and Malmö's infrastructural past, present, and potential futures to wider public discourses around contested sustainability practices and urban change. Such discourses have culminated in the current implementation of a long stretch of "green infrastructures" and "eco-pathways," the so-called *Ekostråket* (Malmö Stad 2019, 24). In the final part of the paper, I problematize how this infrastructural imaginary is presented by the municipality as a panacea for the socio-ecological and political challenges facing humanity in the era of the Anthropocene. I propose that without acknowledging relational and other-than-human agencies as vital parts in shaping infrastructural relations, the promise of sustainable futures through more-than-human infrastructural projects remains little more than a void exercise in urban planning.

2. Ecologizing Infrastructures and the Agency of the Other-Than-Human

In the introduction to the perhaps most assertive contribution yet to the "infrastructural turn" of the more-than-human social sciences, anthropologists Lisa Krieg and Josh Fisher and geographer Maan Barua (Krieg, Barua, and Fisher 2020) contend that an "ecology of infrastructure" is

> about attending to infrastructure as that which forges the very grounds for what shows up as nature at any juncture. The question of what natures we witness, live with and wish to conserve, is never outside what infrastructures do, and what future worlds they might herald.

On the one hand, the infrastructural landscapes evoked here seek to integrate the formalized "gray" infrastructures (constructed to move matter such as energy, water, waste, power, and people) with the informal ways other-than-human beings utilize them. On the other hand, the "turn" also pushes the understanding that other-than-humans themselves form part of such socio-technological networks – that the "green" and "gray," and everything in between, are inherently complicit in the making of infrastructures (cf. Boyer 2022, in this volume). This entwinement also permeates the question of nature preservation and sustainable developments for and in the future – the one, infrastructure, can never be had without the other, "nature." Through ecologizing infrastructures, as I read Krieg, Barua, and Fisher (2020), proponents seek to move beyond human-centered scientific and political articulations to include the ontic-epistemic realities of other-than-human beings. In other words, this ecologizing means allowing lively, other-than-human beings to take agential center stage in ways that many classic social scientific accounts (even those that read infrastructures through, for instance, assemblage thinking or actor-network theory [cf. Graham and Marvin 2001, 185; Brenner, Madden, and Wachsmuth 2011, 231]) often do not.

Below, I make my case for why this emphasis on the other-than-human and its varying agential potential in more-than-human infrastructural relations is important. However, before that, a minor definitional interlude is warranted. Counter to many multispecies scholars, I make a clear distinction between the two terms "other-than-human" and "more-than-human" – a distinction that will be used throughout the text. Replacing the common yet contested descriptor "non-human" (a usual argument being that this categorization is "grounded in human exceptionalism" [Kirksey and Helmreich 2010, 555]), I take "other-than-human" to mean the physical articulation of a lively being and body (beyond the human). I prefer the way this "other-than," rather than "non," emphasizes a distinctiveness from the human without purporting this to be a "lack" – it is "other," but not necessarily inferior. "More-than-human," on the other hand, I use to delineate the entwinements and effects of the

relations *between* other-than-human bodies and human ones, thus acknowledging that the human is very much included in "nature" and vice versa (Metzger 2015, 25). As such, "more-than-human" specifically connotes the relational *in-between* bodies rather than the bodies themselves. Instead of (re)producing a dichotomy focusing on what sets them apart, I find that making this distinction between the "other" and "more" homes in on what binds humans and other-than-human beings together. Thus, it becomes a particularly constructive distinction to make when adopting thinking about infrastructures in line with Larkin's dual characterization. Finally, as will be explored further below, the conceptual interplay between the other-than-human, the human, and the more-than-human lends itself well to navigating the expansion of agency that a more-than-human understanding, or ecologizing, of infrastructures implies – both in theory and in practice.

Having cleared up this common definitional slippage, other questions arise in its wake: Why focus on a specific tree and its agential qualities rather than another other-than-human being? In the case of infrastructures, would it not be more fruitful to turn to those beings who are a bit "livelier" and more mobile, maybe an "other-than" closer to the human than the stationary tree? The answer to the second query is that trees, of course, *do* move, no matter how immobile they may seem to the human eye. From the point of human perception, trees inhabit a timeframe somewhere between the speedy activity of mammals and the stasis of geological matter (Ryan 2012, 108). As anthropologist Tim Ingold (1993, 168), with his usual poetical verve, puts it:

> The tree bridges the gap between the apparently fixed and invariant forms of the landscape and the mobile and transient forms of animal life, visible proof that all of these forms, from the most permanent to the most ephemeral, are dynamically linked under transformation within the movement of becoming of the world as a whole.

Thus, when placed in relation to the human, trees share ontological tensions similar to those of Larkin's infrastructures. If infrastructures denote, in part, the dynamic relationality of matter in motion and in part a cementing of certain physical structures, present beliefs, and projected futurities of society, the mobility of trees comes to indicate a never-ending expansion in space – branches and rhizomes spreading up, down, and sideways – as well as a sedentary grounding, a literal as well as a cultural-historical rooting, to a particular place. Just like the relationality that infrastructures afford, trees always move in connection to the world around them. Their movement patterns – that is, their growth – are predicated on seasonal rhythms, the composite of the soil around their roots, their proximity to water sources, the amount of pollution in the air, anthropogenic cares and disturbances, and so on. In return, this entrenched situatedness in the world is also what constitutes the trees' abilities to act – their ontological reality occasionally aligning with, occasionally contesting, human-made projects and intentions. Accordingly,

this agential dialectic, outlined more fully below, is central to understanding more-than-human infrastructural relations. As such, part of my intention in this paper is to show that it is misleading to purport "sustainability" through the inclusion of other-than-humans in infrastructural projects if this inclusion comes *without* acknowledging that there are other ways beyond the human to become and act in the world. Here, I would argue, there are multiple reasons why the tree is the other-than-human being par excellence to question and showcase how infrastructures are made and remade by multifaceted relational bodies and agencies unfolding over time and space.

