5. Urban policy design for antifragility

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5.1 DEFINING ANTIFRAGILITY

Antifragility (Taleb 2012) is best understood in contrast to three other properties: fragility, robustness and resilience. Things inhabit disorder. Be they inanimate objects, systems, organisms or institutions, perturbations and unpredictable events of all sorts happen to them, around them and within them. To determine whether something is fragile, robust, resilient or antifragile means to examine how it responds and reacts to such perturbations.

Something is fragile if it is prone to only harm over time. Events, stressors, volatility can only damage, break or destroy, and never benefit it. Not every event needs to be harmful. Rather, the above definition of fragility states two conditions which simultaneously need to hold: that there exists the possibility of only harm, and no gain from perturbations.

Instead, something robust withstands perturbations unaffected; while something resilient is capable to absorb and recover from perturbations, to bouncing back to its original state or to its functional equivalent.

Finally, antifragility is the proper opposite of fragility: something is antifragile when it can actually benefit from events, stressors and volatility: it can gain, get stronger, improve, evolve, better adapt. Analogous to fragility, not all perturbations need to be beneficial; some, perhaps most, may be inconsequential, but some can be – unlike in fragility robustness and resilience. Hence, antifragility goes beyond robustness and resilience since resilient or robust systems are merely perturbation-resistant, while antifragile systems not only withstand stress but can also benefit from it.

We can view these four properties arranged on the harm–gain continuum, from fragility to robustness, resilience, and finally antifragility. This allows us to pinpoint the definitional distinction between resilience and antifragility: while both are responsive to perturbations, what sets them apart is the potential for gain from these perturbations, that is, none in resilience, some and possibly large in antifragility. Consequently, resilience should be seen as a 'limit case' of antifragility. Strictly, an urban (sub)system should be said to be resilient if it is capable of absorbing shocks, perturbations, volatility, to recover and

bounce back to its prior equilibrium or to its functional equivalent. With this we are deliberately narrowing the definition of resilience from a more extensive meaning often encountered in planning literature, as we have suggested (Blečić and Cecchini 2016, 2020a) that those extensive meanings of resilience should, for both terminological and substantive reasons, rather be framed as antifragility.

Moreover, for each of the four properties we can talk about degrees to which they are applicable. For instance, when attributing the property of robustness or resilience to something, it is such only up to a certain intensity of perturbation, beyond which it breaks, loses function or the capability to recover.

In the domain of urban policies and planning, we must account for the 'redoubled complexity' of urban systems: they are complex in the 'simple' mechanical sense of large 'many-body systems' (Anderson 1972) interacting in a non-linear fashion, but are additionally complex due to them also being social systems, with some components being autonomous social agents (Hillier 2012; Portugali 2000, 2012). If not ultimately ontological, this autonomy can only be taken as an epistemic, ethical and – for all practical purposes – an operational assumption.

Nassim N. Taleb is also known for developing the concept of Black Swans (Taleb 2010): large-scale, unpredictable (from the observer's point of view) events of large magnitude and consequences. The Black Swans that Taleb discusses often occur within systems with the aforesaid redoubled complexity, along the nexus of social–political–ecological–natural systems,[1] even if a purely physical non-social phenomenon, under certain conditions and always from the perspective of a given observer, can be considered a Black Swan. While there may be formal tools to identify whether a Swan event was actually 'black', 'grey' or 'white' (e.g. De Marzo et al. 2022), we can identify a special subclass of Black Swans which, in tribute to a former United States President, we shall call Orange Swans. To pursue with the example at hand, can Donald Trump's victory in the 2016 presidential election be fully assimilated to Black Swans such as World War I, or the success of the Internet, or the 2011 Tōhoku tsunami which provoked the Fukushima nuclear disaster? While these events may be outcomes of a combination of complex natural deterministic processes (complexity 1) and the fruits of agents' actions (complexity 2), the case of Trump's presidency arguably stands out for the eminently social snowballing ignited by an exceptional unpredictable individual action.[2]

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[1] Among examples of Black Swans, Taleb includes the rise of the Internet, World War I, the dissolution of the Soviet Union, and the 9/11 attacks.

[2] Let us clarify three points on what we see as the peculiarities of Orange Swans. First, Orange Swans are not to be equated in general with exceptional features and deeds of individuals. Lionel Messi in football (as De Marzo et al. 2022 have suggested),

Having outlined these general definitions, in this chapter we want to elaborate more in detail on the relevance and operational applicability of the concept

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and eventually Magnus Carlsen's attaining a 2900 FIDE chess rating, would both fall into the Black Swan category (if these occurrences had a larger societal impact). However, they can still be interpreted as phenomena belonging to the world of what Warren Weaver would call 'disorganised complexity' (Weaver 1948), as rare extreme occurrences of fat-tailed stochastic processes (generating football and chess players). Instead, the entire Trump effect was possible within the world of 'organised complexity' with the predominant role of social processes, whose structuring and evolution was put in motion by the singularity of Trump's candidacy. Trump happened to us because he decided to run for the presidency, which set into motion the build-up of social and political processes making enough people choose to vote for him and, perhaps to Trump's own surprise, to make him President, with all the ensuing consequences.

