

Material Cultures of Future Mobility: Lines

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Abstract

In this short conceptual piece I explore two questions: how do painted lines (on roads) do work in the world? and, how could novel line-making practices contribute to decarbonized mobility futures? The first part of the chapter takes Ingold's 'comparative anthropology of the line' and recent developments in practice theory as starting points to consider how painted lines-in-practices might be conceptualized. This thinking exposes that painted lines, which might seem to be benign aspects of our everyday world, are actually significant elements of everyday life. Moreover, novel line-making practices are needed to help achieve decarbonized mobilities.. The second part of the chapter extends this argument, by identifying a range of novel line-making practices that might provide starting points for alternative futures of the painted line. More broadly, the Chapter highlights the significance of seemingly benign materiality for transformed future mobility, and argues that creatively rethinking and intervening in material cultures – such as those organized around the painted line – could have significant prefigurative qualities in society's efforts to achieve low carbon mobility.

Part 1: about lines

My starting point is Ingold's 'comparative anthropology of the line' (2007; 2015). It was Ingold's focus on different forms and classes of line across practices including walking, weaving, storytelling, drawing and writing that drew my attention to painted lines in the first

place, and raised a question for me ‘how do painted lines do work in the world?’. Ingold provides some conceptual starting points with which to tackle this question.

For the purposes of this piece, I focus on a distinction of ‘class’ and ‘kind’ which is pertinent to the question in hand. He suggests that *threads* and *traces* form two major classes of line.

Threads are defined as ‘a filament of some kind, which may be entangled with other threads or suspended between points in three-dimensional space’. (2016:42) on the other hand traces are ‘any enduring mark left in or on a solid surface by a continuous movement’ (2016:44).

This second class of line (the trace) can be further subdivided into two kinds: additive and reductive. He explains ‘A line drawn with charcoal on paper, or with chalk on a blackboard, is additive, since the material of the charcoal or chalk forms an extra layer that is superimposed upon the substrate. Lines that are scratched, scored or etched into a surface are reductive...’ (2016:44)

From the conceptual definitions above, we can conclude that the class of painted lines is that of a *trace* and that in kind it is *additive*. It sounds rather rudimentary. But from this some initial questions come to mind, which I expand on below: What are painted lines traces of? or are painted lines acts of *tracing*? In which case what is being traced, and who is doing it?

As traces of the additive kind, painted lines have been created and added to the surface (‘the substrate’). They are enduring marks left by the continuous movement of some painting implement or other (or more recently the laying down of some kind of plastic substance). They are the traces of practices of planners and transport engineers, they are traces of practices of governance.

In the case of painted lines, roads and other tarmacked surfaces form the substrate. But roads themselves problematize Ingold’s categories. These too are additive traces, in that they are lines set down by planners, transport engineers and so on. However, in some cases they were

originally reductive traces, becoming etched into the earth's surface by the movement of humans and their vehicles – the tracing and retracing of specific paths. In this instance, roads, and the painted lines on them trace the etched paths of the generations before them. These initial reflections about painted lines are intriguing, but to say something more, to make an argument, I turn to the question of why I am interested in lines and the work that they do in the first place.

Decarbonised mobility practices, future transport and painted lines

My question ‘what work do painted lines do in the world?’ is located in substantive debates on future mobility practices to achieve low carbon travel (Marsden et al, 2018), specifically on how recent developments in practice theory can offer novel insights and thinking in this field¹. Below, I outline two key ways that practice theory helps us understand materials – including painted lines – in everyday travel demand.

Firstly, forms of mobility such as driving, cycling etc. can be conceptualized as practices. Each involves requisite materials, meanings and skills (Shove et al, 2012) that are brought together in practice performance. For example, driving involves materials including the car, the road, traffic lights and satellite navigation devices or maps; it can involve meanings including convenience, comfort, masculinity, freedom; and it involves the skills, the know-how to bring such materials and meanings together in the performance of driving.

In this framing, painted lines might be materials of such practices (driving, cycling) which carry meanings (e.g. keep moving!, stop!), becoming semiotic devices which control and guide (Jensen, 2013:120). In practice these lines are combined in a variety of ways, with other materials, and require skilled performers to understand and interweave them in practice.

