**Children as Natural Change Agents: Child Friendly Cities as Resilient Cities**

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## Introduction

Discourse about Resilient Cities includes processes of societal change and adaptation (Pearson & Pearson 2014) as well as knowledge transfer and exchange between organizations of civil society and citizens (Wamsler 2014). This discourse replaces the dominant view of cities as "engines of growth" (Glaeser et al. 1992) with one that sees cities as "agents of change" (Van Vliet-- 2002). Evaluations of Child Friendly Cities document that even at young ages, children can act as "agents of change" (Van Vliet-- 2002) and meaningfully participate in civic processes (Chawla & Van Vliet--in press; Derr & Kovács in press). Yet references to children are virtually non-existent in the literature about Resilient Cities. Pearson and Pearson (2014, p. 247) describe Resilient Cities as those where "everyone has a role, an idea, an insight and the ability to participate in delivering cities where our children will *want to live*, rather than those where they will *have to work*," yet within their framework, there are no clear mechanisms for including children in the planning process. Integration of children into processes where people help shape their cities and the structures that govern them is thus a logical and important progression. Children and adolescents are important stakeholders in our urban future, entitled to have their voices heard on all matters that affect them (United Nations 1989). They are also a tremendous resource for positive change. This chapter considers how principles of the UN Convention on the Rights of the Child that underlie Child Friendly Cities can contribute to thinking about resilience,

and simultaneously, how Child Friendly Cities can learn from resilience planning in its consideration of nature and green infrastructure within the city. It examines these relationships through the evolution of one Child Friendly City initiative, Growing Up Boulder (GUB), and its recent inclusion of children in resilience planning.

In 2015, Boulder became the first city within the Rockefeller Resilient Cities network to engage children and adolescents in its planning efforts. Boulder was well placed to integrate children into resilience planning because of six years of prior Child Friendly Cities work through its Growing Up Boulder program, which integrates children and youth into urban planning and design. As described in Chapter 15 by Mintzer and Flanders-Cushing, GUB brings together the rights focus of the United Nations Convention on the Rights of the Child, as represented by the Child Friendly Cities Initiative, with the participatory approaches of Growing Up in Cities (Chawla 2002). Over time, this partnership has helped expand the culture of participation to many departments within the city, from community planning and sustainability, to parks and recreation, transportation, arts and culture, Open Space and Mountain Parks, and, most recently, the city's resilience program via the Rockefeller Foundation. The structure of GUB, as a partnership between the city, school district, university, and many youth-serving organizations, has allowed participants to build relationships. Over time and many projects, people have come to know each other and build trust. This bonding and bridging social capital, which are essential components of GUB's success, are also essential for urban resilience.

In this way, initiatives that promote participatory planning through a Child Friendly Cities framework contribute to resiliency and have the potential to create the "capacity to respond to, create . . . and thrive in change." (Magis 2010, p. 404).

**Multiple Facets of Resilience**

When Holling (1973) introduced the idea of resilience in the 1970s, he changed people's thinking about ecosystems, from systems that are static and stable to those that are changing and flexible. Holling's thinking included three factors that are central to ecosystems: i) the potential for change; ii) connectedness and flexibility; and iii) adaptive capacity, or resilience. This idea of adaptive cycles and states has gained momentum within the ecological literature and more recently in the fields of planning and urban design. Recent publications consider resilience in the context of governance (Pearson & Pearson 2014), community well-being (Astbury 2013), and social sustainability (Magis 2010). Resilience thinking in social-ecological systems accepts that change is an inherent part of the system. Magis (2010) suggests that resilience not only contributes to survival, sustenance, and renewal, but also can be transformative. Circumstances arise that push an individual or community to a point where the old norms and adaptations are no longer sufficient and an entirely new system is needed. These transformations are considered healthy and provide opportunities for renewal. Critical factors for resilience include community agency and capacity; natural, financial and social capital; opportunities for self-organization; diversity and different forms of knowledge; opportunities to learn about and steward ecosystem functions; and landscape design that makes ecosystem processes visible and understandable (Astbury 2013; Berkes & Seixas 2005; Magis 2010).

In individuals, psychological resilience is evident when people become competent, confident and caring individuals despite major adversities such as poverty, war, natural disasters and family losses (Masten 2014). Like ecosystems, community systems that promote psychological resilience are constituted by interdependencies. Fifty years of research to understand protective factors that support resilience have yielded a "short list" that has remained largely consistent across different populations, cultures, and types of adversity (Luthar 2006; Masten 2014). Some protective factors are internal to a person: social competence; intelligence and problem-solving skills; self-control and disciplined planning to achieve goals; the motivation to succeed; a sense of self-efficacy; a belief that life has meaning. These internal strengths, however, develop from early childhood in relation to protective factors in the environment: effective parenting and caregiving; supportive relationships with other capable adults; close friendships and, later, adult life partners; effective schools; and effective neighborhoods that demonstrate collective efficacy. Resilience reflects an interactive process that occurs when children exhibit personal strengths by reaching out to find care and support, and people and places around them provide the resources that they need.