While one could doubt the larger societal impacts of exceptional football or chess players, sometimes a Black Swan can turn into an Orange one. Perhaps one such instance comes from literature, in the classic proposition, 'If Shakespeare did not write *Troilus and Cressida*, someone else did'. On one level of reading, this proposition is undeniably true, in the obvious sense that since the play exists, someone must have written it. However, on another level, there certainly can be doubts that had Shakespeare not written *Troilus and Cressida*, someone else would have, because 'only the Bard …'. After all, we should not be entirely dismissive of Pascal's intuition that 'Cleopatra's nose, had it been shorter, the whole face of the world would have been different' (Pascal, *Pensées*, 1660).

The second point of clarification is that Orange Swans are not strictly equivalent to butterfly effects deriving from individual actions. For example, the Gore versus Bush 2000 presidential election was likely highly momentous for the geopolitical events of the following decade (arguably, the invasion of Iraq would have not happened under Gore's presidency), but Bush's electoral victory was not (and Gore's would not have been) unpredictable to the degree that Trump's was at the moment of his candidacy announcement. Hence, Gore versus Bush likely had a butterfly effect, but was not an Orange Swan. However, the line may sometimes be thin, or even non-existing. We could indeed come up with many well-known examples from history to illustrate the impact of singular events and individuals, since the problem of relationship between permanence and catastrophe is one of the most difficult theoretical nodes of historical interpretation.

Third, Orange Swans in principle need not to rely at all on the exceptionality of individual agents. The key feature of Orange Swans is the singularity of the evolutionary trajectory of social processes that produce the exceptional event. As an example, this would be the case of René Girard's hypothesis of the process of hominisation and the emergence of human culture ignited by the scapegoat mechanism (Girard 1977). In Girard's model, the scapegoat individuals, indeed, become 'exceptional' after being singled out as scapegoats, up to attaining divinisation, but are in principle picked randomly, their singling out being the eventual outcome of them becoming the focal point of 'deaf' mimetic social processes.

of antifragility for urban policy design and planning. Specifically, we want to discuss:

1. the normative question of what it would mean to elect antifragility as a public policy goal;
2. the operational question of how antifragility can be pursued in designing urban policies;
3. the example of the concept of the so-called '15-minutes city', to illustrate how the principles of antifragile design may provide insights and tools for its critical examination.

5.2 ANTIFRAGILITY AS PUBLIC POLICY GOAL FOR PLANNING

To elect antifragility as a public policy goal, the first question to address is directly related to the above definition of antifragility. In defining antifragility as the possibility of 'gains from disorder', the central controversial issue in public policy and planning becomes determining what should be the informational focus (Sen 2009) to define and quantify those 'gains', given the inevitable multitude and pluralism of individual and social actors who are the subject and object of, and affected by, public policy. It is one thing, although not necessarily straightforward, to define what may constitute a gain for an individual, an organisation or a well-defined group within society, but it is altogether a problem different in nature to define it at the level of entire society, that is, in relation to possible states of alternative complete descriptions of the society.

The problem of informational focus, with all the ensuing normative and descriptive questions (Who should gain what? At what level, individual or collective, should the gain show up? What gain should be measured? Who gains? At the expense of whom or of what? and so on), is of course inherent in any public policy, but it takes on an additional significance when targeting and promoting antifragility as a political goal. In fact, sometimes antifragility at the aggregate systemic or collective level may obtain at the expense of fragility at the local levels. In such cases, the system operates to benefit from such local fragility (exposition to harm) through some mechanisms, depending on the context, of adaptation, imitation or learning via local trial-and-error, tinkering, experimentations, failures, competition, survival of the fittest, or discovery.

One such possible operating of antifragility, of gains at the aggregate or collective level at the expense of local levels, or for some capitalising on the fragility of others, has sparked objections to the legitimacy of antifragility as

a political ideal (Kolers 2016).[3] Kolers is correct to raise the concern, since in social systems some of those local-level components are social groups and individuals whose fragility can be a legitimate concern of the state, and whose treatment, liberties, well-being and security are valuable goals, not unconditionally available to be fragilised for the sake of 'the greatest antifragility for the greatest number'.

