Activating, sharing, including

A design-led approach to visualising narratives for green mobility transitions

Dan Phillips, Royal College of Art

Dr Cyriel Diels, Royal College of Art

Professor Antti Ahlava, Aalto University

June 2024

1. INTRODUCTION: REIMAGINING SUSTAINABLE URBAN MOBILITY

“Avoid this. Shift from that. Improve what you're doing.”

This is the mantra that has driven sustainable transport design and planning since the German Parliament published the Enquete Commission report in 1994 with the call to 'vermeiden, verbessern und verlagern' (TUMI, 2019).

Sustainable urban mobility planning (SUMP) (European Commission, 2019), seeks to reimagine our places and movement through a series of admonitions that underlie an almost presbyterian attitude towards urban futures. While it is based on forward thinking aspirations that promote low and zero emission mobility, improve air quality and road safety, while generating co-benefits for citizens’ health and wellbeing, SUMP does this by asking citizens to ‘avoid' things that are deeply embedded in society and culture (Dant and Martin, 2013), that we enjoy or feel we need (Steg, 2005), shift from urban mobility practices that consume energy and space (European Commission, n.d.-a) and, if all else fails, make our technologies and mobility systems more efficient and less polluting (European Commission, n.d.-b).

On the other hand, the car industry offers a more hedonistic call to action (Subawa et al., 2020), celebrating personal freedom, comfort and speed (Mausbach, 2010) through vehicles that have been tailored to our needs and that they claim will soon be able to drive on their own (Harrow et al., 2020), allowing us to relax, play or work in our own mobile rooms while we access urban landscapes, nature, luxurious lifestyles and open roads without sweat, labour or consequence.

The growing number of cars on the road in Europe (ACEA, 2023) and the increasing size of personal vehicles (Smart Growth America, 2023) suggests that the hedonistic approach is working.

This dichotomy highlights a crucial question: how can we reshape urban mobility narratives to foster genuine community engagement and sustainable change?

2. THE PROBLEM WITH CURRENT APPROACHES: WHY ASI FALLS SHORT

The traditional Avoid-Shift-Improve (ASI) framework, despite its good intentions, has largely failed to create the systemic change necessary for sustainable urban mobility. The focus on bureaucratic processes and technical solutions often overlooks the human element—emotions, attitudes and values that drive behaviour. While cities like Paris and London have made important strides with initiatives like the 15-minute city and congestion zones, these measures face significant resistance and are often portrayed as government overreach or a ‘war on the driver’. (The Guardian, 2023)

The transformation of European cities in the late twentieth and early twenty first century goes beyond transportation and spatial planning. Between 1990 and 2020, there's been a 15% growth in the number of people living in cities (Our World in Data, n.d.-a, a 24% increase in Europe’s median age (Our World in Data, n.d.-b), a move from industrial to service-based work (Our World in Data, n.d.-c) and a growth in leisure and tourism (EIB, n.d.). Across Europe as a whole, GDP per capita has grown by 55% while consumption-based carbon emissions have fallen by 28%. (Friedlingstein et al., 2023)

But, since 1994, the number of cars per 1,000 people in Europe has risen by 50%, from 370 to 560 in 2021 (Eurostat, 2021). Transport is the only sector where greenhouse gas emissions have increased in the past three decades, rising 33.5 % between 1990 and 2019 and, 'with the likelihood that they will remain above 1990 levels until 2032 at the earliest' (EEA, 2022).

In parallel, European cities have continued to sprawl, with 'urban sprawl per capita … increasing rapidly in Europe, by almost 47% since 1990' (Behnisch, Krüger, and Jaeger, 2022). In 2020, the average mass of new cars in the EU and the UK increased to 1,457 kg, 15% above 2001 levels (ECF, n.d.).

From the perspective of human health, obesity rates in EU citizens rose from 14.7% in 1990 to 25.3% in 2016 (WHO, 2024), and, in the UK at least, children today spend half the time their parents did playing outside (Scott et al., 2022). Cycling, often heralded as the antidote to urban pollution and urban ill health, remained stubbornly flat, with the average distance travelled per capita across European countries staying around 300 km per annum from 1990 to 2017 (Schepers et al., 2021).

