



Integral Resilience – an indicator and compass for sustainability

Authors:

Peres, Edna (E)¹; du Plessis, Chrisna (C)²

¹University of Pretoria, Pretoria, South Africa, edna.m.peres@gmail.com

²University of Pretoria, Pretoria, South Africa, chrisna.duplessis@up.ac.za

Abstract: *While established arguments suggest that the sustainability movement is not achieving enough and that its tools are falling short of ethical imperatives, there are few constructive solutions. This paper suggests that an integral resilience approach might propel the movement forward. Resilience theory has developed into various streams of inquiry and practice over the past forty years, offering a perspective to assess the strengths and weaknesses of a social-ecological system from which better decisions for the built environment can be taken. Apart from the useful clues that this externally quantifiable side of resilience offers, there is also the qualitative side of resilience, the internal dimension that guides decision-making. To effect sustainable change, both dimensions must be tackled. Using integral resilience both as an indicator of the quality of a place and a compass for making better decisions, tools can evolve to guide development.*

Key words: *integral theory, resilience, urban systems, sustainability*

Introduction

The ‘green’ agenda side of the sustainability movement has resulted in an improvement in quantitative efficiencies of the built environment and an awareness of the need for different practices. However it is doubtful whether the awareness fostered is actually inspiring the deep ethical changes necessary in our consumption-hungry societies. It is consistently argued that the sustainability movement is not achieving enough [1][2][3][4] and in many ways sustains a destructive status quo. Current tools and rating systems furthermore fail to provide a meaningful response to the overwhelming number, scale and frequency of interconnected disasters set to cripple global social-ecological and economic systems during the 21st century [5][6]. The real issue is that the magnitude of these changes will force humanity to adapt to a very different world if it is to sustain itself. Mere redesign of current rating systems, such as that put forward by the Living Building Challenge, will not enable the transformation within the built environment necessary to retain a semblance of the life-style that society has become accustomed to. Rather what is required is alignment to a worldview that recognises change as inevitable and addresses the social-ecological aspects of sustainability with the same intensity as economic ones since, “we cannot exclude major dimensions of reality and expect comprehensive, sustainable results” [7]. For sustainability practice this change embodies nurturing the quality and diversity of life on earth, rather than simply sustaining and improving the damaging systems that perpetuate the status quo.

Green Building tools focus on reductive and prescriptive measures that improve the small-scale efficiencies of individual buildings and precincts. They do not consider the connections to broader built environment systems that change in response to fluctuating social-ecological conditions resulting from, for example, climate change; nor do they build capacity for resilience against an unpredictable future in which built environments will need to regenerate



and transform if they are to continue to sustain human life. By responding to today's problems, their focus is not on exploring and creating situations for green buildings or neighbourhoods to evolve in response to changing conditions, so that they may continue to provide quality habitats without intensive and expensive retrofitting. This paper proposes that sustainability assessments and practices can be improved through the adoption of a holistic and dynamic approach to development.

Bridging the gap – crossing the divide between 'green' and holistic sustainability

The objective aspects of sustainability practice (such as 'green' behaviours or energy efficiency systems) are clear, however the subjective qualities, the deeper 'why' and 'how' questions, need to be considered as well [4]. If the responsibility of sustainability practice is to guide development toward prosperous habitats for all forms of life, then sustaining, and more importantly regenerating cities, necessitates building their capacity to absorb, adapt and evolve to changing conditions over time, without losing their functional identity [8] as thriving human (and non-human) habitats; it requires resilience. General rather than specific resilience of the urban fabric depends on complex structures that slowly unfold and evolve in order to develop strong internal connections like those seen in a leaf [9]. Principles for resilience (absorbing, adapting or transforming systems) and regeneration (the creative qualities that rebuild dysfunctional systems) can guide this progression of sustainability.

While resilience is increasingly being seen as a pathway to achieving sustainable development [10], its use as a valid theory for urban sustainability must be refined with a better understanding of its application to urban systems. The initial understanding of resilience was that it was a characteristic of a healthy ecological system which described the ability and speed of a system to return to equilibrium after a disturbance [10]. That understanding has since broadened into dynamic definitions that transcend the equilibrist approaches of its origins [10], and have developed further in the fields of ecology, psychology, business, emergency response, engineering, [6] and more recently urban systems [11]. Its application to cities has mostly focussed on anti-adaptive 'bounce back' attempts to manage or maintain the current condition of cities in the face of pulse disturbances like natural disasters or press disturbances like the economic recession. It can be argued that resilience theory provides a rich umbrella concept that may bring together a number of professions in the built environment and equip them with a common language [12] with which to find solutions for the unprecedented development demands of the 21st century. It holds potential to bridge the gap in discourse between various study areas, practices, professions and sciences that have traditionally been working in isolation, and through this process of integration a whole-systems approach to building the future of the city may be unlocked.