But perhaps Kolers's assessment deserves a reconsideration, since the level-relative nature of antifragility does not, in our view, pose an insurmountable obstacle to the construction of a workable legitimisation. In general, political theory is not unfamiliar with dealing with level-relative concerns. Does not the two-tier structure of Rawls's principles of justice operate precisely with such concerns in mind, when individual liberties take priority over the difference principle? In planning theory, Moroni (2019) has argued that operating within such level-relative tensions is both possible and unavoidable.

Hence, rather than dismissing it altogether, the proper question would be to ask what kind of antifragility may be legitimately pursued. To paraphrase the question others have asked about resilience itself (Carpenter et al. 2001; Davoudi and Porter 2012), the point is to ask 'antifragility of what to what?' Our answer would be that the goal of antifragility should be pursued for valuable systems by endowing them with optionality and asymmetry of possible gains versus harms in the face of uncertainty, in order to increase the chances for them to evolve favourably. To construct a legitimisation for such antifragility as a public policy goal would require two normative stipulations: (1) the identification of the informational focus defining the publicly relevant dimensions of gain or benefit; and (2) the determination of possible constraints in regard to level-relative concerns, including the stipulation of acceptable trade-offs with potential local or individual fragility and, if necessary, the provision of adequate protective nets.

It is beyond the scope of this chapter to delve into such stipulations, except to refer the reader to one such possible framework developed elsewhere (see Blečić and Cecchini 2016, 2020a), employing the capability approach (Sen 2009).

The discussion so far allows us to clarify a necessary normative content of antifragility as a policy goal. In the strict sense, policy design for antifragility is devoid of, and does not imply, reference to any substantial normativity

[3] 'The citizens' affairs cannot *all* be anti-fragile, because in many cases the anti-fragility of some involves capitalizing on the fragility of others. And the state or community cannot *itself* be anti-fragile because part of its function is to absorb some of its citizens' fragility. As a state aim, anti-fragility is therefore illiberal' (Kolers 2016: 95).

(that is, deontology, theory of justice, political goals, and so on).[4] Rather, its normativity is operational, addressing the concerns of the Weberian ethics of responsibility for consequences and outcomes, from which in part the goal of antifragility derives its legitimacy. By assuming uncertainty realism in our domain, it tries to address the problem of expediency of action and policy, and to offer a conceptual framework with a set of tools, principles, heuristics and recommendations for policy and mechanism design.

In consequence, antifragility should be viewed as only a partial goal for urban policy and planning, with other components required to target any substantial normative goal pertaining to politico-ethical domains. In other words, the question of what makes a policy, a plan, a service, an institution, an urban system fragile or antifragile, is not the same as the question of what makes them good, just or right. Despite being two distinct questions, the minimal normative content of our proposal is that they should not be answered separately. Our central claim is that the two questions in planning, and in public policy in general, must be addressed concurrently in order for the answers we provide to be normatively and operationally compatible with one another.

In our view, many recent proposals, such as urban resilience (Davoudi et al. 2013; Davoudi and Porter 2012; Meerow et al. 2016), adaptive planning (Kato and Ahern 2008; Rauws 2017; Skrimizea et al. 2019), and our proposal of antifragile planning (Blečić and Cecchini 2016, 2020a), are attempts to organically address the kind of problems that uncertainty, and especially deep uncertainty (Moroni and Chiffi 2022), pose to public policy. Such problems fundamentally question what the normative content of planning may realistically be, given that the unpredictability of urban systems (Hillier 2012; Moroni 2015) brings about uncertainty of ultimate outcomes of policies and actions, raising both deontological and operational problems for planning (Chettiparamb 2019; De Roo and Hillier 2012; Innes and Booher. 2010; Moroni and Cozzolino 2019; Portugali 2006, 2008; Portugali et al. 2012). Hence, what these proposals have in common is to couple: (1) indications for action, policy and design which are inevitably projected towards future outcomes, even if the future may be hard to predict; together with (2) care for future collective outcomes.

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[4] This is so also because, in general, not only what is antifragile not inevitably 'good' or 'right' (whatever conception of 'good' and 'right' one may have), but also many 'bad' things are often antifragile, and the worst almost always are, precisely because they are antifragile: from the most anguished nightmares to the haunting literary inventions of horror (from the Hydra of Lerna, to the Borg in *Star Trek*, both of exemplary antifragility), from degenerative psychotic spirals to the most stubborn forms of addiction. One could appreciate the fact that the biological evolution of life is generally antifragile, but when directly affected one could be much less appreciative of the antifragility in adaptation of viruses, parasites and predators.

