Dichotomies, Dilemmas and Divergent Pathways: Cities and Nature-Based Solutions

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Abstract

The complexity of today's urban challenges is unprecedented. In a world battered by the COVID-19 pandemic, seemingly competing needs such as public health and economic recovery, the effects of global warming, air pollution, the need to accommodate more urban dwellers, social polarization and inequality problematise a scenario in which a balanced relationship with nature is achievable. Yet, nature and cities ought to be part of the solution. This paper reflects on the tendency in city planning to dwell on dilemmas, which often paralyse or hinder the comprehensive impacts of potential interventions for the lack of an integrative framework that resolves dichotomies. It then centres its attention on the concepts of green infrastructure and nature-based solutions as fundamental strategies to maximise ecosystem services. Finally, it argues for grey-green-blue strategies aimed at contributing to dissolving perceived dichotomous views of challenges and solutions to cities leading towards the development of new systemic and integrative frameworks.

Introduction

Planning has for long been marked by dualism. This approach builds on an unswerving belief in dichotomies: things or events that are seen as polar opposites. Stark examples of dualist views can be found in the contrasting definitions of the city and the countryside, urban and rural, and the natural and the artificial. This paper explores the questions of paradigm shift and systemic planning, from a discussion of dichotomies and dilemmas, in regards to the presence – existing and planned – of nature in cities.

Modern town planning, having emerged in the nineteenth century as a reactive discipline in face of the challenges of industrialism, took for itself the task of making cities inhabitable by human beings once again. It was a fundamental attempt to save the city as our habitat. That was a moment of inflection, of a paradigm shift based on a dualist approach. To that polluted and congested city, airy and spacious planning came forth. To that complex tangle of overlapping functions, came zoning and specialisation. To emerging patterns, came top-down propositions. Across time, a swinging effect from condition 'A' to condition 'B' and back to an 'improved' reminiscent of 'A' marks the way in which many of our planning solutions came forth. One can only look at Mumford's[1] explanation of cities and their histories, Kostof's[2] description the development of urban morphologies over time and Broadbent's[3] discussion on the ontologies and epistemologies of urban design and planning to note how marked such process has been.

Similarly, not only are we posed with the question of dualities, but also of apparent dilemmas. A dilemma situation sets a problem whose resolution implies choosing, at the expense of another possible selection, from options seemingly having the same level of importance. An either-or approach is more easily defendable when such objects of the dilemma are defined as highly contrasting, reinforcing the need of a choice in favour of one, at the expense of the other. Such reductionist perspective has been at the core of planning for many decades across the 20th century. For example, many North American cities saw the expansion of roads and highways to accommodate the private vehicle at the expense of infrastructure for public transport; and

Figure 1. Rieselfeld district in Freiburg. An example of the implementation of green infrastructure including productive landscapes. Source: Author's own.

European post-war planning envisaged the prevalence of openness and the presence of nature in cities at the expense, some would argue, of urbanity.

It is the excluding premise, in other words the either-or postulate, that makes dilemma scenarios particularly problematic when dealing with our complex contemporary condition.

Shifting Paradigms for a Fragile Scenario

Fragility today is a word that best represent our condition.[4] Emerging pandemics, social polarization, inequality, unmet global challenges, and the climate and ecological crises are different facets of the same reality in the Anthropocene.[5] Two key apparent dilemmas scenarios have been posited, the first being that which situates economic growth as a contrasting 'need' against environmental consideration such as nature protection and the sustainable management of resources. The inherent inertia of path dependency makes any attempts of paradigm shift appear as a mountainous task. Besides, change is resisted by the power of corporations and other economic beneficiaries of the current system. The status quo is defended as a means of generating wealth and jobs, funding services and advancing general wellbeing.

The second, and related, dilemma refers to the challenges of the growth of urbanisation versus the preservation of agricultural land and the maintenance or introduction of intra-urban green and blue spaces. The world's population is set to increase from 7.7 billion to nearly 10 billion people in 2050. Its urban share will grow from 55% to 70% by 2050. This means that the urban population will nearly double. In Latin America and the Caribbean already nearly 80% of the population live in urban areas.[6] The growth in population, however, is not proportional to the expansion of urbanised land. The latter tends to grow significantly faster than the former. In addition, this phenomenon is stronger in developing countries. For instance, between 1990-2014 across the OECD while the population growth was 18%, the built-up area grew by 32%; whereas in the BRICs the ratios were 30% and 67%.[7] The increase in urbanisation over the next decades is forecasted to remain more intense in the Global South. Growing planned and unplanned urbanisation is an overall fact. Although urban areas occupy not more than 3% of land in the planet, they are responsible for more than 70% or CO_2 emissions and 80% of energy consumption. Hence, there is a need for the increase of anthropic functions and systems such as housing, grey infrastructure, energy production and waste management. Yet, degradation of land through

human activities, including poor urbanisation, is negatively impacting the well-being of at least 3.2 billion people.[8] Besides, pandemics such as the COVID-19 have been linked to anthropic action such as deforestation and wildlife trade, which are driving forces in diseases leaping from wildlife to humans.[9] In addition, urbanisation increases land impermeabilization and the fragmentation of landscapes, impacting on the evolution of species,[10] their capacity to bounce back from shock and stress and ultimately deteriorating the ecological vitality of the planet.[11] A recent UN report shows that one million species are facing extinction.[12]

The need to accommodate more urban dwellers is normally set against the presence of nature in cities, as if they were incompatible demands. The view of nature as a nice-to-have after all other problems have been resolved, or only affordable in more affluent areas, persists in planning approaches in various cities. The matter that the world is urban and will remain as such for the foreseen future should we not get apocalyptically hit by other pandemics or the climate crises is widely acknowledged. The essential point, however, is what resolution we will give to the proposed dilemmas. At their core is what relationship we want or will build with nature.

