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Futures

Simulating future societies in Isobenefit Cities: Social isobenefit scenarios

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A R T I C L E   I N F O

A B S T R A C T

Environment, history and chance, shape people and cultures, which shape cities, which shape people and cultures, and so forth, in a Systemic Retroactive Game. The quintessential essence of Isotropic (or Isobenefit) Urbanism is to solve Systemic Retroactive Game problems downstream rather than upstream and, also, to give a beautiful city to everyone, rather than just to the richer. Spatial Equilibrium assumptions, Underground Hedonic Theory and Isobenefit Lines, are shortly reminded in order to have a better vision of the Isotropic approach. The Isotropic City is the habitat of a virtual future society that aspires to live in a city where each individual can enjoy an equal level of wellbeing and advantage from the urban quality, services and job location. It is shown by a few visionary examples of virtual future societies habitats such as the Ring City (a city without the 'city centre', where the 'city centre' is all around the peripherical ring, or in a series of rings), the Homogeneous City (a city where the 'city centre' is everywhere), the Annulus City (a city without any geometrical centre in the city) and the Punctiform City (an interconnected net of urban hyperdense 'points' throughout nature, parks and lands). Finally I will show some simulations on more realistic cases which could be of interest as support to urban and public policies in respect to a social well-being point of view as well as to urban theory such as urban economy (i.e., by the relation between an Isobenefit scenario and Property value), urban morphology (influence of different urban forms), urban sociology (how a different location of centralities and amenities gives advantage for social life and wellbeing of citizens).

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1. Introduction

Classical urban economics theory is based upon a Central Business District (CBD) in which urban amenities and land values fall with distance from the CBD. The aim of this paper is to demonstrate that multicentre cities would produce a richer spatial distribution of amenities and therefore a higher and especially more equal quality of life.

As this aim will be achieved by proposing a set of cities extensively planned from the top-down, being apparently against the current bottom-up vision, the paper will be opened by a section explaining how top-down and bottom-up should be mixed.

In the same way another introductive section explains the Spatial Equilibrium meaning on which the concept of isotropic urban theory turns.

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In the 20s the system theory approach was dominant and suggested, during all the 50s, that systems were regarded as being centrally ordered, as a hierarchical sum of subsystems dominated by negative feedback, which implied a predominant controlled equilibrium status. Examples of these systems were also cities and regions. But, cities are never in equilibrium, they are constantly changing and dominated by positive feedback, not by negative's [1]. A standard theory of cities was developed until the middle of the 20th century as an economic and transportation model based mostly on the monocentric city. Ideas and models were built on statistical aggregations of units, as for example models based on macro economics (econometric models, population models, Keynesian models).

In the 1970s the idea changed: cities were observed as controlled by positive feedback and not anymore from the top-down but from the bottom-up. A single agent may be able to reconfigure a complex system (systems that have the potential to reconfigure themselves in ways that may be surprising), but the potential still exists for the system to change without us knowing the actions of any particular agent [1]. Models were specified in more detail as, for example, by disaggregating into several types of populations, types of personal habits, etcetera. Fundamental elements themselves are to be represented: the agents.

Cities are mirrors of societies which are mirrors of cities. Cultures, religions, politics and moral values, habits, and lifestyles design cities throughout history, and vice versa.

Societies and cities – their physical skeletons – are created by the constant game (as cooperative as antagonistic), between private and public interests, personal and aggregate preferences/needs; and private and public interests depend on cultures, religions, politics, etc.

We can call _Systemic Retroactive game_ (_SyR_) these braided causal relations across different scales and feedbacks: individual behaviours generate an emergent phenomenon which becomes 'independent' from them even if maintained (and changeable) from them, and whose behaviour influences (_top-down_ feedback) the individual behaviours, which influence it, which influences them, which influence it... It is like if the emergent phenomenon, after emerging, becomes a 'single agent', which we can call _Autonomous Post-Emergence_ (_APE_), inside the retroactive game with the other 'single agent' which is the 'people behaviour', where 'people behaviour' can differ among individuals and depends from the personal interaction with the emergent phenomenon; the sum of each individual behaviour generates the emergent phenomenon itself. Therefore, an _APE_ is intrinsically a complex system, as emergence from the non-linear interactions among agents who do not imagine (and often they also do not know and do not realize _that_ they made it, and _what_), but it is also something 'more', as, once it emerged, it gets, in a certain way, independent.

Examples of complex systems which are also _APE_(_s_) are intelligence, life, market-economy, globalization, religions, cities, political-moral-economic systems, and so forth.

Citizens behaviours-needs influence urban planning (i.e. dwellers love using bikes and walking rather than wasting money, time, physical and mental health by using cars, therefore the town council decide to plan parks, pedestrian areas and cycle paths rather than transform squares into parking spaces and boulevards into motorways), and citizens actions themselves (private investment, preferences about where to live, where to walk, how to commute, where to open shops, business, etcetera), which, together with the geographical conditions and historical events, are the ingredients shaping cities.

In turn, cities, once made, influence citizens, their habits, even their way to see and think, and, again, citizens influence cities, and so on. For instance, the hub of Greek and Roman cultures was the public life, therefore their cities were full of public spaces. In turn their cities, so built, amplified and/or encouraged public life. Or: citizens could not use bikes because cycle paths are missing, and cycle paths could be missing because no one is willing, or pushing, to use bikes, and the less people who use bikes the less they even think they could be used; or, the more they use cars, the more no one feels to use bikes (not just because of cultural habit, but because streets are too dangerous).

When these influences are objectively negative (pollutions, stress, daily wasting of time for commuting, crime, low quality of life, segregations, urban sprawl or over density, obesity, etc.) and predictable, why not try to avoid them at their origin rather than wait decades and change them just after having continuously suffered their negative effects rather than before?

From this point of view, agents-based-modelling (_Bottom-Up_/citizens behaviour) offers future scenarios which, depending from the negativity or positivity of them, we (_Top-Down_/urban planning) can decide to facilitate or to avoid.

Reminding the _Systemic Retroactive game_ (_SyR_) between an _APE_ and its agents, and quoting the _Negative Transitory Cycles/ Net Positive Development_[2], it would be better to anticipate (_Top-Down_/Planning and _Bottom-Up_/personal behaviour) the negative consequences of the _SyR_ for directly jumping the _Negative Transitory Cycles_.

Example of _Negative Transitory Cycle_ is the life cycle of many squares and streets, and almost each historical centre in our cities: they were born, often centuries ago, in a pedestrian status (not for forward-looking merit but more simply because there were no cars), then they evolved in expanses of smoke and sheet steel (because of the 'fault' of both: individual behaviour – using the car rather than public transport, biking, walking – and planning – encourage the use of cars rather than facilitate biking, walking or improving the efficiency and economy of public transport), therefore they are now starting to

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[2] "History shows how humanity development has sometimes momentarily decreased in certain aspects during periods of time, lasting from a few decades to a few centuries; we can refer to them as Negative Transitory Cycles (NTC). However, when we look at the same history in a larger temporal perspective, we can see that, on average, our life has improved, both in quality and duration; we call this Net Positive Development (NPD). The desire to progress is part of human nature; it is an inevitable, automatic process that we should drive forward in the cleverest way, attenuating, as much as possible, future Negative Transitory Cycles and heightening Net Positive Development. Looking back at past improvements and believing in human intelligence, we like to think that our development will drive us towards a greater level of well-being and progress [...]" [53].