5.3 DESIGNING ANTIFRAGILITY

Pursuing the goal of antifragility in planning and urban policy as interventions on socio-ecosystems (Equihua et al. 2020) entails two families of principles. The first pertains to *primum non nocere*: other than what to do, antifragile planning should as much be about what to avoid doing, so as not to fragilise those systems. Elsewhere (Blečić and Cecchini 2020a) we have attempted to identify a set of attitudes and practices of intervening on social systems, and on urban systems in particular, which may fragilise them, namely: decisions based on fragile predictions; excess of centralisation-*cum*-micromanagement; fixation with efficiency and optimisation; specialisation; extractive political and economic institutions; and the crumbling of the 'cement of society'. Shunning such fragilisers constitutes a *prima facie* content of the *via negativa* in antifragile planning. However, under the tenet of *via negativa* there is also a place for policy options subject to democratic deliberation. The idea of *via negativa* does not imply a withdrawal into a planning miniarchism or the maintenance of the status quo, and does not exclude the possibility of even structural transitions and 'changes of regime', as long as they observe principles of generality, retract from short-term contingencies and conveniences, and do not introduce significant new sources of fragility.

The second family of principles, to which we dedicate more space in this chapter, pertains to operational heuristics for what may constitute the *via positiva* of antifragile planning and policy design. Before presenting these principles, the caveat is that their concrete applications of course depend on the specific policy subdomain. The great variety of what usually falls under the umbrella of urban and territorial policies and projects requires that we express the principles with a certain degree of generality, allowing, and demanding, their further specification for different policy reference classes. As we have said, ideally, they should provide a conceptual bridge between theory and practice. This also entails that the principles may not be pursued in all circumstances in the same way, by the same means, with the same intensity and rigour, nor can they be obtained to the same degree (building a bridge is not the same thing as devising a neighbourhood regeneration strategy).

5.3.1 Modular Design

We start with this principle as it represents the precondition for many of the following ones. Well known across engineering and industrial domains (Baldwin and Clark 2000; Brusoni et al. 2023), it suggests to identify the minimum viable functional unit which could be operational as soon as it is completed, and to devise the policy or the project as a partitioning into such

discrete scalable and possibly reusable modules. Such an approach is favoured if the circumstances allow the modules to be relatively functionally independent, and to use well-established and tested modular interfaces among them.

In the context of urban policies and projects, modular design favours learning and scalability (Flyvbjerg 2021; Flyvbjerg and Gardner 2023). Instead of going full-scale immediately, it ideally allows the incremental prototyping of a few modules, their experimental putting into function, and relatively rapid cycles of tinkering, learning and improvement over the next iterations and additions. Such an approach specifically favours antifragility, as it is more adaptable to changes of circumstances in the medium to long run. Indeed, policies and large projects with long-term goals may be devised some time before the actual implementation, which itself may take place over longer periods of time. In such conditions, modular design is more adaptable to shifts in circumstances, capacity demand, technological innovations, demographic, social and economic trends, and so on.

It may be challenging to fully operationalise this principle in different policy domains, starting from identifying what exactly may be a 'module' (Anderies and Janssen 2013) under different circumstances, goals, and organisational and normative policy settings. Nevertheless, we hold that putting explicit effort into exploring the possibility of modular solutions should prove productive, if only as a test heuristic, should some such form of modularity not be devisable and obtainable, that what is being designed may be fragile.

5.3.2 Decentralisation through Layering

The concentration of decision-making in a central entity increases the likelihood of disastrous outcomes, blow-ups, threats to survival, and jeopardy of projects and policy goals. A wrong decision made at the central level can have widespread effects, as is demonstrable in large investments and megaprojects (Ansar et al. 2017; Flyvbjerg 2017; Flyvbjerg et al. 2003). Instead, decentralisation allows for localised errors, which are less likely to propagate and trigger systemic failures. Additionally, by creating favourable conditions for trial-and-error without risking systemic blow-ups, decentralisation augments the benefits of modular design: tinkering, experimentation and learning. To clarify, forms of centralisation may be justifiable for pursuing certain policy goals, such as granting equity or some configuration of uniformity of conditions, opportunities and outcomes; or in circumstances with large fixed costs, economies of scale, and network effects. However, centralisation requires wariness of threats of fragilising the system and of jeopardising its antifragility, especially when the centralised action aims to micromanage the system, beyond setting the general frames of reference for individual and local action,

granting rights, supplying universal public goods, and addressing externalities and collective action problems.

A possible approach to pursue decentralisation is through layering and nested institutional arrangements (Ostrom 1995). Such institutional structures are potentially more socially inclusive, provide a plurality of actors with a 'sense of common objectives' (O'Riordan and Voisey 1998), offer discretionary space for action on local levels for adaptation, calibration and experimentation of context-sensitive solutions while implementing shared policy goals, and finally provide necessary (albeit not fully sufficient) conditions for 'skin in the game' (Taleb 2018) across the layers of decision-making.