From green infrastructure to nature-based solutions

The benefits that nature provide us have been the object of much recent research.[13] Such ecosystem services – divided into the four main groups of cultural, provisioning, regulating and supporting – span across the domains of socio-cultural, ecological and environmental benefits. Many of these benefits are now crucial to resolve our global challenges such as access to nature, air pollution and global warming. For example, the introduction of plants to an urban area can significantly reduce air pollution levels due to adhesion on leaf surfaces[14] and show particular potential in urban street canyons[15]. Furthermore, it has been argued that nature can provide us with almost 40% of our climate solution.[16] In this line of argument, the IPCC recommends that 1 billion hectares of forests be planted to help limit global warming to 1.5°C by 2050.[17] The recent COVID-19 pandemic has shown that forced or recommended social distancing or confinement exacerbated people's will and need to access nature, for example in order to sunbathe and to reduce anxiety and stress.

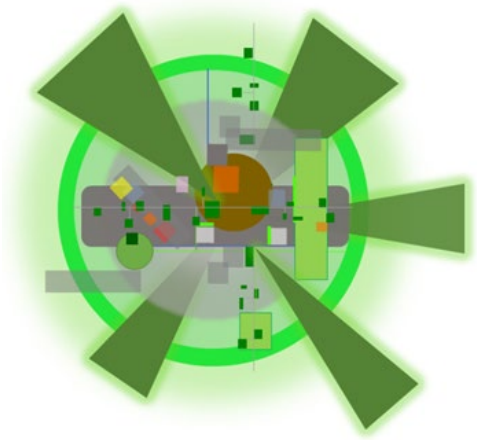

Figure 2. Diagram illustrating the need for a new framework for interconnected nature-based solutions in cities and their integration with other urban systems. Source: Author's own.

Process of wealth and power accumulation in cities lead to inequalities that have strong spatial manifestations, including regarding ecosystem services. Access to quality green spaces tend to be more prevalent in affluent areas, compared with those inhabited by low-income groups.[18] Considering that a third of the global urban population was reported living in slums[19] and the current indicators, this inequality of access is likely to increase if a business as usual scenario is followed. In this regard, productive landscapes have been particularly defended as a means of income generation beyond the social, ecological and environmental benefits.[20]

Bringing and enhancing ecosystem services inside cities, where most people live, has been the object of attention of, for instance, *Green Wedge Urbanism*, which shows how the balance between urbanisation and nature in cities can be achieved by the very virtue of urban form, and how green wedges can be implemented to maximise the benefits of nature.[21]

Green infrastructure has been defined as 'a strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services such as water purification, air quality, space for recreation and climate mitigation and adaptation.[22] The last decades have seen much advancement in the theory and practice of green infrastructure.[23]

The question of its articulation with grey infrastructures and functions in cities can be object of criticism,[24] when posed in a dilemma framework. In other words, when seemingly competing needs such as housing or basic services are in the line, green infrastructure has been seen not as important. Also, in consolidated urban areas, lack of available horizontal space plays against GI discourses. Recently, the concept of nature-based solutions has been put forward as 'solutions that are inspired and supported by nature, which are cost-effective, simultaneously provide environmental, social and economic benefits and help build resilience'.[25] Such solutions are to be brought into cities through locally adapted, resource-efficient and systemic interventions, and can range from natural to highly technological. Considering the multitude of challenges cities face and assuming a will to bring nature at the core of the answers to them, the question that follows is how can we create the framework for green-blue-grey infrastructure and associated NBS in cities and maximise their ecosystem services?

Systemic Planning and the Overcoming of Dilemmas

Seeking the resolution of dilemmas is fundamental for the sustainability and resilience of cities and regions. As such, there is a fundamental need to link top-down and bottom-up mechanisms for the promotion of a systemic integration of social-ecological and environmental services with the final purpose of tackling conjointly the challenges cities face. A systemic approach allows the possibility of the resolution of dilemmas by maximizing the positive aspects of each system and the interactions between them. Applied to the question of nature in cities, it can provide an integrated set of systems that, taken alongside the definition of an urban metabolism framework which moves away from linearity to circularity, has the potential to forge another change of paradigm. The new range of interconnected NBS for cities can be a step-change in city planning towards urban areas that can both accommodate more inhabitants, and also reduce their impact on the planet and enhances the presence of nature.

Endnotes

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