First, as we will see in the following sections, to consider more-than-human infrastructural relations through the history of a seemingly unassuming ligneous being such as the willow may unravel often taken-for-granted Western concepts of progress and change. Landscape historian Sonja Dümpelmann (2019) alludes to this at the end of her monograph on 20th-century street trees in New York and Berlin. She concludes that "because of trees' dynamic nature, life cycles, and limited life spans, on the one hand, and their site-specificity, localism, and relative permanence on the other, they both embrace and resist change. Street trees exhibit the *ambiguities of modernity*" (2019, 248, my emphasis). These "ambiguities of modernity" particularly come to a head when put in contrast with human-built infrastructure – the display, par excellence, of Western notions of the progress of modernity (Kaika 2005; Graham and Marvin 2001). As we will see, over time, the willow and its connection to various infrastructures both support and disrupt these notions of progress. Infrastructures, of course, have existed long before the advent of modernization, and this historical retelling of more-than-human infrastructural entanglements affirms Krieg, Barua, and Fisher's (2020) musing that these relationships are "never outside what infrastructures do, and what future worlds they might herald." As such, this outlook also presents alternative critical narratives to the contemporary focus on infrastructures' progressive potential as "green" and "sustainable" – something I will return to in the final part of this paper.

Second, the emphasis on other-than-human flora in the form of the willow helps to re-situate scholarship intimately linked with infrastructures and what we define as "nature" in human-dominated environments (cf. Szerszynski 2022, in this volume). In the social sciences, the connection between the two is perhaps most obviously articulated within political ecology and its urban subfield. Urban political ecology's notion of the urban (and its web of infrastructures) as a continuous "process of socio-ecological change" has undeniably paved the way for recognizing "nature's" integral role in molding human-made materialities and politics alike (Heynen, Kaika, and Swyngedouw 2006, 2). Yet anthropologist Melissa Poe and her colleagues detect a lingering anthropocentrism in political ecology's predominant focus on the "structural modes and dynamics" of "human actors and their

management and use of, and interactions with species" (Poe et al. 2014, 904). According to political ecologist Jake Fleming (2017), it is first in "posthuman political ecology" that we find a clearer integration of other-than-human actors within the field (and to this, we may also add more recent conceptualizations of a "more-than-human political ecology"; see, for example, Gesing 2021). However, Fleming argues that most of this research rarely ventures beyond the bounds of fauna – predominantly focusing on animals as agents in relation to human inventions and interests, while plants and fungi remain the backdrop to these relations (2017, 26-7). "Even as botanists and philosophers shed new light on plant autonomies," he notes, "political ecologists still treat plants primarily as aspects of the landscape against which other human and nonhuman actors move" (Fleming 2017, 26). To rectify this omission, Fleming proposes that we pay closer attention to scholars of so-called "vegetal politics" (see, for instance, Head et al. 2014), who work with a more plant-inclusive reading of a "multispecies relational ontology" (Fleming 2017, 27). In the next paragraphs, I will return to the central role this relationality plays not only for being in the world but also for acting in it. Here, it suffices to say that the ecologizing of infrastructures through the willow tree exposes the need to move not just beyond the human but beyond favored research subjects within a discipline. Furthermore, it stresses the value of crossing disciplinary boundaries to retain a "theoretical fluidity" when accounting for more-than-human relations of plants as well as animals (Lawrence 2022, 632) – a fluidity that I very much ascribe to in this paper.

Finally, as already alluded to above, to search out and account for more-than-human infrastructural relations also underscores the importance of how we conceive of an expanded notion of agency. This is particularly apparent when dealing with spatially and temporally complex plant lives, such as the life of the willow tree. The idea that agency can stretch far beyond the human is, of course, not an insight confined to plant scholars. There is a rich, disciplinary-sprawling and slightly unruly canon of agency beyond the human – from the general embrace by science and technology studies of the Latourian actor-network theory (Latour 2005) and the adoption in varying ways by new materialist and post-humanist thinkers of the Deleuzian and Guattarian philosophical concepts of the assemblage and the rhizome (see Bennett 2010; Barad 2003; cf. Braidotti 2013) to the focus of a diverse cluster of multispecies sciences on other- and more-than-human constellations of agency (Haraway 2008; Tsing 2013; Law and Lien 2014) – to name just a few. Throughout this canon, not only is agency expanded to other-than-human beings or other forms of matter, but the human agency of intentionality and planning – as commonly defined by "Western standards" (Tsing 2013, 20) – is concurrently being redefined. As political theorist Timothy Mitchell (2002, 10, my emphasis) notes:

> One of the things with which [the forces of technology, disease, hydraulics, war, nature, chemistry, and so forth] interact, in different ways, is what we call human intention. […] As one unravels these interwoven forces, human agency appears less as a *calculating intelligence* directing social outcomes and more as the product of a *series of alliances* in which the human element is never wholly in control.