Finally, specifically in spatial planning, forms of layering should also be devised in reference to the space and time scales of decision-making and action. As we have argued (Blečić and Cecchini 2020a), the perspective of antifragility should distinguish three planes for the planning practice: (1) the *via negativa*; (2) the shared vision and the 'coordination by means of future'; and (3) the space of the projects. These three planes operate on different time, spatial and institutional scales, from long-run and high-level (regional and above) of the *via negativa*, to short-term and strictly local of the space of the projects.

5.3.3 Redundancy

Redundant functions, tasks and information flows between modules and layers create fault-tolerant systems, functioning even if one component fails, as another component can assume its role. Redundancy in our context of policy design would primarily mean to devise mechanisms which can perform similar or substitutive functions in case of failures on local levels. Such redundancy, especially appropriate for critical components and functions, could be built into systems horizontally (by generating adequate spare capability or overcompensation in other local units/modules), and vertically (through preparedness of higher-order layers to take over functions, goods provision, management and regulatory tasks). An instance of institutional redundancy would be the sequential use of informal and formal rules for resource management: when informal rules fail, more formal higher-level institutional arrangements are activated as backup, which are more expensive but perform a similar function (Low et al. 2002). Building horizontal spare capability or vertical fallbacks may appear costly, but such costs should nevertheless be duly compared with the costs of the possible system's failures. For instance, in some circumstances in our domain, a redundancy design may not require assuring full functional integrity over short periods of time. Differently from the high-level redundancy necessary for the extreme robustness of a commercial airliner designed to continue flying even if many subsystems fail, in the domain of urban policies such

robustness against temporary disruptions or discontinuity of service may not be necessary. If that is the case, the policy design could devise contingency plans of 'graceful degradation',[5] the ability to maintain limited though crucial functions in adverse conditions or under temporary subsystems failures.

Strictly, while redundancy as a design principle is directed to strengthen robustness and resilience, the antifragile dimension emerges in the medium to long run and in combination with the other two principles mentioned above. Indeed, embedding adequate redundancies in the system permits and favours cycles of tinkering and learning through trial-and-error without jeopardising the essential established functions. Redundancies hence should help to advance dynamic adaptation through innovation in response to internal or external stressors and perturbations, and should encourage 'fail fast' practices ('fail early, fail better, test early, fail cheaply') to cut sunk cost losses and to favour quick pivoting to new approaches and solutions.

5.3.4 Resist the Urge to Suppress Randomness

'[I]f antifragility is the property of all those natural (and complex) systems that have survived, depriving these systems of volatility, randomness, and stressors will harm them. They will weaken, die, or blow up' (Taleb 2012: 5). This general heuristic can have many different declinations in urban policies. One is to relax the pursuit of excessive optimisation and efficiency. Optimising subsystems, processes and services is uncontroversial only under stringent conditions (Blečić and Cecchini 2020a), and can hardly be applied to urban systems in general, where agents pursue their autonomous ends and life plans within a shared spatial, social, cultural and economic context. The drive for efficiency and optimisation can especially be problematic when it only considers immediate first-order effects, as it can reduce the optionality, remove protective safeguards and redundancies, decrease the potential for adaptations, inclusion, opportunity of exaptation (Johnson 2010) and changes in urban uses, in view of inevitable evolution of ends, needs and desires. Allowing for, instead of suppressing, internal randomness may also have two other long-term effects on antifragile evolution of policies. The first is that, in the case of more open-ended policy goals (such as urban regeneration, or revitalisation of peripheral territories), the policy should be open and embrace the possibility of serendipity, of stumbling upon opportunities which may refocus the goals and

[5] 'Graceful degradation' is often evoked as a design principle in web-based software development, aiming at creating a fully functional website or application that performs optimally in the latest browsers, while still providing crucial content and features in older browsers even if the experience may not be as advanced.

discover yet unpredicted means to achieve them. The second effect is that the policy processes build social capital and future capability for coordination and collective action (Olson 1971).

5.3.5 'Skin in the Game'

While this is a general principle inviting to set the symmetry and sharing of risk by decision-makers with the potential (negative) impact of their decisions (Taleb 2018), the 'skin in the game' acquires a particular significance in the kind of modular, multi-layered and multi-actor policies where decision-making and responsibilities may be distributed and attributed through different vehicles and organisational schemes (administrative norms, ad hoc regulations, contracts, collaboration partnerships, and so on). This principle also recommends aligning incentives and risk management schemes for public administrators and officers, who frequently act as gatekeepers and have much sway over decision-making. Mobilising these actors to more proactive attitudes, open to innovation, normogenesis and flexibility in mechanism design, which inevitably entails some risk-taking, is often a decisive precondition of an effective and adaptable policy design.