On the positive side, road deaths in Europe due to vehicle collisions have reduced by 49% from over 169,000 in 1990 to less than 86,000 in 2019 and deaths from outdoor particulate pollution have reduced from 58 to 27.2 per 100,000 (Global Burden of Disease Collaborative Network, 2021).

We have quantitatively richer, older, more service-oriented cities but have our mobilities and quality of lives kept pace with the need for change and the aspirations of our citizens?

And while we are often presented with examples of cities that have achieved successful mobility transitions, deeper investigation finds that these were often initiated by citizen-led movements and socially-centred politicians rather than by technocratic analysis on its own.

In Amsterdam, Stop de Kindermoord (Stop the child murder) helped to prevent major road building plans, improved cycling infrastructure, created a cultural shift in attitudes towards the car and influenced policymakers and urban planners to prioritise safer and more livable urban environments (Bruno, Dekker, and Lemos, 2021).

The energy transition in Germany, 'emerged from and remained embedded in a local milieu characterised by concern with community quality of life and a commitment to grassroots activism.' This movement included a campaign against a nuclear power plant near Freiburg, the development of an Eco Institute, 'generating what they termed counter expertise', a solar-powered commercial development called the ‘Sun Ship’ and the eventual transfer of power to the local Green party (Hager, 2015). Freiburg’s people centred planning and its investment in walking, cycling and public transport are now lauded globally (Medearis and Daseking, 2012).

The story of Copenhagen’s transformation from a car-centric city to a model of sustainable development is one that also grows out of the frustrations of the public rather than ambitious plans from on high. While planners wanted, 'to develop a network of motorways through the city to secure its arterial functions', citizens, including architects like Jan Gehl, were beginning to have discussions about the virtues of having a city for people. Those discussions and the detailed research that informed 'Life between buildings' have formed the basis for a livable city movement that continues to influence city planning fifty years on (Gehl, n.d.).

And, whilst initiatives led by public authorities are also important templates of sustainable transitions, they are often led by socially-focussed political leaders: Ken Livingstone’s congestion charge manifesto for London in 2000 (Livingstone, 2004), Ada Colau’s implementation of Bareclona’s superblock project after her election in 2015 and Anne Hidalgo’s ‘Paris Breathes' programme and the more recent adoption of ‘15 minute Paris' from 2016.

Each of these examples show that the storytelling needed to transform urban planning focuses on the philosophical and emotional underpinnings of the city. Each worked at the level of public consciousness and acted as a counterpoint to supposedly rational and normative approaches to twentieth century mobility.

But despite this recognition, transport discourse is still dominated by rationality, with planners analysing smart transportation using data, models and algorithms (Karami and Kashef, 2020), mobility service providers offering technology enabled demand responsive solutions (Calderón and Miller, 2020) and transport department’s utilising scenario planning and Transport Analysis guidance to support road widening and network planning for our future (Lyons et al., 2021).

Storytelling, design and visualisation offer powerful and emotionally relevant ways to bring urban futures to life but their use within more technological, systemic and bureaucratic processes of change are less well understood.

In 'Building Brave New Worlds', Leah Zaidi quotes historian Yuval Noah Harari in arguing 'that our world can be divided into objective reality and fictional reality' (Zaidi, 2017). She goes on to suggest that 'stories are co-created, that they can be rewritten and that … narratives can help transition a system from one state to another'.

In architecture and urban design, we suggest the need to move from maps, plans and 3d visualisations towards a greater focus on journeys and everyday stories of residents and other neighbourhood actors showing how they might live together in future models of green urban life and engage with new infrastructural systems. This can be developed both through a narrative approach to design (Austin, 2020) and through the use of cinematic techniques in architectural practice (Lum, 2019).

Pallasmaa's work on 'architecture as a verb’ (Pallasmaa, 2024) also points to the need to move architectural discourse from focusing solely on form and object towards actions and relationships. In the context of narratives, this perspective encourages us to go beyond visualising the technologies of the green transition to bringing to life the experiences and relationships that are enabled by this transition - new ways of nurturing, playing, learning, moving, transacting, powering, growing and caring for and with each other and the world around us.

Design, partnering with other disciplines, has a unique ability to translate high-level objectives into tangible, human-centred realities (Meyer and Norman, 2020). As Don Norman says, 'Design is really an act of communication, which means having a deep

understanding of the person with whom the designer is communicating' (Norman, 2013).