Human agency, as Mitchell would have it, is a decidedly more-than-human affair where the human is always in relation to the other-than-human world around it.

Nevertheless, even within fields that recognize the force of other-than-human matter, such as political ecology, there are those who are critical of this extensively widened understanding of agency. For some, there is the worry that if agential capacities are applied to other-than-humans of organic *and* non-organic forms, it risks diluting or distracting from human political agency (see, for example, Hornborg 2017; Malm 2018). As human ecologist Alf Hornborg sees it, without life, there is no way to act, and thus the separation "between living and non-living entities hinges on the occurrence of agency" (2017, 98). This is an articulate pushback against lines of thought that have grown in influence over the past decades – such as Karen Barad's "agential realism" (2007) or Jane Bennett's "vibrant matter" (2010) – which levels, in my eyes, a relevant critique against "the humanist notion of agency as a *property* of individual entities" (Barad 2003, 807, emphasis in original). Still a hotly contested topic of a much wider debate than this short paper can cover, the most important takeaway is that the discord highlights that *who* or *what* may be included in Mitchell's "series of alliances" is part of larger questions of subjectivation: Where do we draw the line (if at all) between subject and object? To throw another spanner in the works, for some, aliveness in itself is a "relational condition" and therefore always up for (re)definition (Whatmore and Hinchliffe 2010, 446).

As much an existential reckoning as a "simple" question of definitions, much of the understanding of "planty" agencies stems from these multifarious debates. Primarily emerging from human-plant studies (Ryan 2012) and the philosophies of "plant thinking" (Marder 2012; Hall 2011), it works with an expansion of agency that, in line with Barad (2003, 2007) or Bennett (2010), seeks to undo the anthropocentric hierarchy of both acting and being in the world. Here again, when contrasted with human-initiated projects, such as infrastructures, I believe that trees function as especially constructive entry points to do so. As alluded to earlier, trees carry the liminal identity of simultaneously being living beings and "things" in much of Western planning discourse (Braverman 2015, 133). As such, they are far enough removed ontologically from the human (as opposed to, say, other mammals) but still fall within the registers of life, as we commonly accept it, to push "agential thinking" further without encountering a kneejerk shutdown from those less inclined to consider agency beyond the human. To untangle the agency of the

tree, I choose to read the willow tree (and develop this paper in the process), in part, through what Donna Haraway (famously an early proponent of more-than-human agencies [1991]) describes as "patterns of relationality" (2008, 17). In human-plant scholar John C. Ryan's words, "Rather than biochemical extracts or anatomized parts, plants can be defined by their connectivities to dynamic events and other mutable beings. As plants change before our senses, so too do our bodies and social practices in relation to the plants" (2012, 110). These relational, more-than-human patterns of "planty" agency emerge through the meeting and interlinkage of multiple bodies, motions, and temporalities.

As the sharp-eyed reader might have noticed, writings on other-, more-than-human, and "planty" agencies more often than not return and revolve around thinking through ever-changing *relationalities*. Nevertheless, I would argue that the juxtaposition of an ecology of infrastructure with the ontological demands of a tree reminds us not to forget about the very bodies and matter that form the ends and nodes of this relating. Again, just as an infrastructure's ontology is defined as simultaneously being a thing and the relation between other things, so is the agency of ligneous beings born out of the meeting of an always-shifting relationality and a phenomenological rootedness (Brice 2014). Trees are increasingly being recognized for their connective capacities, with forest ecologists working to uncover the widespread interconnectedness and interdependence of mycorrhizal networks that join vast communities of plants together through the intermediary of fungi (Simard 2021). It is thrilling to imagine these large, more-than-human networks; yet, it might make us lose sight of how the other-than-human body of each individual tree and the characteristics of tree species also come to function as a vital agential backdrop in their own right – particularly in direct, everyday relations to human beings. As anthropologist Anna Tsing argues, the "first step in appreciating a more-than-human sociality is to embrace a wider sense of what freedom to act might mean" (2013, 30). This freedom to act (i.e., agency), she continues, "depends on the bodily form we have inherited; through it, we navigate the world" (2013, 30). When looking at the willow tree, being able to successfully read its phenomenological relation to the world thus demands a minute understanding and engagement with the tree's ontological standing – both in terms of species affiliation, as part of a larger connective tissue of plants, and as an individual body that expands and bends in a constant conversation with its immediate surroundings.

The willow's freedom to act, then, in part denotes its other-than-human agency – or "plant intentionality," as plant philosopher Michael Marder chooses to call it – an agency that "may be understood as the movement of growth, directed toward the optimal patches of nutrient-rich soil and sources of light" (Marder 2012, 1367). In part, it also denotes the more-than-human relationship between these physical expressions of "intention" and the ideas,

needs, and projects of the humans around it. This is the agential dialectic of the tree: of an intense interconnectedness but also of a relational yet individualized growth; of being the relation between things (as a habitat for birds, insects, and lichens; and as a projection surface for human ideologies and future projections) as well as acting as a rooted yet changing "subject" within this wider relationality. With an eye on this enmeshment of human-made infrastructure, the willow tree, and past and present human relations to the tree in Scania, it is easy to see that any current ideas and projects of sustainability that lose sight of this dialectic and the complexity it affords are doomed to failure. I will expand on this reflection in the final section of the paper, but first, let us consider the willow's capability to act not only in space but also through time.