¹ There are other more-than-human theories that might be brought to bear on the topic of lines. For a nuanced comparison of a range of such theories, including practice theory, see Maller, C. (2018) *Healthy Urban Environments: More than Human Theories*, Taylor and Francis Group, Part 1: Understanding More-than-Human Theories, pp. 21-89.

The lines therefore, do work in and through practice performance. We should also note that lines legitimise specific forms of mobility, they 'rule' some mobilities in and others out. In large part, lines paint cars into the world, though recent efforts to increase active travel (walking and cycling) have challenged this.

The second way in which practice theory contributes to understanding lines flips the focus. In this view, travel demand is an outcome of interconnected end use practices (Spurling and McMeekin, 2015). In transport planning this is termed 'derived demand', in other words movement is an outcome of the activities, such as shopping, commuting to work or taking children to school, that it is for.

In this sense, lines are drawn to provide space for certain interconnections between modes of travel and end use. Parking provision is an example of this, with algorithms developed over decades to ensure diverse end use practices such as sporting events, dog walking, shopping and working can all be done by car (Spurling, 2018). These spaces of interconnection, are drawn onto the world with painted lines, and they reify relationships between specific modes of movement, and specific forms of end use. We can also think of the sites and sizes of taxi ranks, drop off and pick up points (e.g. bus stops) and delivery bays, as spaces defined and governed by painted lines, and which hold and normalise specific connections of mobility and end use activities in place. These ways of conceptualising lines provide one answer to the question I began with, how do painted lines do work in the world?

In both the formulations above, the warp and weft threads of weaving can provide useful metaphors to further conceptualise the painted lines. Weaving is a kind of fabric production in which two distinct sets of yarns are interlaced to form a cloth. The warp yarns are held in place, fixed. The weft yarns are interlaced through these to create infinite patterns. Painted lines are like warp yarns through which the weft of everyday life weaves; such weaving

requires skill and know-how. Actual lines of movement form the weft. Warp yarns presume a certain kind of weft. They make some patterns possible and others less so. To continue the metaphor, painted lines create legitimacy for certain patterns of everyday movement and everyday life – predominantly those that are car-centric - whilst rendering others less valid, or less possible.

Painted lines thus contribute to the (re)production of forms and patterns of everyday mobility practices. From this point of view new everyday movements require a changed warp and weft. In relation to the former by erasing it, or re-making it (e.g. through repainting or overlaying); in relation to the latter by disobeying, bricolage i.e. creatively piecing together the existing materials (including lines), meanings and skills in new ways, and creating data that makes such alternative wefts visible. Such novel practices of line-making are significant for a decarbonised transport future, and it is to these practices that I turn in a moment. Before doing so, I briefly consider what further work would be needed to reveal and understand the work of current painted lines in everyday life.

To put in the groundwork, and evidence the significance of the preceding claims, we might undertake empirical work around the following questions:

Which forms of movement are normalized and legitimized by painted lines? How are painted lines therefore implicated in producing and perpetuating environmentally problematic forms and patterns of travel? (e.g. painted lines in general script what cars should do, thus inscribing the car into the urban environment).

What is the work of the painted line in holding specific mobility and end use practices together? (e.g. consider where it is possible to park a car, in contrast to parking a cargo bike).

Given cycling and walking cannot etch themselves in a built environment² how can the dominant warp and weft be challenged? How can less dominant or emerging mobilities be seen? (e.g. new forms of data from mobile apps have potential to reveal wefts that are otherwise invisible).

Part 2: How could novel line-making practices contribute to decarbonized mobility futures?

Now a more ambitious question. How could novel line-making practices contribute to decarbonized mobility futures? There are different ways in which this question can be tackled.

For example, it would be possible to explore how practices of line-making currently shape mobility, or how car-based mobility and line-making practices co-evolved, each shaping the other in equal measure. This approach could reveal the evolution of practices of line-making, processes of standardization, their formalization in driving practice (e.g. through the highway code and driving test), their evolving status in law and associated fines. The analysis would predictably reveal that the current approach to line-making in large part presumes and reproduces a car-centric society. But then what? Could such an analysis enable novel line-making practices to develop – would it bring us closer to knowing what to do? It does not offer much in this regard. In the remainder of this chapter I argue for a different approach that in my view holds more promise.