Visualisation lies at the heart of design practice. Indeed, Nigel Cross suggests that, 'Designers think in sketches' (Cross, 2023). But visualisation has moved a long way from simply sketching. 'Visualizations of thought are especially apt for conveying information that is intrinsically spatial' but they are also

'Effective for conveying concepts and relations that are metaphorically spatial, including temporal, social, quantitative, and more, in part because such concepts have 'natural' mappings to space' (Tversky, 2013).

3. THE NEED FOR A NEW NARRATIVE: FROM AVOID-SHIFT-IMPROVE TO ACTIVATE-SHARE-INCLUDE

To overcome these challenges, we propose a new approach to sustainable mobility transitions that asks designers, citizens, public servants and other stakeholders to embrace a unifying language towards mobility and place-making - not simply based on time, health, smartness or technology, but around social qualities and values. We ask, not to avoid, shift and improve, but to activate, share and include, recognising that the green transition is not a technical activity determined by individuals but a cultural transformation developed through neighbours and networks.

'Activating people and places' connects to theories of activity, activism, active lives and actualisation. It recognises that active spatial and mobility planning and design shape our experiences, our relationships, our choices and our potentials. It reinforces the call for temporal accessibility and the desire to develop healthy neighbourhoods but asks what are the qualities that activate a neighbourhood. It also asks us to be proactive in responding to future challenges and suggests that active citizenship is as important as active citizens.

Alastair Fuad-Luke sees design activism as 'beautiful strangeness for a sustainable world' and asks designers to consider their role across natural, human, social, manufactured and financial capitals. This points both to the multiple physical and immaterial dimensions of activating people and places as well as the role of imagining and envisioning futures to help define 'beauty that is more than skin deep, beauty that is envisioned by society, because the current version of beauty is largely ordained by big business and governments' (Fuad-Luke, 2013).

In mobility and spatial planning, sharing is best understood through 'public' commons, where our public transport, public realm, public schools, parks and libraries form the core of our shared public space. These services, routes and centres are physical representations of the values, uses and behaviours in our communities and act as the arteries of our cities as well as the catalysing spaces for local connections, relationships and transactions. New forms of sharing through digital approaches to shared space, mobility technologies and business models may

open the door to more sustainable uses of materials and energy but they can also strip away collective ownership and shared stewardship of resources that more public approaches can achieve. 'Sharing what we currently own' is perhaps one of the most challenging aspects of the green transition. While it is seen as 'a potential new pathway to sustainability' (Heinrichs, 2013) it can also be read as 'a nightmarish form of neoliberal capitalism' (Martin, 2016).

Designers use sharing as a way to understand the depth and varieties of relationships, trust, safety and value that shared places and experiences offer. This juxtaposes the difference between a 'sharing economy' and 'sharing cultures'. While the sharing economy focuses on factors such as, 'collaborative consumption, commercialization, loss, trust and maximization of resources to avoid waste' (Light and Miskelly, 2015), sharing cultures see 'sharing as an act that facilitates a transition of urban communities towards places that are socially interactive and resourceful.' (Katrini, 2018)

'Including everyone' in the development of city or neighbourhood scale green urban transitions would appear to be an obvious prerequisite for change, but the increasing demand for private vehicles and the often bitter political battles for hearts, minds, votes and wallets shows that inclusion is still considered a secondary principle rather than a fundamental enabler. Indeed, while sustainable mobility plans aim to place people at the heart of urban transport planning, some commentators suggest that 'a more systematic treatment of (tensions between) climate change and equity' (Arsenio, Martens, and Di Ciommo, 2016) is required and that, for example, 'Norway's sustainable mobility transition policy mix leans towards elite capture' and that 'sustainability agendas face populist challenges to their legitimacy'. (Remme, Sareen, and Haarstad, 2022)

Inclusive design asks us to consider the barriers that prevent different people from thriving in their daily lives - environmental, communicative, organisational, social and cultural (Shakespeare, 2006). Health and wellbeing based approaches towards children, families, women, older and disabled people need to be combined with issues of climate change and biodiversity loss not just to ensure that we design our cities for their future needs but that their knowledge and experience helps to co-create the cities that they will be part of - not just through functional improvements but through shared delight.

4. IMPLEMENTING THE NEW FRAMEWORK: TOOLS AND STRATEGIES

Our research suggests that storytelling and digital visualisation tools can be powerful allies in this new approach. By crafting compelling narratives and using visual aids, architects and urban mobility designers can engage stakeholders more effectively and develop a shared vision of sustainable futures.