5.3.6 Chesterton's Fence

Inspired by C.K. Chesterton's point never to take down a fence until you know the reason it was put up (Chesterton 1929), in the strict sense this heuristic is a corollary of *primum non nocere* in the domain of public policy. Chesterton's point was of course an admonishment that interventions on social systems should not be made until the reasoning behind the existing state of affairs is understood.[6] In our domain this would primarily mean the awareness that policies operate in contexts of agonistic pluralism, and sometimes of irreducible conflicts and structural antagonisms, even if collaborative approaches and co-design (Blomkamp 2018) can be pursued in some circumstances. In a wider sense, pertaining to antifragility, the point is to operate to remove fragilisers of social cohesion, by which we do not mean a stationary 'state of harmony', but a dynamic, ultimately precarious, outcome of conflicts, reciprocal accommodations and partisan mutual adjustments. An example of a fragiliser of social cohesion is when excessive economic inequality, coupled with particular institutional arrangements, turns into inequality of real opportunities, capabil-

[6] Incidentally, Chesterton of course invented his proverbial fence as a metaphor, but in urban design and architecture sometimes we should perhaps take him quite literally, as if he was talking about actual fences, walls and barriers.

ities and the possibility to meaningfully participate in the democratic political process, undermining the social cohesion from within (Sandel 2012).

5.3.7 Optionality

The common tenet to all the above principles is building and promoting optionality as a fundamental precondition of antifragility. Optionality is the property of having options (possibilities, rights, entitlements, capabilities to do, to have, to become, to change the course of action, to reverse prior decisions, and so on), but not obligations or constraints. Greater optionality embedded in a course of action offers the possibility of a favourable asymmetry between the action's upsides and downsides, and allows benefiting from unpredicted and unpredictable opportunities, while limiting the possible harm arising from threats.

After all, optionality is what sets antifragility apart from resilience: while at the core of antifragility, optionality in the strong sense is absent in resilience. We say 'in the strong sense' because the goal of resilience may be pursued for institutions, services, infrastructures, environmental systems, that are also valuable for providing certain optionality to people. But in this sense, resilience at its face value does not contemplate the possibility that these institutions, services, infrastructures, systems themselves evolve and improve, even in terms of their purpose of providing optionality, specifically from the unexpected opportunities with time. For that, the goal of antifragility must be put to work.

5.4 ON THE '15-MINUTES CITY', THROUGH THE GLASS ANTIFRAGILE

In this section, we want to illustrate how our conceptual framework could be employed to critically examine the idea of the '15 (or 20)-minutes city' (Moreno et al. 2021; Whitzman 2017), focusing on possible fragilisers, and on what may be required to pursue such goals. The policy goals of the '15-minutes city' aptly fit into the domain of evolutionary policy design, constitutively requiring a combination of top-down actions, bottom-up organising, and convergence of autonomous economic and social processes, to obtain the desired results on the ground.

Our premise would be that the so-called '15-minutes city' is not a bad idea if it is proposed without nostalgia, without appeal to imaginary communities, without fixed modules (such as that of the so-called 'neighbourhood units'; Perry 1929), and if it is a projected towards the future, but starting from the 'really existing city'.

The idea finds its origins in a certain 'rediscovery' of proximity, which cannot be abandoned even in the age of extreme globalisation and of the per-

vasive presence of information technologies. This is a lesson arising from the practices of everyday life, work and consumption, and has manifested itself acutely in the period of the COVID-19 pandemic (Blečić and Cecchini 2020b). Among many 'rediscoveries' (which nevertheless risk to remain temporary) of the acute period of the pandemic crisis – alongside the realisation that there *is* such thing as society, and of the decisive role of the public and of the state in preventing societies from collapsing – is the recognition that a certain dose of self-sufficiency may be necessary at national, regional and local level, and that an antifragile system cannot be based on abstract criteria of efficiency and optimisation (as has been thought possible for the size and localisation of health services), or of competitiveness (as has been thought for agricultural production), or of 'excellence' (as has been repeatedly said for the funding of universities).

This does not mean that efficiency, competitiveness and quality are not among the variables to take into account, but it means that the ability of a system to withstand perturbations, to absorb shocks of unlikely events (be they Black or White Swans), to recover and to better adapt, also implies redundancies, plasticity, duplication and the possibility of exaptations, just as it implies that some types of goods and services are produced locally even though it may not be 'efficient', with multiple possibility of exchanges between supra-local 'reservoirs' and interconnected networks.