3. The History of the "Scanian" Willow

Time, both natural and social scientists purport, is an essential aspect of plant agencies (Trewavas 2003; Elton 2021), and the willow is no exception. It may make its mark by expanding in space, yet, as geographer Jeremy Brice observes in his account of how seasonal labor patterns are determined by the activities of grape vines, "the perception of planty agencies is interwoven with the marking and reckoning of time" (2014, 947). Learning to recognize plant agencies, such as the willow's, thus also means learning to recognize the multiple temporalities that the more-than-human relations of an ecology of infrastructures operate within. As mentioned earlier, this involves taking into account temporalities of movement, growth, circadian and seasonal rhythms, imposed mechanical time, and so forth (Bastian 2009). As such, the willow's agency should also be seen as an embodiment of and through time. In fact, this agency of embodied temporalities – of the intentionality of growth and the relationality of more-than-human connectivities – has come to define the fates of Scania's and Malmö's willows and their relation to human-made infrastructures throughout past centuries. Thus, being able to fully appreciate the willow's status in the urban-rural landscape today and understand the problematics of its current positioning in the City of Malmö's sustainability thinking, we first need to trace how the "Scanian" willow has emerged through history.

An often taken-for-granted presence in Scania (the southernmost region of Sweden), the willow tree has nevertheless played an integral part in the formation of the region's infrastructural landscape – materially as well as politically. Embodying the tension between change and permanence, disruption and connectivity, the history of the tree is entwined with a plethora of infrastructures – from streets and road networks, water pipes and reservoirs, to green corridors and eco-pathways. At large, it is the specific ontological

qualities of the tree – how it sets root and grows – that have defined its historical situatedness and belonging in the Scanian landscape as well as caused both ruptures and connections in the urban landscape of Malmö today. Predominantly of the species white willow, *Salix alba*, but also basket willow, *Salix viminalis*, and several hybrids, the tree was most likely introduced to Scania by humans in the Middle Ages (Törje 1955, 5). The relationship between tree and landscape was thus inherently more-than-human from the start, and although the tree occasionally can be found in a feral state, in most cases, this dependency on human actors remains. As such, unlike many "naturally" occurring tree species, and without disregarding that other-than-human beings do have "relative autonomy from human designs" (Tsing 2013, 33), there is a straight correlation between human actions and intentions and the tree's very existence in Sweden.

The willow is a light-demanding pioneer species with a forceful and fast-expanding root system that makes it easy for the tree to establish itself in exposed places, gain in size at a considerable speed, and penetrate many surfaces, soft and hard, in search of water (Houston Durrant, de Rigo, and Caudullo 2016, 168; Orvesten, Kristoffersson, and Stål 2003, 13). Thanks to these ontological qualities of relatively speedy tree temporalities, the willow quickly became one of the favored tree species among those trying to counteract the intense anthropogenic deforestation that plagued Scania due to continuous wars between Denmark and Sweden and heavy farming (Törje 1955, 7). The soil erosion resulting from this lack of trees was a big concern in Scania, as the region harbored (and still harbors) some of the most fertile soils in Sweden. There are accounts of Danish regents from the 13th century onwards demanding by various laws and ordinances that farmers plant willows on their grounds (Törje 1955, 5-6; Weimarck n.d.). Nevertheless, it was only after the region went from being Danish to Swedish in 1658 that the number of willows substantially increased and their relation to, and entwinement in, human-made infrastructure became more articulate.

Over time, the tree became known as the (slightly derogatory) "lazy man's tree" (*latmans träd*). It earned this denomination thanks to its ease and inexpensiveness in terms of planting[1] and pruning (more on the latter later) (Fribing 2004, 14). Nevertheless, on a structural level, it seems that it was especially in the interest of "the learned" community and the ruling classes to have the willow planted throughout the Scanian plain (Hobroh 1944, 42). By the 18th century, the countryside was close to being void of woods and, in addition to promoting soil retention, the new Swedish masters of the land were desperately trying to find ways to generate wood for heating, fence making, sheltering, and so forth (Linné 1959, 270-1; Fribing 2004, 20). The arguable father of modern taxonomy, Carl von Linné, sang the willow's praises during his

[1] The tree can be easily reproduced from suckers and adventitious roots (Houston Durrant, de Rigo, and Caudullo 2016, 168).

journeys through Scania in the mid-1700s: "For no other tree grows more easily, quicker, with lusher greenery, nor is more useful for a household than this [tree]" (quoted in Törje 1955, 10-1, my translation). During his travels between the two villages Klörup and Dybeck, just south of Malmö, Linné records that "willows of both kinds, namely the green and the white, but mostly the latter" were planted along both villages (Linné 1959, 270, my translation). This, according to Linné, was thanks to a certain "general and governor Bennet [who] had managed to get the people in the county to plant trees here by the farms" (Linné 1959, 270, my translation). It would, he remarks,

> be preferable, that it [the tree-planting practice] were to be continued. […] For the plains of Scania, it would be a primary thing, if all ditches were to be planted with willows and other deciduous trees on the insides of the mounds, which thereby would gain considerable strength, and every third year the branches could be cut and woven into small fences […] which [when they started to decay] could be used as fuel […]. Besides all this, such trees could considerably adorn the countryside and protect from winds. (Linné 1959, 270-1, my translation)

This "image of the future" that Linné was proposing – that the willow should be planted in rows along mounds to fulfil a multitude of functions for Scania's human inhabitants – would take almost a century to come to pass (Törje 1955, 11).