We can use digital platforms to tell stories of successful green place-making and mobility initiatives that can help change public perceptions and inspire action. These can build on the underlying stories of change that drove the successful adoption of sustainable mobility in other cities and ask citizens to generate their own narratives that build on local histories, people and realities.

We can create locally relevant design narratives, rather than plans, sections and key views, that tell the stories of how different people in a community can be part of more active, more shared and more inclusive networks, relationships, mobilities, routes and places.

We can develop playbooks or support community workshops that test and codesign these narratives to ensure that multiple perspectives are included in the planning process.

And we can use this process of narrative based design to engage politicians, planners, developers and citizens in systems of behaviour change that engage with the deeper levers of change in systems - culture, emotion and compassion rather than relying on shallow leverage points - such as system parameters, surfaces and feedback loops (Meadows, 1999). Indeed, we can go beyond the technical rhetoric of systems and recognise that underlying these rational concepts are issues of connectedness that relate to the cultural meanings behind movement, our feelings towards our public realm, compassion, care and beauty as well as our sensory connection with our mobility spaces and systems (Richardson et al., 2020).

5. CONCLUSION: SHAPING THE FUTURE OF URBAN MOBILITY

The transition to sustainable urban mobility is not simply a technical challenge but a social and cultural one. By adopting a narrative and design-led approach that emphasises activation, sharing and inclusion as enablers of a systemic transformation in spatial and mobility planning, we hope to provide a framework that is both more holistic and human-centred, one that is flexible, place-based and capable of being used by architects, mobility designers, developers and planners together.

The green transition can either be articulated as a series of defensive and reductive approaches to save us from a dystopian future or as a creative approach to a more inclusive and vibrant urban life. We hope that designers can engage in the deeper connection between communities and their environments, narrating and visualising these stories of change by bringing to life the values, rituals and physical interventions that underpin a socially just transition from the passive, private and separated industrial city to the active, shared, inclusive and convivial communities that will underpin resilient and safe spaces for twenty first century urban life.

6. BIBLIOGRAPHY

ACEA (2023) Report: Vehicles in use – Europe 2023.

Arsenio, E., Martens, K., and Di Ciommo, F. (2016) 'Sustainable urban mobility plans: Bridging climate change and equity targets?.' Research in Transportation Economics, 55, pp. 30-39.

Austin, T. (2020) Narrative environments and experience design: Space as a medium of communication. Routledge.

Behnisch, M., Krüger, T., and Jaeger, J.A.G. (2022) 'Rapid rise in urban sprawl: Global hotspots and trends since 1990.' PLOS Sustainability and Transformation, 1(11), e0000034.

Bruno, M., Dekker, H-J., and Lemos, L.L. (2021) 'Mobility protests in the Netherlands of the 1970s.' Environmental Innovation and Societal Transitions, 40, pp. 521-535.

Calderón, F., and Miller, E.J. (2020) 'A literature review of mobility services.' Transport Reviews, 40(3), pp. 312-332.

Cross, N. (2023) Design thinking: Understanding how designers think and work. Bloomsbury Publishing.

Dant, T., and Martin, P.J. (2013) 'By car: Carrying modern society.' In: Ordinary Consumption. London: Routledge, pp. 143-157.

European Commission (2019) Sustainable Urban Mobility Planning Guidelines: 2019 Second Edition.

European Commission (n.d -b.) Mobility Strategy.

European Commission (n.d. -a) Saving energy through implementing urban mobility measures.

European Environment Agency (2022) Decarbonising road transport — the role of vehicles, fuels and transport demand. EEA Report No 2/2022.

European Investment Bank. (n.d.) 'The story of your city.'

Eurostat (2021) 'Number of cars per inhabitant increased in 2021.' Eurostat.

Friedlingstein, P., et al. (2023) 'Global carbon budget 2023.' Earth System Science Data, 15(12), pp. 5301-5369.

Fuad-Luke, A. (2013) Design activism: Beautiful strangeness for a sustainable world. Routledge.

Gehl, J. (n.d.) Life Between Buildings: Using Public Space.

Global Burden of Disease Collaborative Network (2021) Global Burden of Disease Study 2019 Results. Seattle: Institute for Health Metrics and Evaluation.