² The statement draws on MacFarlane's observation 'Humans are animals and like all animals we leave tracks as we walk: signs of passage made in snow, sand, mud, grass, dew, earth or moss... We easily forget that we are track-makers, though, because most of our journeys now occur on asphalt and concrete – and these are substances not easily impressed' (MacFarlane, 2012:13). Although such substances do eventually reveal the etches of such movements, this is over long timeframes, and so they do not reveal emergent mobility demands to planners – which is the concern in this chapter.

Let's take a moment to unpack the question, so that we can see through to an approach that might help us answer it. The question assumes a link between lines and everyday mobility. This link undoubtedly exists, lines provide an infrastructure of rules almost everywhere that we go. However, the manner or extent to which they shape practice is not straightforward. These are, after all, simply lines, and in practice they are not always obeyed – illegal parking, stopping, overtaking and so on. Second, they cannot be considered separately from the array of other materials which shape mobility practices – painted lines do not shape everyday mobility alone, but are part of a much wider set of materials, meanings and skills that are brought together in performance, and the attention paid to lines might vary by time of day, or time of year. The question here then, is what is the extent of the relative influence of lines within practice performances?

Even though we can likely identify a large degree of congruence between current infrastructure-in-use and the lines that govern it, this does not mean that a change in the lines would transform movement overnight. Practices and their rights and rules become ingrained, they take hold in a culture, in a country, in a city and can be incredibly difficult to shift. From this point of view, lines might be changed whilst everyday mobilities stay the same.

Returning to the points above, taking a retrospective view, looking at how the present governance of lines came into being, does not reveal much about their power in practice, or about their potential to instantiate change. To find this out, a different approach is needed. To quote Ingold, we need a way of 'feeling forwards rather than casting our eyes rearwards' (2013: 2).

In his Introduction to 'Making', Ingold (2013:3) hints at a potential foothold from which we might do this. He highlights that the aim of the anthropologist is not to seek out facts *about* the world, but to be taught by it. To start with the presumption that those living in the worlds or situations that we wish to understand have the most to tell us about it (Ingold, 2013:2). In

relation to the current chapter, this point might be translated into an approach that seeks to study practices of line-making that are already novel. To learn from those involved in bringing a new warp and weft into being, and to explore the details of these examples.

It is necessary to distinguish such an approach from one that emphasizes the design, implementation and evaluation of pilot projects for ‘what works?’ with a view to ‘scaling up and out’. A focus on ‘what works’ without exploring ‘how things work’ produces knowledge that guises as ‘transferable’ from one context to another. Exploring ‘how things work’ enables the relevance of interventions to be critically explored in relation to a range of specific situations (Cartwright, 2012).

In the final section I draw on the earlier metaphor of warp and weft to identify some candidate cases of novel line making practices that might form the basis of such a study. These candidate cases are namely, line-making practices which change the warp: ‘erasing’, ‘overlying’, and ‘repainting’; and, line-making practices which change the weft: ‘disobeying’, ‘bricolage’ and ‘making data’. In the following sections I indicate some instances of these practices already found in the world, and return to Ingold’s distinction between the additive and reductive trace to reflect on how painted lines are situated in these practices.

Changing the Warp

Erasing

The first novel line making practice that I suggest is erasing. Such practices would have the effect of erasing painted lines, creating an opening for alternative, non-dominant and new mobilities to thread through the world. An outcome of such practices would be that the warp which privileges some movements over others, and that ‘rules’ some mobilities in and others out, would no longer hold.

The mainstreaming of ‘shared space’ in the Department for Transport’s (2007; 2010) ‘Manual for Streets’, means that across the last decade, examples of ‘erasing lines’ have proliferated in the UK, and this reflects approaches to urban planning around the world. Shared space is an approach to the design of streets and public space that seeks to reduce dominance of motor vehicles, and prioritise ‘place’ rather than the fast movement of traffic (ibid). It is often associated with a slowing down of motor traffic which negotiates its way through spaces in which all users have equal priority. Shared space design typically *removes all road markings*, alongside reducing excessive signage, and taking out controls such as traffic lights. As such it can be thought of a strategy of line erasure.

