



Desirable futures: Human-nature relationships in urban planning and design

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ABSTRACT

This article explores conceptualizations of future relationships between humans and nature in urban planning, introducing the special issue³. It initiates by examining how the future of human-nature relationships can be seen as a consequence of resilience, or lack thereof, to global challenges. The special issue explores distinct visions of what nature may mean in desirable futures, and its relations to humans. Preferable futures portray harmonious interactions between nature and humans, recognizing nature's intrinsic and relational values, as well as acknowledging its agency in the context of urban planning. Additionally, the evolving role of technology in shaping these desirable futures is a growing area of exploration, potentially challenging established definitions of nature and paving the way for the construction of new natures in prospective scenarios. Another facet of exploration is the spatial dimension of human-nature relationships. Articles investigate various contexts where these relationships may unfold, spanning from within cities to envisioning revised approaches at the urban-rural interface for a radical transformation of our connection to the natural world, including the consideration of distinct entities, such as mountains or non-urban territories, as potential focal points for evolving human-nature relationships. The special issue helps deepen our understanding of the intricate interplay between humans and nature in urban planning, exploring diverse visions of the future and the spatial dynamics where these relationships may manifest. By integrating these elements, the aim is to contribute to a more comprehensive and forward-thinking approach in urban planning that embraces sustainable and harmonious futures for both humans and the natural world.

1. Introduction

The climate crisis, planetary ecological depletion and challenges to liveability in cities compromise the continuation of life on the planet as it is, of the existing and future ecosystems and pose the need for fundamental reconsiderations of possible, probable and preferable futures (Bell, 2003) for human-nature relations. As Miller (2018) stated, the future does not exist in the present, but anticipation does. Although the current crises and their expected aggravation often become the main anticipatory assumptions behind

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expectations about the future in contemporary urban planning visions (Urry, 2016), divergent trajectories are traced based on diverse future imaginaries (Jasanoff et al., 2015).

Technocentric imaginaries of the future are pervasive in the media and popular literature. Such narratives tend to see the future deterministically as an inevitable result of technological advancements (Dunn, 2018). When optimistic, they suggest that technology is seen as the primary means to control nature and address environmental and ecological challenges, as well as to resolve remaining urban challenges. In these visions, human-nature relationships become mediated by technology – which is employed to control, manage or ‘create’ nature. This poses fundamental questions, such as regarding the legitimacy of a worldview that seeks to dominate natural forces and the perpetuation of inequalities in access to critical advanced technological solutions to the most severe societal problems.

Conversely, sceptical views caution against these assumptions, warning of potential dystopias resulting from unchecked technological dominance (Costanza, 2000). In these cases, human-nature relationships deteriorate or collapse due to unintended consequences of technological advancement. For example, geoengineering projects to counter global warming might lead to unpredictable negative futures for life on the planet and ecosystems.

In turn, critics from ecological philosophy and environmentalism have long challenged modernity’s technocentrism fostered by exploitative and instrumental attitudes towards nature (Garforth, 2018). They contend that there are environmental and ecological limits to socio-economic growth and argue for attitudinal changes that recognise nature’s intrinsic values and for a more balanced and positive reframing of human-nature relationships (Woodhouse, 2018).

Even though the act of planning involves futuring, and no shortage of possible futures have been envisioned in the discipline across history (Dunn, 2018), it often overlooks explicit connections to futures studies in exploring sustainable futures. The Anthropocene, arguably initiated by the Great Acceleration in the postwar period (Steffen et al., 2015), has been characterized by an adversarial and exploitative relationship between humanity and the natural world, causing the current crises. Such pressing global challenges are seen as accelerating and compressing the remaining time to “prepare for the future”. While the planetary impact of human activities has been historically uneven across developed and developing countries and significant disparities in responsibilities and consequences remain unresolved, the Anthropocene nonetheless marks a crucial turning point for reconsidering human-nature relationships (Steffen et al., 2011). As Bai et al. (2016) suggest, while the Anthropocene reflects the magnitude of the impacts of humans on the planet, its significance may lie in how it can be used to change attitudes, choices, policies and actions that influence the future. Global challenges have elicited a spectrum of responses, including those projecting pessimistic and dystopian urban futures – in other words, not desirable futures. Here we consider “desirable”, or “preferable”, those futures in which the chances of addressing appropriately the current crises are improved (Bai et al., 2016) and where human-nature relationships find more balance and holistic exchanges.