An urban system consists of a variety of interconnected and co-dependent relationships or networks which cannot be successfully isolated without compromising the integrity of the whole. In addition, a city does not only consist of what the eye can see, such as the physical buildings and services; it consists of spaces that hold intangible qualities for their citizens, like a unique 'spirit of place' or subjective meaning and identity. While built environment professionals focus almost predominantly on designing aspects of the city that can be seen,



they are most successful when they integrate the ‘hidden’ flows of experience and meaning pertaining to life-forms in the city, into their projects as well. Simply put, since a city is a whole-system of equally essential tangible and intangible aspects, similarly its resilience cannot depend on a singular perspective of resilience. Furthermore, this multiple perspectival framing of resilience becomes important in highlighting the additional understanding that resilience itself is not the goal. As an emergent characteristic of a system, it could be present both in highly functional systems or others which are dysfunctional. In this instance resilience would be perceived as positive in a functional system (say a healthy neighbourhood with amenities) or negative in a dysfunctional system (say poorly serviced informal neighbourhoods) and therefore resilience merely represents the capacity that a particular system has to absorb or adapt to pressures without collapsing. Using resilience theory to inform the study of urban systems therefore provides insight into which aspects of the system may need to be developed or collapsed in order to transform into more positive systems through regenerative design strategies [13]. However, the big challenge lies in being able to make responsible, holistic, aesthetic, just and precise decisions in response to what the resilience findings show. Integral Theory provides a useful framework within which to make such holistic decisions [7].

A whole-systems perspective of urban resilience

In order to build the resilience of a regenerative urban system and sustain it over time, its tangible aspects (the physical fabric and structure) as well as its intangible aspects (the thinking that guides its development) must be enhanced. Traditionally, these realms of practice have been separated, with the focus in urban resilience lying in specific tangible responses and ‘bounce back’ approaches. However, since cities are complex-adaptive systems with multiple dimensions [14], an urban resilience strategy must take into account multiple resilience methodologies that each respond best to different situations. Holistic resilience practice in a city requires that both external and internal dimensions be tackled and developed, but without an overarching framework to guide its application, it may simply become another development ‘buzzword’. Over the past 37 years, an approach has developed with capacity to interrelate multiple dimensions of reality, offering possibilities for the successful holistic assessment and resolution of many 21st Century crises [7]. Using an Integral Theory framework to inform urban resilience practice can be the logical extension of existing research into the application of Integral Theory in the built environment such as sustainable architecture [4] and urbanism [15].

Integral Theory can be described as a full spectrum approach to the study and practice of life (in all its external and internal manifestations) that “attempts to create a comprehensive framework for understanding the complexity of multiple competing theories” [4]. The framework acknowledges objective (external and empirical) and subjective (internal and experiential) perspectives, as well as their manifestations in individual versus the collective domains (Fig. 2_1, 2_2). This results in four co-existing perspectives (quadrants or *quadrivia*) of life: behavioural, social, cultural and experiential terrains (Fig. 2_3), each with its own unique wisdom that unfolds individually across a line of development that progressively

displays higher levels of depth, complexity, transcendence and integration (Fig. 2_4). In addition to quadrants and levels, the Integral Theory framework includes lines, states, stages, and zones; however this paper will only focus on quadrants and levels for the sake of simplicity. Ken Wilber, the philosopher best known for elucidating this meta-theory, indicates that for holistic development or an ‘integral vision’ to occur, all four quadrants must be developed to reach their highest levels of growth [16]. This paper suggests that in order to propel sustainability practice into actions that create fast, long-term and large-scale change from individual, to urban and thereby global systems, an integral study of resilience in urban systems, is required.