Resilience can follow a number of pathways, including *resistance* when people continue to function well during a crisis, *recovery* when they return to capable functioning after a period of decline, and *transformation* when they experience personal growth through positive adaptations to challenges. Similar pathways can be seen in community responses to disaster (Masten & Obradovic 2008). These individual and community levels are connected. The recovery of individuals and families is embedded in community contexts, and reliant on whether communities rally to provide their members with critical resources. Whether communities

respond effectively to adversity, however, depends on the strengths of the individuals and social groups that constitute them. Community resilience is defined as networked adaptive capacities that are facilitated by economic resources, information and communication, social capital, and community competence in the sense of collective know-how and effectiveness (Norris et al. 2008). Collective efficacy happens when groups function well because they are composed of people who bring individual strengths, and people feel encouraged to mobilize their strengths because they value the capacities of their group (Bandura 1997).

**Intersections between Child Friendly and Resilient Cities' Frameworks**

Although the Convention on the Rights of the Child does not mention resilience directly, the government obligations that it specifies to secure children's rights are intended to protect children from harm, ensure their healthy development and full participation in society, respect their dignity and capabilities, and provide resources such as high quality health care and education (United Nations 1989). Protective factors for resilience are implicit in these conditions.

UNICEF conceived of Child Friendly Cities as a way to advance children's rights in city decision-making and governance. These rights-based principles provide a framework for Resilient Cities to acknowledge the importance of children's wellness, the full development of children's talents and capabilities, and children's inclusion in civic processes: topics on which resilience planning has been largely silent. Because ideas about Resilient Cities emerged from the study of ecosystems, they address the general omission of the natural environment in the

Convention on the Rights of the Child. Bringing children's rights and urban resilience together can enlarge the conceptualization of wellness and agents of change in Resilient Cities, and highlight the importance of well-functioning ecosystems for children's realization of their rights in Child Friendly Cities. Concerns for multilevel, multisectoral governance and social equity, which thinking about resilience and child friendliness already share, provide opportunities for this expanded vision. (See Figure 1.)

[FIGURE 1]

It is noteworthy that the natural world is only mentioned once in the Convention on the Rights of the Child, when Article 29 includes "the development of respect for the natural world" as one of the goals of education. Neither the Convention nor current guidelines for *Building Child Friendly Cities* (UNICEF 2004) articulate the right of children to informally play in nature (Derr & Rigolon in press). This is a serious omission, as research shows that childhood play in nature is the most frequent experience associated with lifelong respect and care for nature (Chawla & Derr 2012). Recent initiatives in GUB demonstrate that when children are included in urban planning and design, they spontaneously weave nature into their work (Figure 2). Children's own definitions of Child Friendly Cities integrate all ages into city life, through welcoming public spaces and public processes that take their ideas seriously, and extend consideration of the rights of others to the rights of nature to exist within a city (Derr & Kovács in press). Nature also emerges as an important element when children discuss Resilient Cities.

[FIGURE 2]

The values of nature that children express extend beyond the concept of ecosystem goods and services that is featured in the Resilient Cities literature. They are consistent with recent evidence that has been amassing about benefits of everyday access to nature for the health and well-being of all ages (Chawla in press; Hartig et al.2014). This research shows that people function better physically, cognitively, and socially when they have trees, other vegetation and biodiversity around their homes, school and workplaces and in nearby parks. For children in particular, it indicates the importance of greening playgrounds, schoolyards, and child care centers. For both child Friendly Cities and Resilient Cities, this research deepens the link between wellness and ecological systems.

**Participatory Processes Produce Agents of Change and Foster Social Capital**

Growing Up Boulder's six years of engagement laid the groundwork for children's inclusion in resilience planning. In our review of GUB projects, we find several central tenets of Child Friendly Cities that support resilience within cities. These include participation as a process that supports children as agents of change; promotion of social equity; integrated, multilevel, multisectoral approaches to governance; attention to wellness; and a strong value that children place on access to nature (Figure 1). Brief descriptions of selected GUB projects show how these principles evolved.

Early on, adolescents involved with Growing Up Boulder worked in action groups to support public art, teen-friendly businesses, and safe and affordable nightlife (Derr et al. 2013). Teenage

mothers were concerned about Boulder's housing policy, which prohibited anyone under 18 from applying for public housing. Some teen mothers were concerned that they would become homeless (Derr et al. 2013). Young people worked with GUB staff and discussed their concerns with adults, including business leaders and city councilors. In turn, adults identified existing services and possible policy changes (Derr et al. 2013). While no action group was specifically focused on resilience, when youth identified aspects of the city they liked and did not like, they helped to identify core components of child friendliness, such as access to basic services, as well as urban resilience, through their desire for supportive services and bridging capital. Through this process they developed their own capacity to be agents of change within their cities.