The apparent originality of the '15-minutes city' hinges on us somehow having forgotten the importance of proximity, and of Jane Jacobs. Welcomed be such reminders, but whilst recollecting, we should not at the same time forget Christaller and Mandelbrot. That is, the '15-minutes city' should not be an appeal to a 'flat localism' and to an autarchic self-sufficiency of the city of proximity. Rather, it needs to fully engage the multi-scalar nature of cities and call for a 'fractal localism' (Taleb 2019), with adequate modes of coordination and integration (Bandarin et al. 2020), as a source of antifragility and antifragile policies.

Thus, a '15-minutes city' must not be a naïve and romantic idea of 'urban villages', but that of urban systems which at the local level of neighbourhoods can offer a high accessibility of goods, services and capabilities to each person, according to their needs and abilities, in a reasonable time, on foot or by means of 'soft' mobility, such as to be intrinsically fairer and protective of the most fragile, but also capable of adapting to exogenous shocks and unexpected events, and learning from them.

In Europe at least, such policies should start from the city that really exists. Because the total number of inhabitants will not grow much, because on average the density is relatively high, and because in many cases there is a large unused and underused stock of buildings and areas within cities, so that – starting from the existing city – there is impressive work to be done to

restore, recover, reconvert, redevelop and regenerate this heritage from the architectural, urban, infrastructural, economic, social and cultural point of view. An impressive work, but a work which in many cases does not need to take place all at once: it can be a 'great project' on an urban scale, without being a large-scale project. Indeed, if designed in a systemic and long-term dimension, the fact that it can happen in a modular way through time can be a great advantage, as it can promote its antifragility.

Let us, however, touch upon two potential 'structural' fragilisers, taking at face value Moreno's definition of the '15-minutes city' as having '*4 composantes majeures: la proximité, la mixité, la densité, l'ubiquité*' (Moreno 2016).

Although Moreno understands *mixité* primarily as a mixture of functions, for many such functions only a social *mixité* would assure that outcome. Otherwise, it is indeed hard to imagine non-fragile mechanisms to address the scarce provision of services, not only public services, but also commercial, entertainment venues, bars and restaurants, given that their localisation can hardly be imposed, and given that economic preconditions may not be present on the ground. This is likely a blind spot in many of the concrete attempts to turn neighbourhoods into '15-minutes' ones. Otherwise, the goal will likely be reached only in the neighbourhoods which already possess a certain favourable *mixité*, not far from already being the 'city of proximity'.

Therefore, a '15-minutes city' probably cannot do away with housing policies, without which interventions on public spaces often prove insufficient to affect social segregation and to promote 'diversity' of residents. This is unavoidably a gradual process, for which a starting point could be to promote not only developments in less-advantaged neighbourhoods, but also a significant share of 'contracted' or public housing within regeneration plans in more better-off areas.

Further, we want to suggest that an endowment particularly relevant to make the city of proximity work is that of schools. Not only because their redistribution, refunctionalisation, extension, rethinking could favour a substantial reduction of forced mid-distance mobility, but also for the role those spaces could have as poles for neighbourhood services and diffuse cultural activities.

Finally, we arrive at a discussion of urban rent as a source of fragility. This offers us the opportunity to add some specifics to our previous claim that the *via negativa*, as a set of general and long-term rules and constraints, while preserving and increasing the resilience and antifragility of urban systems, does not exclude the possibility of structural transitions and 'regime changes', as long as they preserve principles and forms of generality and superordination, escape from short-term contingencies and conveniences, and reduce fragility without introducing new sources of fragility.

For urban systems, the modes in which urban rent is created and distributed may be a formidable structural source of fragility. It can be argued – convincingly, in our opinion – that the *private appropriation* of (most of) urban rent is a powerful fragiliser of cities, for political, environmental, even cultural reasons.

The well-known moral argument is that of the 'unearned increment' (Mill 1848): the idea that the increase in land values due to favourable localisation, presence of services and public infrastructures, or due to the general progress of society, does not belong to (or, in some variants of the argument, is not deserved by) the land owners, but rather to the entire society.

To this we want to add the argument of political-institutional dysfunction. It in fact seems to us that the predominant modes of private appropriation of urban rent are among the main causes of dysfunction of politics and planning practice at the levels of local government, at least from our Italian observatory. Even when not spawning downright corruption and graft, it is a source of a massive political and economic pressure on local politicians and public officials, to which they often, to a lesser or greater degree, cannot but surrender. Yet it is hard to imagine how could it possibly be otherwise, when the decisions on the allocation of building rights and land uses are constitutively discretionary, and at the same time differentiate among land owners in terms of potential rent extractable from urban developments (Chiodelli and Moroni 2015).