Shared space examples provide cases through which the potential of erasing lines to make new mobility futures can be studied. Key debates in this field actually focus on the different kinds of shared space, which can be ranked by the extent to which the warp is disrupted (Landscape Institute, 2019, section 2.1), with analyses that reveal the positives and limitations of such schemes, and their appropriateness in different settings.

Overlaying

Overlaying relates to the temporary creation of additive traces using a variety of materials, so as to impose a new warp through which movement must be woven. Examples of reallocation of road space throughout 2020 in response to the COVID crisis provide a pertinent current example of such overlaying.

In this example, the requirements of social distancing have resulted in government guidelines dissuading the use of public transport, whilst promoting alternatives other than the car. In an attempt to promote socially distanced cycling and walking in these circumstances, pop-up (temporary) infrastructure has been funded in towns and cities across the UK. This has emerged quickly and has taken a variety of forms, including the use of barricades, cones and bollards to create wider footways and cycle lanes; increased signage to indicate how various

zones on urban streets should be used; and, the use of barricades and temporary planting to close streets, creating outdoor eating and drinking places. These developments have already been the focus of critical discussion and debate vis-à-vis their impact on streets and mobility systems (e.g. The Street Improvement Collaboration, 2020), and a range of evaluative research projects on the implications of these interventions are in progress (e.g. Parkes 2020; Dunning 2020) In relation to the research question of this chapter, such sources might be analysed for the work that overlaid lines do, and for the changed mobilities observed.

Repainting

As part of the tactical urbanism movement, artists, activists, and more recently some city governments and local authorities have embraced an alternative use of paint on streets to reclaim city roadways from motor traffic (e.g. Bloomberg Associates, 2019: 7). These public art projects simultaneously transform city infrastructure by painting new lines and painting over old lines, to create public spaces, and make space for new mobilities. This additive approach, belongs to a broader family of initiatives that are collectively referred to as ‘tactical urbanism’ - low cost, and temporary or seasonal interventions which disrupt the dominant script of the built environment, including the dominance of the private car. Examples include painting murals and new priorities onto intersections, such as at West Palm Beach in Florida (Bloomberg Associates, 2019:19) to slow down motorists. As public art projects, such initiatives also serve to bring communities together raising awareness of public space, its current use, and possible alternatives. Such repainting projects provide a plethora of examples, which might help to answer the research question with which I began.

The wealth of initiatives focussed on active travel (e.g. DfT, 2020) could be analysed from a similar point of view. Of interest here, is the recent shift of policy emphasis which explicitly states that painted lines are not enough, and that more strongly scripted environments are needed.

‘New cycle provision on busy roads which consist of painted markings or cycle symbols will no longer be funded. We want to see as many as possible of the existing painted lanes upgraded with physical separation’ (DfT, 2020: 17).

Here is an opportunity to study the transformation of paint into a more scripted and obdurate material form. A chance to explore the circumstances and process through which the painted line has come to be viewed as ‘not enough’, and its instantiation in ‘3D’ infrastructure justified.

Changing the weft

Disobeying

Thus far I have focused on altering the warp threads – the painted lines through which movement weaves. However, transformed mobilities – and changes in practices of line making, might also result from changing the weft. I use the term weft to refer to the actual movements and mobilities occurring all around us. Everyday mobilities that must find ways to navigate and weave amidst the existing materiality of the warp, but which does so in a range of ways – sometimes obeying and following, sometimes by subverting the assumptions that underpin painted lines. Understanding and harnessing such patterns of alternative and new mobilities is significant for decarbonized mobility futures.

The standardization of painted lines which accompanied the development of automobility was in part a response to an ever-increasing demand for automobile infrastructure, and a need to manage and control the moving and stationary materiality of car culture. Today, new urban mobilities are creating a new politics of urban space which challenges, crosses, and disobeys these lines.

Aldred and Jungnickel (2013) note this in their paper on bicycles as matter out of place, where they highlight some of the cycle parking strategies of their study participants – all of

which ‘disobey’ the script of built environments (e.g. locking to pedestrian railings on pavements, lamp-posts, benches). A 2017 report from the San Francisco County Transportation Authority on transport network companies such as Uber and Lyft highlights the new politics of the kerbside, as these services pause on double lines to drop off and pick up; or cut across painted cycle lanes. The recent use of micro-mobilities such as electric scooters and segways pose new challenges to existing lines and the mobilities which they legitimize.