Despite local governors, such as the said Bennet, and influential botanists, such as Linné and his disciples, pushing farmers to adopt these tree planting practices by means of everything from gentle encouragements and prayers to threats and ordinances, the Scanian plain remained sparsely planted. The fact was that in the mid-1700s and early 1800s, most of the "lowlier" farmers were not willing to sacrifice their meager strips of farmable land to fulfil the visions of people in power (Hobroh 1944, 48). It was only with the second, and largest, agricultural land reform – the so-called *Enskifte* – during the first three decades of the 1800s that the willow became a staple on the plain. With the *Enskifte,* the strips of land belonging to each farmer, which had previously been scattered around each village like a patchwork quilt, were consolidated into larger, solid chunks of land. Simultaneously, each farming household was moved out of the old village structure to become freestanding units, each surrounded by its own land and not much else. As such, the shift not only enabled more efficient farming of the land, but with this material consolidation also came a consolidation of power. The lines between the haves and the have-nots became sharper, and old village alliances were undone to be replaced by a more individual focus on singular households, as the farms were scattered around the Scanian landscape. Those without any land at all were forced to move to so-called "row villages" (*radbyar*), with houses lining the freshly constructed roads serving the new farming structure (Grundström 2021, 24). In a flat landscape otherwise void of landmarks, with novel property boundaries and road infrastructure came the need for new demarcators.

These came in the form of the *pilevall* – a straight line of willows planted on banks along a road or agricultural land – and, to a lesser extent, the *pilallée* – a willow tree avenue lining roads leading up to city gates or rural farms and manors (Weimarck and Weimarck 1985, 29).

In the markedly changed political and material landscape of the Scanian plain of the early 19th century, the uniform rows of planted willow trees consequently became an unarticulated symbol of a new ruling order. This development reflects environmental historian Joanna Dean's (2015, 163) notion of an anthropocentric "narrative of power. [Where] long lines of identical trees, alike in age and in type, speak of the human control of nature, and of a grace born of power." At this time, *pilevallar* and *pilalléer* also became important as road markers on the country roads to and from towns, cities, and rural estates – in a sense, facilitating the transport of both goods and humans between different centers of power, new and old. As part of the plain's infrastructure, in an era before artificial lighting and protective road rails, the straight lines of trees helped travelers move between town and country at night or in the darkness of winter without the risk of running off the road (Olsson and Jakobson 2005, 29). What is more, this was a functionality that stretched beyond the purely material. Just as Linné prophesied that the willows would "considerably adorn the countryside," there was an aesthetic argument for the tree's existence, at least among the upper classes. This is how a young Miss Ulla Cronstedt ([1817] 1934, 120, my translation) describes what she sees from the window of her carriage during her journey from the village of Dalby to Malmö in August 1817:

> The Malmö region is also the most beautiful of all land-reformed plains; the Scanian also places a high value on it and finds in it the greatest beauty; his cornfields are more beautiful in his eyes than the most beautiful forest. The willow is the species of tree most often seen planted; it too grows rapidly, serves as a hedge on earth banks, and makes a fence, which is much more beautiful than our wooden round-pole fences and in a few years [it] will yield revenue for the owner by it being pruned and sold for the same purpose of plantation.

In lining the new roads and property boundaries, the willow trees gave weary travelers something to rest their eyes on when passing through the intensely flat plain. Like Miss Cronstedt, these were often travelers from affluent backgrounds, who would know only of the willow from "above" (i.e., from the back of a horse, the window of a carriage, or the sketched tree lines of a map).

As it is those in power who tend to write history, it is perhaps not surprising, then, that this visual, romanticized notion of a cultivated countryside crisscrossed with *pilevallar* and *pilalléer* has remained until this day. In fact, today, it is purported to be the quintessential cultural landscape of Scania (Weimarck and Weimarck 1985, 29). Even the Region of Scania's official logo is a stylized silhouette of a willow tree – a testament, if anything, to the willow's continued symbolic importance (Fig. 1).

Figure 1 The Official Logo of the Region of Scania

Source: https://www.skane.se/organisation-politik/om-region-skane/Kommunikation-och-varumarke/Koncernlogotyp/ (Accessed November 24, 2022).

This, despite the fact that the planting of willows, and consequently the number of *pilevallar* in the landscape, has steadily decreased since its peak in the mid-1800s – and that these planting practices were only really dominant on the Scanian plain, not in the whole region (Hobroh 1944, 54). What is more, even in the willow's heyday, the wealthy owners of Scanian estates always preferred other, more "noble" trees (such as linden, *Tilia cordata*) when planting the tree avenues leading up to their own property grounds (Olsson and Jakobson 2005, 73, 76). As such, a distance from and a distancing of the willow tree itself can be detected. It is the willow as a passive, ordered multitude – not a lively being with agential capacities – that comes to symbolize, at first, the agrarian progress and change of the 19th century, and later in the 21st century, the cultural heritage of now-outdated socio-ecological mores.