Recent research has claimed that solutions to many contemporary urban challenges can be found in nature. As such, attention to nature-based solutions (NBS) has notably increased in recent years. The number of publications and implemented NBS cases has significantly grown, bringing forward increased evidence on how they can be integrated into urban and environmental planning and design (Mahmoud et al., 2022). It could be said that NBS are at the forefront of the intersection between environmental sciences and urban planning. Despite being posited as a critical approach to integrate nature and urban planning and unlock harmonious futures between humans and non-humans, research in the field has not sufficiently grasped the question of time nor has it substantially embraced visioning practices of medium-long term futures. This may be due to the urgency to assure NBS can efficiently address current environmental problems. For example, uncertainties surrounding medium and long-term future weather patterns could potentially render NBS typologies primarily aimed at preventing runoff flooding, such as rain gardens and constructed wetlands, inefficient in the long run and require the envisioning of new typologies. Anticipating such futures could invigorate NBS research, and a broader engagement with future studies can generate novel, critical and reflective questions about the sorts of futures humankind and nature might have and who has a voice in the processes of imagining and implementing these futures.

Therefore, this special issue brings together urban planning, environmental sciences and future studies, aiming to advance the conceptualisations of future human-nature relationships and their implications for planning in cities. It presents five articles, contributing on several fronts ranging from empirical and locally based explorations of futures to more speculative and theoretical considerations.

2. The desirability of futures

Desirable visions of the future have the power to provide signals of hope and directionality, be drivers for transformative change (Pereira et al., 2020) and support the coordination of actions in a desired direction (van der Helm, 2009). Yet, it has been argued that positive urban visions of futures are lacking. This is understandable considering the severity of global challenges. Futures in which civilisations and the environment collapse are pervasive (Urry, 2016). Although these dystopian responses are intended to galvanize stakeholders into action, alarmist narratives have been shown to inadvertently lead to paralysis, feelings of lack of empowerment and the ostrich effect (Hale, 2016). In addition, despite showing possible consequences of our actions today in certain futures, they do not provide directions for change towards more sustainable and resilient societies (McPhearson et al., 2016). As Bina et al. (2024) state in this special issue, transformative change means new paradigms, new ways of thinking; and here visions of desirable futures have much to say. The consideration of such positive futures is primarily about action in the present, rather than the future itself. They present visions in which challenges have been resolved or are not dramatic any longer, and therefore have a normative valence (Levitas, 2017; Pinder, 2005), they are expressions of what ought to be, rather than what is likely to be – the extrapolation of business as usual – or of what could be (in other words, other possible futures). In this sense, they may allow us to break away from existing path dependencies that might lead to undesirable futures, as shown by Arlati (2024), in this special issue, on the upscaling of nature-based solutions as an

act of futuring.

3. Desirable futures for human-nature relationships: what they might be

The futures of human-nature relationships in desirable, or at least not dystopian, scenarios, are often presented as consequences of resilience to global crises, offering rebalanced sets of forces and entanglements between humans and the more-than-human world (Riedy & Waddock, 2022). For example, this is seen in de Geus (1999)'s categorisation of the changing attitudes towards nature in "utopias of sufficiency" and in ecocentric visions of urban futures where nature's agency is acknowledged (Ernstson & Sorlin, 2019). A question that then arises is what nature might be, become or be referred to in these futures? And, what do these views imply for human-nature relationships? Here we present four categories derived from the contributions in the special issue: ecosystem services, transformational relations, new wilderness, nature-culture mesh and ubiquitous nature.