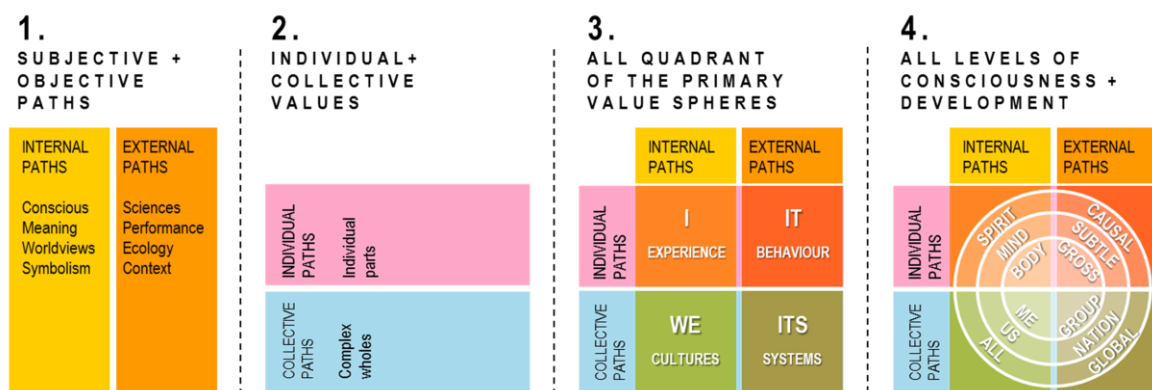


Figure 1- Graphic summary of Integral Theory (Authors, 2014) based on (Wilber, 1996) (de Kay, 2011)

Building the resilience of thriving urban systems through an integral approach

An integral urban resilience approach is seen as a stepping stone that holds potential to act as both an indicator and a compass for transformative development on the path toward regenerative sustainability and so, operates at deep levels of inquiry and perception. Integral urban resilience can be defined as the capacity of urban systems to maintain their functional identity as thriving human habitats that co-exist with all forms of life and which display high levels of holistic integral quality. As an indicator set, integral urban resilience provides diagnostic warnings regarding how far the system has moved away from embodying the qualities of resilience that are required to sustain a truly regenerative and prosperous system. Examples of some of the qualities that are capable of fostering conditions of a healthy (and thereby resilient) system, require an understanding of the broad context and its on-going capacity for adaptation, made possible through built-in redundancy across scales, in combination with an increase in the diversity of functions and responses that leave room for growth and complexity to advance over time. If none of these qualities are present, or if they abundantly perpetuate a dysfunctional system, then the knowledge provided by these resilience indicators can direct the implementation of catalytic interventions within the system to effect regeneration at that point which can ripple beyond; in this instance integral urban resilience provides the metaphorical function of a compass.

Urban systems can be interpreted through the four different perspectives of the integral *quadrivia*, and within each quadrant resilience theory applications will differ. For example,

the external paths of a city manifest in the following ways (Fig. 3_1). Buildings, organisms, infrastructure, typologies and morphologies, all of which can be measured and quantified, would be located within the terrain of behaviours. Political, economic, social, legal, institutional, and educational structures would be found in the terrain of systems where they have manifestations in architectural styles [17]. Behaviours and systems are usually the aspects within which sustainability practices tend to focus, trying to force behaviours into optimal efficiencies or systems into representations of the whole of reality. However, these strategies exclude the internal paths which are essential to the healthy resilience and therefore sustainability of a city. Worldviews and ideologies held by groups can be found in the terrain of culture, and these values give rise to architectural identity and a ‘sense of belonging’ that a community or individuals associate with the built form in the city (Fig. 3_1). Lastly, in the terrain of experience, beliefs and emotions take root in the phenomenological states that give rise to experiences of ‘spirit of place’ and poetics in landscape [7].

Engaging resilience within each terrain requires shifting between the different resilience practices mentioned earlier in the paper, determined by where their methodologies offer the most appropriate responses (Fig. 3_2); for example, in the external paths, the design of a road will require resilience approaches that can mitigate known disturbances and can accommodate for a variance on the standard through ‘bounce-back’ and equilibrist engineering resilience. In the case of systems, mapping the impacts of climate change disasters on the health, political security, economy and social interactions within city networks requires an appreciation of various types of systems-based resilience practice. When dealing with internal paths (Fig. 3_2), on a collective scale, the resilience of cultural norms or political ideologies affect the resilience of a community’s beliefs or worldviews. This in turn impacts on how they identify with built environments and consequently affects their actions in the external terrains. In the case of experiences, the presence of ‘spirit of place’ and the quality of phenomenological exploration and emotion becomes important, and in this case, psychological resilience can provide clues for creating spaces that can evolve an individual’s consciousness development within carefully crafted environments.