But if the "learned" and the upper classes experienced the trees from afar, and mostly while in motion, the average farmer and farmhand had a much more everyday, intimate infrastructural relationship with the trees themselves. And, I would argue, it is in these relationships that the "planty" dialectical agencies of the willow emerge in full. Common people from the Scanian countryside did indeed use the willow in multiple ways beyond its function as a static road marker or aesthetic coulisse. On the deforested plain, the tree trunks were used both as tethering posts for farm animals and as shelters from Scania's characteristically strong winds. Furthermore, the willow's branches were used as material for everything from basket weaving to roof laying, as well as fuel for heating during the long winter months (Hobroh 1944, 60). It was the practice of pollarding (*hamling*) that kept the tree in a certain shape to best serve these human needs. An ancient practice allowing humans to use the wood of a tree without felling it, "pollards are cut at between 6 and 15 feet above ground, leaving a permanent trunk called a bolling

[…], which sprouts the same way as a coppice stool but out of reach of livestock" (Rackham 1997, 65-7). Every four to six years, thanks to the willow's aforementioned speedy growth system, the tree could be trimmed back without being cut down completely – a procedure, if done correctly, that simultaneously strengthened the bolling of the tree itself. This pollarding also implied a lifelong commitment on the part of humans to care for the trees – respecting the temporalities of the tree, a pollarded willow had to be pruned regularly to retain its shape; otherwise, it would weaken and eventually die an untimely death. In this way, the pollarding practice turned into a co-constitutive, more-than-human relationship, as the tree was able to live and thrive for much longer through regular pollarding than it would have without it.

Fleming proposes that the grafting of fruit trees in post-Soviet Kyrgyzstan could be seen as a more-than-human "partnership, one which is maintained over time and allows each party some autonomy in its actions" (2017, 30). The same, I believe, could be said about the practice of the pollarding of willows on the Scanian plain. The "lowly" farmers and farmhands, whose job it was to keep the willows in shape and alive, had to gain intimate knowledge of each pollarded tree. They had to attune to the cyclical temporalities of the plant and each tree's independent growth pattern in order for the tree to be able to respond and grow the best possible crop. To paraphrase human-plant scholar John C. Ryan's (2012, 110) earlier statement: as the willows changed before the farmers' senses, so too did the farmers' bodies and social practices in relation to the trees. Today, a line of pollarded, healthy-looking willow trees is thus not only a lively cultural symbol of the Scanian plain; it is also living proof of a long-standing, more-than-human infrastructural relationship between humans and trees. Over the past century, as both *pilevallar* and free-standing willows have increasingly vanished from both urban and rural areas, what has been lost with these disappearances is, of course, a certain historical and aesthetic configuration of the Scanian cultural landscape, but even more so are the unassuming yet binding partnerships and relational agencies between humans and "nature." And nowhere is this loss more apparent than in and around urban areas.

4. Malmö's Urban Willow

Not only in the Scanian plain but also in the city of Malmö, the willow came to thrive in relation to human-made infrastructures. Just as on the plain, the tree has been a common feature along public roads and other pathways around and inside the city. In the mid-1700s, even the mayor of Malmö had "an avenue of white willows leading to his garden from the city," writes gardener Axel Törje (1955, 12) in his exhaustive account of the history of the

Scanian willow. Furthermore, for many years the willow played a vital role in the city's water infrastructure. Since at least the late 17th century, willows have been planted around the city's water reservoir to strengthen the porous soils of its banks (Malmö Stad 2012, 38). In fact, the willows were such a prominent sight that the reservoir soon became known as the "Willow Ponds" (*Pildammarna*; Andersson 2021). In 1914, as part of an international exhibition, it was integrated into a public park with the slightly modified name Willow Pond Park (*Pildammsparken*). Today, the now-defunct water reservoir, with its surrounding green area, is one of the largest parks in Malmö, and willow trees still line the pond's banks.

Figure 2 Pildammsparken in Malmö

Source: Mathilda Rosengren, October 2022.

Most importantly, the park is promoted as a vital node for the city's main green pathway, the Willow Pond Pathway (*Pildammsstråket*), which runs in a north–south direction through the city (more on this later).

Apart from the *Pildammsparken*, however, the number of willow trees and *pilevallar* has dwindled in and around Malmö. It is telling that as farming was modernized and car infrastructure and urbanization increased exponentially in the post-war years, there was an increase in scientific literature and accounts of the history and present condition of the *pilevallar* (see Weimarck n.d.; Hobroh 1944; Törje 1955). One contributor was a local professor in

botany, Henning Weimarck, who observed in an undated archival document (likely from the late 1950s):

> The old willows, which were so characteristic of the otherwise open plain, are disappearing as they become decrepit or are considered an obstacle to rational agricultural practices. This is to be regretted, mainly from an aesthetic and cultural point of view. However, they also have a somewhat practical use as a habitat for birds, pollinating bumblebees and other beneficial animals, and at least on lighter soils as protection against wind erosion. The landscape loses an essential and attractive feature when the willows disappear.

Weimarck and his teenage son spent the early autumn of 1954 mapping and photographing the remaining *pilevallar* in the then periphery of Malmö, with the anticipation that these willows would soon be lost to further urbanization and infrastructural developments (Fig. 3).