In an urban fabric comprised of hard surfaces, it is not always possible to see these alternative and new patterns of movement, movements that might well have left reductive traces in a less concrete world. This raises questions of how to make such patterns visible, which might reveal positive trajectories that could be harnessed. If such new demands could be more visible, their infrastructural needs highlighted, then the planning and drawing of lines would eventually need to catch up. The warp shifts to catch the weft.

Bricolage

An altered weft is not only about disobeying the lines, but might also involve creativity within the existing warp , generating new practices that harness the warp of painted lines in legitimate, albeit, novel ways. The practice of ‘hoteling’ within last-mile delivery of freight provides such an example (Cherrett, 2016). Cherrett (2016) notes a range of trends that have resulted in last mile delivery becoming increasingly challenging for delivery drivers over the last decade. These include a 50% growth in next day delivery (non-food) from 2012-2015; multi-tenanted buildings in cities, all with separate procurement processes generating freight activity; increased food delivery (e.g. deliveroo) adding to the number of small vehicle couriers; a decrease in the stock space of high street retailers. Alongside this, kerbspace is increasingly in demand, for cycling and pedestrian infrastructure, mobility as a service, and as public space. Delivery drivers therefore face the challenge of finding legitimate stopping

space near to the consignee's address, without incurring fines and parking charges. In response to this a practice of 'hoteling' has emerged, in which drivers identify legitimate bays within which to leave their vehicles – sometimes for up to 6 hours - and walking 77% of the delivery round, using the vehicle as an in-situ warehouse for the goods (Cherrett, 2016).

Knowing the warp of a city well enough to engage in this new mobility practice is one way in which the weft changes. Yet, such practices – which might be viewed as significant for achieving low carbon mobility – can remain invisible to planners, and so are not supported and developed to their full potential. .

Making data

Just as lines co-developed alongside the emergence of automobility, so the mobilities made visible in transport planning data, take a car centric view. Whether national level data or at the city scale, much of the data available makes visible fossil fueled vehicles and existing mobility practices. Those concerned with engendering more sustainable ways of life, and of promoting less carbon intensive movement, have emphasized the significance of creating data which make new movements visible. Crowdsourced geographic information from smart phone apps provide one such avenue (See et al, 2016; Sui et al, 2013). Mobile methods (Buscher et al, 2011) that trace specific journeys, as opposed to use of static sensor data from major roadways, provide another. Here, new practices of representation result in different data, and the prospect of a new mathematics of mobility – one that is suited to low carbon transformation. Such data and math opens up our eyes to the new weft taking hold, challenging us to create a warp that supports these less carbon intensive alternatives.

Conclusion

In this short conceptual piece I explore two questions: how do painted lines (on roads) do work in the world? and, how could novel line-making practices contribute to decarbonized

mobility futures? In relation to the former, I suggest that lines have multiple forms of significance when it comes to the workings and conduct of everyday mobility. Painted lines connect and separate, they insist on movement, and on stopping. Lines tell us where to go and where not to go. Where to stop, pause and rest. Lines reflect and reify what is dominant, what has rights. Bound by guidelines and standards, and threaded through with governance they shape, create and perpetuate the world as it is.

In response to the second question, I propose that much could be learned from studying novel line-making practices that have already intervened in warp or weft. I suggest a catalogue of such practices, namely: erasing, overlaying, repainting, disobeying, bricolage and making data. For each, I identify potential cases whose analysis might reveal how novel line-making practices contribute to the (re)production of problematic and transformed mobilities, always as part of a broader dynamic material environment.

In conclusion, the seemingly benign materiality of the line is significant for transformed future mobility. Looking beyond lines, the ideas in the chapter suggest that the creative rethinking of and intervention in other material cultures of mobility could have significant prefigurative qualities. This could include material cultures that are organized around traffic lights, direction signs, pavements and parking space, thus following things (Evans, 2018) as well as lines through novel practices that seek to shape the future and achieve zero carbon.

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