The first conceptualisation, *ecosystem services*, extrapolates the trend of ecosystem services (ES) framing of nature as a provider of benefits to humans. As attempts to better understand and manage the complexity of nature succeed, as suggested by the article by Hernández and Camerin (2024) in the special issue, a growing focus on ES may prevail. The use of technology may continue to contribute to improving land use planning and assessment through forecasting climatic changes, and helping to envision scenarios for adaptation and mitigation, as their article shows. This goes beyond mere anthropocentric needs to expand the realm of ES-based planning to benefit both humans and nature.

Transformational relations: the instrumentalisation of nature is contraposed to claims about the need to consider the relational and intrinsic values of nature, as discussed in propositions such as nature-based thinking (Randrup et al., 2020), biophilic design (Andreucci et al., 2021), more-than-human approaches and multispecies justice (Celermajer et al., 2021). In the special issue, this is taken forward in the work by Bina et al. (2024), who have sought reconciliation of culture and nature through enacting new socio-natural imaginaries and pathways for an evolved form of nature-based perspective to city planning. This suggests the envisioning of urban futures in which nature has agency, and environmental justice is broadly considered to include more-than-human entities.

New wilderness: this is manifested in propositions arguing for the abandonment of urban areas and the consequent "take over" by nature. Nature taking over the core of cities becomes an imaginary, "a collectively held and performed vision of desirable futures that are temporally situated and culturally particular", as Jasanoff et al. (2015) described. In other words, it becomes a shared vision of re-natured futures. The COVID-19 experience led to a proliferation of views of disurbanisation and abandonment of city cores (Ramani & Bloom, 2021). In these futures, information technology continues to advance modes of communication and mobility. Humans move out to the suburbs and rural areas establishing new forms of relationship with domesticated nature. In this special issue, such scenarios can be seen in Biagetti et al. (2024), whereby the 'donut' effect is explored, with the urban centre being reclaimed by nature, and the previously urban population living in a (former) suburban ring. Mareggi and Lazzarini (2024) also develop visions for nature reshaping settlements in locations expected to experience chronic depopulation. In their study of an alpine village, mountains become the place for new forms of wilderness and pastoral nature.

Nature-culture mesh: the blurring of the boundaries between nature and culture is increasingly a recurrent theme in the literature (Lemes de Oliveira & Brisotto, 2022). Here, it is worth pointing to the new forms of human-nature relations that might emerge in contexts in which populations move to suburban areas and peripheral fringes, reconfiguring and meshing further the already difficult separation of urban-rural-nature domains. They become one entity. This conceptualisation is related to present attempts to address climate change through limiting land take for urbanisation, the transformation of agriculture with approaches considered more eco-environmentally sound and the restoration of nature (e.g. the EU Nature Restoration Law), all of which may radically transform land use in urban fringes. This is seen in explorations of the futures of ecologically transformed nature-rural landscapes, as well in the donut effect whereby new suburban living comes hand in hand with reinvented productive and re-natured landscapes. These landscapes create a transitional zone – characterized by varying degrees of permeability – that mediates new human-nature relationships (Biagetti et al., 2024). Such investigation is akin to current scholarship on the transformation of peri-urban landscapes as a medium of re-composition of the urban-rural interface (Waldheim, 2016). For Bina et al. (2024), in turn, the sustainable coexistence of humans and nature in rapidly growing cities presuppose a transformative approach that foregrounds nature, and the consequent socio-natural relatedness, which manifests itself spatially through nature-based planning and design across scales in cities.

Ubiquitous nature emerges as the reconciliation between technology and nature takes place. Perhaps counterintuitively, technology may make nature ubiquitous, in various forms. This includes the application of AI, the development of artificial nature, and the creation of nature in virtual and 'augmented' formats (Piga et al., 2021). The evolving role of technology in shaping these 'potentially' desirable futures is a growing area of exploration, challenging established definitions of nature and paving the way for the construction of new natures in prospective scenarios where technology "for" or "in" nature are considered (Mahmoud et al., 2024). This theme appears in the special issue mainly in the form of a weak signal of potential future directions, in particular within Biagetti et al. (2024)'s take on technology as a tool allowing for the fast re-shuffling of populations across territories, with highly consequential impacts for human-nature relations.