Figure 3 Example of 1950s "pilevall" on the Peripheries of Malmö

Source: Henning Weimarck (1954). Archival documents. SBK Arkivet Malmö.

Revisiting the sites 70 years later, it is clear that this indeed would become the fate of many a tree – it is only on remaining farmland that the *pilevallar* are still present (Rosengren 2021, 43-56).

As the city has expanded and car traffic has become its dominant infrastructural feature, the same ontological qualities of strong root systems and speedy growth patterns that worked to the willow's advantage when planted on the plain in the past have instead created tensions in the political visions and economic priorities of the urban present. The upkeep of the remaining aging trees and the damage their inquisitive roots can do to water pipes and cables

can be extensive and costly for the municipality (Malmö Stad 2005a, 37; Orvesten, Kristoffersson, and Stål 2003). Moreover, the willow's trunks have become a safety hazard for nighttime motorists driving on badly lit roads around the city. Consequently, in post-war times, rather than being an essential, connective part of the Scania plain and Malmö's infrastructure, the willow has been causing increasing disruptions to the city's modern functions. In 2003, it was still the third most common tree species in Malmö, making up about 4.4% of the tree cover in the city – most likely because, up until the 1980s, willows and cottonwoods were planted in the city as green "quick fixes" (Malmö Stad 2005a, 45). Today, however, as new trees are planted in the city, the municipality seems to favor other, more "manageable" tree species (Malmö Stad Web 2021).

Nevertheless, the symbolic status of the rows of pollarded willows as part of the quintessential Scanian countryside has meant that *pilevallar* are included in the county of Scania's cultural heritage program (Länsstyrelsen Skåne Web). Just as Weimarck noted in the 1950s, in this Anthropocene era of great biodiversity loss, the aging willows still lining the roads have been hailed as important habitats for fostering biodiversity (Naturvårdsverket 2014), and inner-city school children plant trees as part of their "sustainability" curriculum (Malmö Stad 2008, 20). As such, in the midst of the disruption that the tree's ontological characteristics are causing to Malmö's gray infrastructures, the tree is also promoted as a cultural connector between old rural ways of being (Malmö 2005a, 45) and, perhaps, new ways of being urban.

5. *Ekostråket* : "Green" Infrastructure as a Panacea in the Anthropocene?

As we saw in the previous section, the willow is playing an increasingly less active role in the urban-rural landscape of Scania. There is a static nature to the contemporary status of the willow that jars with its formerly co-constitutive relations to human beings. While earlier, its growth, albeit managed, was encouraged and attended to by laypersons, its current status as a simultaneously cultural-historical object and a sustainability "container" obscures rather than enables its agential capacities. These are capacities that are quickly fading as the willow's dynamic, relational growth is being curbed, and the numbers of trees are decreasing – fueling an ever-greater detachment between the humans of Malmö and their everyday engagement with the trees. When the willow is no longer seen as part of a working infrastructural network, its right to exist and act in the city and beyond has subsequently diminished. From playing a major part in Scania's infrastructural environment, the willow presently finds itself a minor footnote in a novel kind of infrastructure

– the "green pathways" that are supposedly providing ecosystem services to the municipality of Malmö. The city's current *Comprehensive Plan for Malmö* (2018) defines these ecosystem services as "crucial to human existence, and society's ability to nurture and maintain them determines their future survival" (Malmö Stad 2018, 14). As such, these services speak to the third aspect of the municipality's leitmotif of striving for "social, economic and environmental sustainability," which has come to define much of the municipality's infrastructural planning (Malmö Stad 2018, 2).

An ongoing example of how this environmental sustainability thinking is put into practice is the so-called "eco-pathway" (*Ekostråket*). Described by municipal planners and landscape architects as "the only comprehensively articulated green belt"[2] and "the most obvious [...] and longest [green] pathway" in Malmö,[3] it was conceived as an extension of the already mentioned *Pildammsstråket*. In recent years, it has been a high-profile project for the municipality, particularly when considering the greening of the city and its peripheries.[4] Readily adopting the discourse of conservation infrastructures of green urban–rural pathways, the municipality (Malmö Stad 2018, 14) officially states:

> An interaction between the rural and the urban is a pre-requisite for a sustainable society. A denser, less sprawling city permits unique rural landscapes and natural environments to be preserved. Through preservation, development and supplementing, Malmö's surrounding rural and agricultural landscapes will become more attractive and increasingly accessible to the municipality's inhabitants.

What is striking about this quote, found in the subsection "Nature, Biodiversity, Ecosystem Services and Rural Areas" of the abovementioned Comprehensive Plan, is that the focus remains inherently anthropocentric. This stance is subsequently reflected in the planning and execution of *Ekostråket*, though this first becomes truly apparent when the green infrastructural and sustainability planning discourse is put to the test in confrontation with the willow (more on this below). Still in its implementation phase, the vison has been to create a green infrastructure with eco-pathways and corridors connecting the green urban corridor of *Pildammsstråket* with the countryside and seaside southwest of Malmö. Just as the establishment of willow tree rows in the 18th century was purported to be the remedy to human-induced ills (i.e., deforestation), so has *Ekostråket* been approached as a panacea for the environmental catastrophes of today (i.e., biodiversity loss, extreme weather,

[2] Interview with City of Malmö urban planner/landscape architect, code name: 33. All interviews referred to here and below were conducted by Karin Grundström and myself in the autumn of 2021 as part of the FORMAS-funded research project "Revisiting Allmänningar & Stråk: Spatial Justice in the 21st Century Urban-Rural Land Regime," Malmö University.