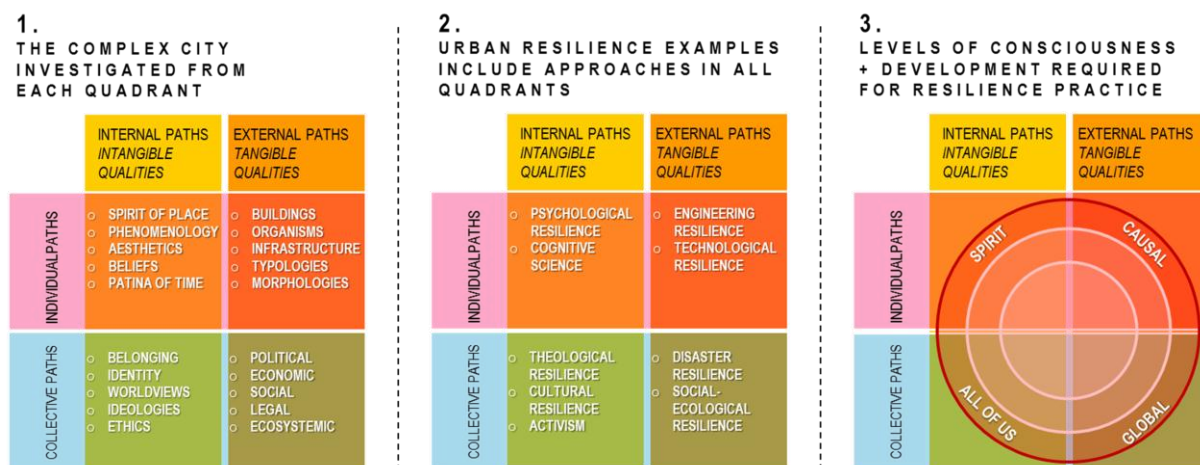


Figure 2- Integral Urban Resilience: All-Quadrants & All-Levels (Authors,2014); based on (Esbjorn-Hargens, 2012) (Zolli & Healy, 2012)



Lastly, the interpretation and application of resilience theory in the urban realm, requires a certain level of conscious development within the internal paths. It is suggested that individuals at least evolve beyond thinking only about themselves, their family or their tribe, to a higher more complex level at which they are able to operate in an organisation or community that encompasses various groups [15]. Sustainability requires that individuals should be able to think beyond this intermediary scale toward global eco-systems and networks (Fig 3_3: All of us and Spiritual). This higher level of development requires individuals to step well outside of themselves in order to achieve a greater depth of understanding and points of engagement with individuals who are still engaging with sustainability at community or organisation levels. Communities and groups also need to be guided to evolve their average operational centres to higher levels of empathy and away from self-centred goals. In addition, external paths also have levels of development which increase in complexity at each level by transcending and including local vernacular wisdom, knowledge and strategies from lower levels (Fig 3_3: Global and Causal). Local vernacular wisdom is necessary because it is based on a social-cultural worldspace to which societies tacitly conform, and also determines individual and collective behaviours in the practice of sustainability [4]. Practices should tap into and then transcend the current predominant worldview of a particular region. Integral urban resilience theory has to foster development along internal and external paths toward these highest levels of development and beyond, if it is to ensure the resilience of truly sustainable social-ecological habitats.

Conclusions

We know we are not doing enough. In response to the conference's question regarding the adequacy of current tools and rating systems, this paper argues that they are inadequate and that they are so because they focus on monitoring and awarding exterior paths and disregard interior paths of development. An integral urban resilience approach offers the opportunity to move away from restrictive 'green' checklists, toward a way of thinking that promotes a holistic reassessment of the goals of sustainability and outlines paths for reaching them. Integral resilience requires that practitioners ask the right values-based questions (interior paths), especially since built environment professionals have the ethical responsibility to design human habitats for future generations that enable the health and co-existence of all forms of life. To create these environments requires an understanding of the system and its empirical conditions (exterior paths). Tools (and checklists if unavoidable) can then be aligned to a combination of both these paths; an integral urban resilience approach embraces the qualities of life from all its perspectives. Developing this approach forms the next step that can enable an evolution of the sustainability movement, enabling the development of built environments driven by an ethical imperative to promote innovative systemic regeneration: to do more good, do it truthfully and beautifully.

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