It is worth noting that even though these categories can be separated analytically, a combination of approaches composes the exploration of futures in the articles in this special issue.

These conceptualisations of nature and human-nature relationships have many physical implications for cities. The special issue presents various contexts where these implications may unfold, within cities through NBS (Arlati, 2024; Bina et al., 2024) but also across revised reconfigurations of the urban-rural interface for a radical transformation of our connection to the natural world, or in the nature take-over of urban centres (Biagetti et al., 2024; Mareggi & Lazzarini, 2024). Additionally, distinct entities have been considered, such as mountains or non-urban territories, as potential focal points for evolving human-nature relationships. The impact

of technology (Hernández & Camerin, 2024) in fostering ubiquitous nature, transcending traditional boundaries, has also been explored.

4. Contextualism and conceptualism

The nexus between humans and nature, as explored in this special issue, is investigated both through how conceptualisations of future natures could shape urban planning and urban design and, in turn, how human influence could shape nature. In these futures, tensions arise between explorations focused on localities and their future trajectories and idealistic visions driving these explorations.

For research focused on specific place-based contexts, the human relationship with nature is dynamic and bidirectional, with nature providing solutions that are integral to addressing societal challenges. In this perspective, city redesign and morphological changes are responses to emerging needs, such as the trends in working from home (Biagetti et al., 2024) or depopulation (Mareggi & Lazzarini, 2024). This framework underscores how urban development can both impact and be shaped by natural systems, highlighting the mutual influence between human activities and natural environments in shaping sustainable urban futures.

Research centred on examining the human-nature relationships through theoretical lenses includes multi-level perspective models, projection as an anticipatory exercise (Arlati, 2024), and forecasting (Hernández & Camerin, 2024) and backcasting methodologies to explore various pathways for nature to thrive in cities. New socio-natural imaginaries as potential ways to frame nature as a connecting node for cultural change were explored. In this line of thinking, the aesthetic qualities of nature are utilized to design and create local cultural identities (Bina et al., 2024).

5. Conclusions

In summary, this special issue focuses on the futures of the relationships between humans and nature in urban and environmental planning, design and practice. It shows that future visions reflect preoccupations in the present, seeking to address grave contemporary global challenges. Nature is multifaceted and so is its relationships with humans in the future. An underlying ontological dimension to the explorations emerges, that of what is meant by nature in the future, as well as what it means to be human *in relation* to these natures. The special issue explores visions in which nature is on the one hand “left alone” and on the other becomes more entangled with human activities – through environmental modelling and management, the development of holistic and transformational relationships, the overcoming of dichotomies and distinct domain categorisations, and the roles of technology. Such reflections also pose the question of what their implications for cities and urban planning in the future could be. Finally, the special issue deepens our understanding of the intricate interplay between humans and nature in urban planning, exploring diverse visions of the future and the spatial dynamics where these relationships may manifest. By integrating these elements, the aim is to contribute to a more comprehensive and forward-thinking approach in urban planning that embraces sustainable and harmonious futures for both humans and the natural world, as lighthouses to guide action now.