Hager, C. (2015) 'Germany's Green Energy Revolution.' German Politics and Society, 33(1), pp. 1–27.

Harrow, D., et al. (2020) Driverless futures: Design for acceptance and adoption in urban environments. Royal College of Art, London. ISBN 978-1-910642-32-0.

Heinrichs, H. (2013) 'Sharing economy: a potential new pathway to sustainability.' GAIA-Ecological Perspectives for Science and Society, 22(4), pp. 228-231.

Karami, Z., and Kashef, R. (2020) 'Smart transportation planning: Data, models, and algorithms.' Transportation Engineering, 2, 100013.

Katrini, E. (2018) 'Sharing culture: On definitions, values, and emergence.' The Sociological Review, 66(2), pp. 425-446.

Light, A., and Miskelly, C. (2015) 'Sharing economy vs sharing cultures?.' IxD&A, 24, pp. 49-62.

Livingstone, K. (2004) 'The challenge of driving through change: Introducing congestion charging in central London.' Planning Theory & Practice, 5(4), pp. 490-498.

Lum, T. (2019) Designing Stories: A Narrative-Driven Design Process for Architecture.

Lyons, G., et al. (2021) 'Scenario planning for transport practitioners.' Transportation Research Interdisciplinary Perspectives, 11, 100438.

Martin, C.J. (2016) 'The sharing economy: A pathway to sustainability or neoliberal capitalism?.' Ecological Economics, 121, pp. 149-159.

Mausbach, A.G. (2010) Paradigm shift: the aesthetic of the automobile in the age of sustainability. Royal College of Art.

Meadows, D. (1999) 'Leverage points.' Places to Intervene in a System, 19, pp. 28.

Medearis, D., and Daseking, W. (2012) 'Freiburg, Germany: Germany’s eco-capital.' Green Cities of Europe, pp. 65-82.

Meyer, M.W., and Norman, D. (2020) 'Changing design education for the 21st century.' She Ji: The Journal of Design, Economics, and Innovation, 6(1), pp. 13-49.

Norman, D. (2013) The design of everyday things: Revised and expanded edition. New York: Basic Books.

Our World in Data. (n.d.-a) 'Urban and rural population.'

Our World in Data. (n.d.-b) 'Median age.'

Our World in Data. (n.d.-c) 'Share employment in agriculture, industry, services.'

Pallasmaa, J. (2024) The eyes of the skin: Architecture and the senses. John Wiley & Sons.

Remme, D., Sareen, S., and Haarstad, H. (2022) 'Who benefits from sustainable mobility transitions?.' Journal of Transport Geography, 105, 103475.

Richardson, M., et al. (2020) 'Applying the pathways to nature connectedness at a societal scale: a leverage points perspective.' Ecosystems and People, 16(1), pp. 387-401.

Schepers, P., et al. (2021) 'The development of cycling in European countries since 1990.' European Journal of Transport and Infrastructure Research, 21(2), pp. 41-70.

Scott, S., et al. (2022) 'The impact of time spent in natural outdoor spaces on children's language, communication and social skills.' International Journal of Environmental Research and Public Health, 19(19), p. 12038.

Shakespeare, T. (2006) 'The social model of disability.' In: The Disability Studies Reader. 2nd ed. New York: Routledge, pp. 197-204.

Smart Growth America (2023) When it comes to design, we must also consider the deadly impacts of ever-larger vehicles.

Steg, L. (2005) 'Car use: lust and must. Instrumental, symbolic and affective motives for car use.' Transportation Research Part A, 39(2-3), pp. 147-162.

Subawa, N.S., et al. (2020) 'Hedonism on the behavior of consumer society as a global cultural transformation.' International Research Journal of Management, IT and Social Sciences, 7(2), pp. 59-70.

The Guardian (2023) The war on motorists: the secret history of a myth as old as cars themselves.

Transformative Urban Mobility Initiative (TUMI) (2019) Approach: Avoid-Shift-Improve (A-S-I). April 2019.

Tversky, B. (2013) 'Visualizing thought.' In: Handbook of Human Centric Visualization. New York: Springer, pp. 3-40.

World Health Organization (2024) Global Health Observatory – processed by Our World in Data.

Zaidi, L. (2017) Building brave new worlds: Science fiction and transition design.