Such pressures further fragilise cities: developments maximising rent extraction at the expense of liveability and quality of public spaces, lack of funding for the 'public city' and public housing, loss of diversity, economic monocultures, social uniformity of neighbourhoods, urban sprawl, are all phenomena in many ways concaused by the mechanisms of the creation, extraction and private appropriation of urban rent.

We should push our point even further and wonder about the long-term cultural consequences of normative-institutional arrangements which favour a systematic private appropriation of a collectively produced value, which in many respects should be considered a common-pool resource. Is such distribution of the rent value not a permanent, perhaps latent, but by all means contagious hotbed of social rivalries? If the collectively produced rent represents a relevant share of the wealth created,[7] if its distribution is conditioned by

[7] In his *Capital in the Twenty-First Century*, Piketty (2014) describes the progressive increase in inequality in the distribution of wealth in developed countries since the 1980s and after the 'historical anomaly' of the first three post-war decades. Piketty's central thesis unfolds around the persistence of the condition of greater return on capital with respect to the general growth of national income. Given the unequal distribution of ownership titles on capital and the strengthening of the 'patrimonial capitalism'

planning, and hence its private appropriation is determined by a discretionary (political-administrative) mediation, do we not have in rent a perfect 'object of desire' which, following René Girard's insights (1977; Girard et al. 1987), is capable to bring about an escalation of mimetic rivalries? This may have deep implications for the quality of social relations and cohesion, for the functioning of government mechanisms, and on the latent violence in local politics and communities.

Ultimately, not in one, but in the joint corrosive operating of all these ethical, political, economic, social and cultural consequences, and of their fallouts, resides what makes the private appropriation of urban rent based on discretionary and differential logic a vigorous 'fragiliser' of the city and many urban policies.

While the urban rent cannot in principle be eliminated – its value stemming from ineliminable localisation preferences of agents – the point instead is who appropriates it and through what mechanisms. Our key point is therefore that the rent becomes a fragiliser: (1) when its actual realisation depends on the discretionary differentiation between agents; and (2) when it is privately appropriated.

An antifragile remedy would proceed through a *via negativa*. As we have said, under certain conditions the logic of the *via negativa* does not exclude the possibility of triggering structural transitions and even radical regime changes. These conditions are that it is a transition operating through general and abstract rules, without aspiring to overcontrol and micromanage the internal dynamism of the system, its capacity for self-organisation and autopoiesis, and the propensity of agents for dynamic adaptation. Under these conditions,

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(Milanović 2014), this imbalance involves a progressive concentration of wealth, and therefore its more unequal distribution. As various scholars have observed (Homburg 2015; Milanović 2014; Stiglitz 2016), in his book Piketty defines 'capital' extensively, and uses the term largely interchangeably with that of 'wealth', without distinguishing between 'productive' and 'unproductive' capital, and above all by including the value of assets, thus including the capitalisation of land rents. In short, Piketty classifies any asset or security capable of generating income for its owner as capital, including the income implied in the capitalisation value of real estate, which incorporates the value of the underlying land rents. This terminological clarification is not trivial, as it allows Stiglitz (2015, 2016) to point out that, rather than attributable to the conventionally understood return on productive capital, most of the increase in the concentration of wealth can instead be attributed to ownership over sources of rent, that is, to the higher income deriving from these rents and their capitalised values. Here, among various forms of income, the pre-eminent role seems to be covered by land rents. In fact, a breakdown by sector of the data used by Piketty shows how the relative increase in capital income compared to labour income is almost entirely attributable to the housing sector (Rognlie 2015), and in particular to the income implied in the value of the real-estate assets.

a different regime of *jus aedificandi* and of land property rights, or introduction of fiscal tools for land value capture (Ingram et al. 2012), would not violate the principles of policy design for antifragility.

5.5 CONCLUSIONS

By dedicating this chapter to an attempt to provide a conceptual bridge between theory and practice for incorporating antifragility as a policy goal and design principle, our primary purpose was to lay some of the groundwork necessary to operationalise the concept of antifragility in the domain of urban and territorial policies and planning.

Going from here, we see (at least) two promising directions for future research and developments. One is strictly operational, related to our initial caveat that the general principles which we presented here need to be adapted to the wide variety of what usually falls under the umbrella of urban and territorial policies. This creates the need for further specification and specialisation of principles, exploring the ways in which they may be concretely relevant and pursuable for different reference classes of policies and projects.

A second promising line of research is to adopt the conceptual framework of the fragility–robustness–resilience–antifragility quadriad for empirical research, to test how design choices, in a sample of past policies and projects within different reference classes, actually impacted upon their evolution and antifragility. Likely, these two lines are methodologically intertwined, and both necessary for ours to ultimately become a viable paradigm.

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