Declaration of Competing Interest

None

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References

- Andreucci, M. B., Loder, A., Brown, M., & Brajković, J. (2021). Exploring challenges and opportunities of biophilic urban design: Evidence from research and experimentation. *Sustainability*, 13(8), 4323. <https://doi.org/10.3390/su13084323>
- Arlati, A. (2024). Navigating urban futures: Exploring NbS upscaling discourses, practices, and relations in reimagining human-nature relationships. *Futures*, 161, Article 103403. <https://doi.org/10.1016/j.futures.2024.103403>
- Bai, X., van der Leeuw, S., O'Brien, K., Berkhout, F., Biermann, F., Brondizio, E. S., Cudennec, C., Dearing, J., Duraipapp, A., Glaser, M., Revkin, A., Steffen, W., & Syvitski, J. (2016). Plausible and desirable futures in the Anthropocene: A new research agenda. *Global Environmental Change*, 39, 351–362. <https://doi.org/10.1016/j.gloenvcha.2015.09.017>
- Bell, W. (2003). *Foundations of Future Studies: Volume 1: History, Purposes, and Knowledge*. Routledge.
- Biagetti, M., Croce, G., Mariotti, I., Rossi, F., & Scicchitano, S. (2024). The call of nature. Three post-pandemic scenarios about remote working in Milan. *Futures*, 157, Article 103337. <https://doi.org/10.1016/j.futures.2024.103337>
- Bina, O., Baptista, M. D., Pereira, M. M., Inch, A., Falanga, R., Alegria, V., Caquimbo-Salazar, S., Duarte, D. H. S., Mercado, G., Valenta, A. T., Vásquez, A., & Verellen, T. (2024). Exploring desired urban futures: the transformative potential of a nature-based approach. *Futures*, 159. <https://doi.org/10.1016/j.futures.2024.103362>
- Celermajer, D., Schlosberg, D., Rickards, L., Stewart-Harawira, M., Thaler, M., Tschakert, P., Verlie, B., & Winter, C. (2021). Multispecies justice: theories, challenges, and a research agenda for environmental politics. *Environmental Politics*, 30(1-2), 119–140. <https://doi.org/10.1080/09644016.2020.1827608>
- Costanza, R. (2000). Visions of alternative (unpredictable) futures and their use in policy analysis. *Conservation Ecology*, 4(1), 5. <https://doi.org/https://www.ecologyandsociety.org/vol4/iss1/art5/>
- de Geus, M. (1999). *Ecological Utopias: Envisioning the Sustainable Society*. International Books.