[3] Interview with City of Malmö urban planner/landscape architect, code name: p2.

[4] All of the planners and landscape architects interviewed focused on the Ekostråket and Pildammsstråket when asked to give examples of important pathways (stråk) in the city of Malmö.

pollution, and so on). Simply, the name itself – "eco[logical]- pathway" – indicates a double focus on creating potential green corridors for mobile "natures" (and humans) to move in and out of the urban-rural landscape, while relying on more stationary other-than-human beings, such as trees, to carry the weight of keeping these corridors habitable.

During the long planning process, the *pilevall* has frequently been used to symbolize rural "nature" outside the city. For instance, a planning program from 2005 is heaving with images of willow trees in neat rows, painting a picture of a future in which the idealized Scanian countryside is set to be reconnected with its ligneous neighbors by the ponds in the city (Malmö Stad 2005b). The same program's planners argue in emotive language that "the implementation of the extension of *Pildammsstråket* will lessen the wounds in the landscape [caused by] the new roads and railways" (Malmö Stad 2005b, 33). As such, in this projection, the notion of "green infrastructure" itself is implied as a step toward rethinking the future sustainability and resilience of the city. Yet, at the same time, this extension also legitimizes the expected "wounds" in the natural landscape that other, less sustainable infrastructural developments most likely will bring with them in the future. "Green" is thus promoted as good, but the "gray" is still approached as unavoidable – both today and in the future. What we see here is the contemporary willow, both inside and outside the city, being incorporated in a generalized "green infrastructural panacea" that is supposed to lend sustainability clout to new infrastructural developments – developments that may, in fact, in many ways counteract these "eco-friendly" aspirations. Recent interviews with municipal planners and landscape architects confirm this contradiction.[5] As one planner put it,

> How we have fought a lot in recent years not to have it [the green space on the trajectory of Ekostråket] sold off! But [this question of sustainability comes up] also just in discussions about what future green spaces should contain. They're on track of just being [seen for their] functions, like taking care of stormwater.[6]

What this planner is pinpointing is how the contemporary focus on sustainable practices risks reducing everything – green spaces in general, and other-than-human beings in particular – to the mere sum of their "climate-mitigating" functions. This is performing sustainability through a specific notion of infrastructure, which, in opposition to the ecologizing of infrastructures engaged with in this paper, does not allow for any deviations from the proposed anthropocentric plans. Other-than-human beings are introduced only after these plans are set, stripping away any acknowledgment of the co-constitutive agential potential that could flourish in these more-than-human relations. Agency thus falls squarely in the lap of human planning and intentions.

[5] Interview with City of Malmö urban planner/landscape architect, code name: 43.
[6] Interview with City of Malmö urban planner/landscape architect, code name: 10.

As such, the willow is being robbed of the agential dialectic that has defined its relationship to the Scanian landscape and human beings for centuries. It is still granted a *raison d'être* as a static, environmental prop, but it has lost its freedom to move and, thus, to act on the southern Swedish plain.

6. A Conclusion of Sorts

The example of *Ekostråket* casts light on the adoption of sustainability thinking that values "function for" over "being with," which will only ever work to rehash the same anthropogenic patterns of domination that arguably serve as the very foundations of the Anthropocene. This paper, by drawing on the historical and contemporary being of the Scanian willow tree, puts forward a rather different suggestion of how to approach the environmental challenges of the 21st century: that we start in the messy, complex end of multifarious, other-than-human bodies and more-than-human infrastructural relations. Far from being alone in offering this proposition, I have made my case by thinking along the lines of ecologizing infrastructures. The reframing of infrastructures away from non-organic, gray matter toward more-than-human relations imbued with the agential flows and lively bodies of other-than-human beings has provided the basis for outlining the "planty" dialectical agency of the willow tree and how it has been expressed over time through various more-than-human infrastructural relations in Scania. The connectivities that enable this agency, I have shown, both affect and are deeply embedded in how human-made infrastructures and socio-cultural approaches to the "natural" world have changed throughout the centuries in Malmö and the surrounding Scanian landscape. Finally, using these insights while assessing official municipal documents and recent interviews with local landscape architects and planners to juxtapose the willow's now symbolic status as the quintessential Scanian tree and the promise of "green" infrastructure purported by the City of Malmö, I have highlighted the abovementioned blind spots in the City's sustainability discourse.

Unearthing the various more-than-human infrastructural relations that the willow tree affords – both in time and space – allows us to ask new or different questions when speaking of "green" infrastructures, sustainability, "natural" landscapes, and so forth: What can relations with matter – our infrastructural relations – tell us about living *with* ecological actors? How can we listen to and cultivate agential power *beyond* the confines of our own species affiliation? The history of the Scanian willow calls on us to reconsider Ingold's musing that "the place was not there before the tree, but came into being with it" (1993, 167). If we – the tree, the human, the road, the city, and the landscape – came into being together, what would we actually need to *sustain* humanity and all those other-than-human bodies in the era of the Anthropocene?

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