- Dunn, N. (2018). Urban Imaginaries and the Palimpsest of the Future. In C. Lindner (Ed.), *The Routledge companion to urban imaginaries* (pp. 375–386). Taylor & Francis.
- Ernstson, H., & Sorlin, S. (2019). *Grounding Urban Natures: Histories and Futures of Urban Ecologies* (Eds.). The MIT Press, (<https://direct.mit.edu/books/oa-edited-volume/4522/Grounding-Urban-NaturesHistories-and-Futures-of>).
- Garforth, L. (2018). *Green Utopias: Environmental Hope Before and After Nature*. Polity Press.
- Hale, B. (2016). *The Wild and the Wicked: On Nature and Human Nature*. MIT Press.
- Hernández, R. C., & Camerin, F. (2024). The application of ecosystem assessments in land use planning: A case study for supporting decisions toward ecosystem protection. *Futures*, 161, Article 103399. <https://doi.org/10.1016/j.futures.2024.103399>
- Jasanoff, (2015). Future imperfect: science, technology, and the imagination of modernity. In S. Jasanoff, & S.-H. Kim (Eds.), *Dreamscapes of modernity: Sociotechnical imaginaries and the fabrication of power* (pp. 1–33). The University of Chicago Press.
- Lemes de Oliveira, F., & Brisotto, C. (2022). Rethinking the Urban–Rural Relationships and Productive Urban Landscapes. In C. Brisotto, & F. Lemes de Oliveira (Eds.), *Re-Imagining Resilient Productive Landscapes: Perspectives from Planning History* (pp. 1–20). Springer International Publishing. https://doi.org/10.1007/978-3-030-90445-6_1.
- Levitas, R. (2017). Where there is no vision, the people perish: a utopian ethic for a transformed future. Retrieved 04/06/2024, from (<https://cusp.ac.uk/themes/m/m1-5/>).
- Mahmoud, I., Morello, E., Bisello, A., & Kolokotsa, D. (2024). Augmented Nature-Based Solutions: A Possible Taxonomy of Technologies “in” and “for” Urban Greening Strategies. In A. Bisello, D. Vettorato, M. Bottero, & D. Kolokotsa (Eds.), *Smart and Sustainable Planning for Cities and Regions*. Cham: Green Energy and Technology. Springer. https://doi.org/10.1007/978-3-031-39206-1_10.
- Mahmoud, I. H., Morello, E., Lemes de Oliveira, F., & Geneletti, D. (2022). *Nature-based Solutions for Sustainable Urban Planning: Greening Cities, Shaping Cities* (Eds.). Springer, Part F4, pp. ix–xii. <https://doi.org/10.1007/978-3-030-89525-9>.
- Mareggi, M., & Lazzarini, L. (2024). Dare to imagine. Explorative scenarios for re-shaping human-nature relationships in an inner periphery in the Italian Apennines. *Futures*, 158, Article 103358. <https://doi.org/10.1016/j.futures.2024.103358>
- McPhearson, T., Iwaniec, D. M., & Bai, X. (2016). Positive visions for guiding urban transformations toward sustainable futures. *Current Opinion in Environmental Sustainability*, 22, 33–40. <https://doi.org/10.1016/j.cosust.2017.04.004>
- Miller, R. (2018). *Transforming the Future: anticipation in the 21st century*. Routledge.
- Pereira, L. M., Davies, K. K., den Belder, E., Ferrier, S., Karlsson-Vinkhuyzen, S., Kim, H., Kuiper, J. J., Okayasu, S., Palomo, M. G., Pereira, H. M., Peterson, G., Sathyapalan, J., Schoolenberg, M., Alkemade, R., Carvalho Ribeiro, S., Greenaway, A., Hauck, J., King, N., Lazarova, T., & Egoh, B. (2020). Developing multiscale and integrative nature–people scenarios using the Nature Futures Framework. *People and Nature*, 2(4), 1172–1195. <https://doi.org/10.1002/pan3.10146>
- Piga, B., Stancato, G., Rainisio, N., & Boffi, M. (2021). How Do Nature-Based Solutions’ Color Tones Influence People’s Emotional Reaction? An Assessment via Virtual and Augmented Reality in a Participatory Process. *Sustainability*, 13(23), 13388. <https://doi.org/10.3390/su132313388>
- Pinder, D. (2005). *Visions of the City: Utopianism, Power and Politics in Twentieth-century Urbanism*. Edinburgh University Press.
- Ramani, A., & Bloom, N. (2021). *The Donut effect of COVID-19 on cities*.
- Randrup, T. B., Buijs, A., Konijnendijk, C. C., & Wild, T. (2020). Moving beyond the nature-based solutions discourse: introducing nature-based thinking. *Urban Ecosystems*, 23(4), 919–926. <https://doi.org/10.1007/s11252-020-00964-w>
- Riedy, C., & Waddock, S. (2022). Imagining transformation: Change agent narratives of sustainable futures. *Futures*, 142. <https://doi.org/10.1016/j.futures.2022.103010>
- Steffen, W., Broadgate, W., Deutsch, L., Gaffney, O., & Ludwig, C. (2015). The trajectory of the anthropocene: The great acceleration. *The Anthropocene Review*, 2(1), 81–98. <https://doi.org/10.1177/2053019614564785>
- Steffen, W., Persson, A., Deutsch, L., Zalasiewicz, J., Williams, M., Richardson, K., Crumley, C., Crutzen, P., Folke, C., Gordon, L., Molina, M., Ramanathan, V., Rockström, J., Scheffer, M., Schellnhuber, H. J., & Svedin, U. (2011). The anthropocene: from global change to planetary stewardship. *Ambio*, 40(7), 739–761. <https://doi.org/10.1007/s13280-011-0185-x>
- Urry, J. (2016). *What is the Future?* Polity Press.
- van der Helm, R. (2009). The vision phenomenon: Towards a theoretical underpinning of visions of the future and the process of envisioning. *Futures*, 41(2), 96–104. <https://doi.org/10.1016/j.futures.2008.07.036>
- Waldheim, C. (2016). *Landscape as Urbanism: A General Theory*. Princeton University Press.
- Woodhouse, K. M. (2018). *The Ecocentrists: A History of Radical Environmentalism*. Columbia University Press.