GUB's first park planning project – the "Burke Park" project – emerged when shifts in land use led to an opportunity to collaborate in a participatory design process for a city park and the adjacent primary schoolyard. Historically, a ranch stock pond became a lake amenity for a city park in a growing neighborhood. Lake levels were maintained by pumping treated municipal water into the lake. When the city proposed halting the unsustainable practice of pumping water, long-time residents, especially those living at a neighborhood retirement center, staged a 100-person protest. Meanwhile, the school had expanded its buildings and needed to construct a new playground. The city saw this as an opportunity to bring together the school, the community, and the Growing Up Boulder initiative to rethink the park and playground through an intergenerational planning process. Many partners identified the *process* as the most significant aspect of the Burke Park project. It facilitated community dialogue through a four-week elective class at the school, several community meetings, and a university design-build course (Rigolon, Derr & Chawla in press).

This development of social capital within the community became significant during a major flood in 2013. In what has been called a "1000 year rain event" (Brennan & Aquilar 2013), the retirement community was inundated with water. Many from the neighborhood came out to help. The outreach coordinator of the retirement center directly attributed this to the planning process for Burke Park (Rigolon, Derr & Chawla in press). This is an example of how participatory planning can create opportunities for groups to understand and care for each other, with ramifications that can go far beyond project timelines and outcomes and extend into ideas of resiliency. In the case of more vulnerable populations, such as children or senior citizens, bridging capital seems particularly important in resilience to natural disasters. Intergenerational participatory processes such as this one create both social capital and connection to community, via the park and its resources that facilitate resilience.

**Ecological Systems Considered and Integrated**

GUB's "Great Neighborhoods" project involved children and adolescents in exploring options for dense, affordable, child friendly housing in anticipation of the city's Comprehensive Housing Strategy. The housing area chosen for study was heavily impacted by the 2013 flood, with some child participants being evacuated during the time of the project. While flood response was not the primary focus of the project, it played a role in shaping students' interest in ways to make neighborhoods and housing more resilient. Local experts presented mechanisms for flood mitigation during the project, and students designed hills and berms for flood protection and

play. This project particularly facilitated the nurturing of different forms of knowledge and consideration of ecosystem services, with nature integrated at multiple scales.

In both the Burke Park and Great Neighborhoods projects, students expressed a desire to experience, learn about, and care for nature (Figure ~~2~~3). This was reflected in Horizons students' desire to restore the wetland, remove invasive fish species, and increase plant diversity (Rigolon, Derr & Chawla in press). It was similarly reflected in the desire of students in the Great Neighborhoods project to create hills and berms that could be used for flood mitigation as well as for play (Figure ~~3~~4). These desires are natural extensions in young people's thinking, from imagining possibilities for access to nature to intentions to actively care for it. This idea of stewardship is a fundamental concept of resiliency. In this sense, GUB's Child Friendly Cities work helps foster both young people's *desire* to become active stewards and *capacity* to steward, which the Rockefeller Foundation includes in its basic definition of resiliency. In this realm, Child Friendly Cities could learn from Resilient Cities by increasing stewardship opportunities, thereby teaching children project-specific skills. Resilience planning could also learn from children: green infrastructure can play a role not only in supporting ecosystem services, but also in providing community opportunities for access to nature for play and restoration.

[FIGURE ~~2~~3]

[FIGURE ~~3~~4]

**Promotion of Social Equity**

In 2013, Boulder became a Resilient City under the Rockefeller Foundation. Selected cities partner with the Rockefeller Foundation and receive financial support to plan for resilience. The Rockefeller Foundation's resilience framework considers health and well-being, economy and society, leadership and strategy, as well as infrastructure and environment (Rockefeller Foundation 2014). While Boulder's implementation of the framework is broad, the initial emphases were in response to the fire and flood that significantly impacted the city in 2010 and 2013, respectively. On its website, the Rockefeller Foundation considers Boulder and San Francisco as "cities [which] understand that investing in residents' capacity to steward their community's resilience is an essential step in building urban resilience." However, website examples focus on disaster response and rebuilding and not on the transformative processes described initially by Hollings (1973) or in recent definitions of community resilience (Magis 2010; Norris et al. 2008). When GUB began to work with the city's Chief Resilience Officer in the spring of 2015, broader conceptions of resilience began to emerge.

At this time, the city was gathering community perceptions of resilience. GUB decided to explore children's and adolescents' perceptions of resilience in an open-ended context, by focusing on Boulder's most underrepresented population. The goal was that these perceptions would help the city develop an understanding of local issues that impact resilience during their Preliminary Resilience Assessment phase, which was designed to identify priority areas for resilience planning. GUB partnered with the city's Youth Services Initiative (YSI), an after-

school program that serves children and adolescents who live in Boulder's public housing sites. Most of the children who participate in the program are Latino, primarily of Mexican heritage. To qualify for public housing, families must earn an income close to federal poverty levels.

Using a variety of art-based methods over several weeks (Figure ~~4~~5), children and adolescents developed their ideas about resilience and shared them through informal presentations to Boulder's Chief Resilience Officer, Rockefeller Foundation staff, and the city's parks and recreation staff. Both age groups expressed feeling most resilient among family and friends, as well as in nature. Adolescents identified that the beauty of nature, interactions with animals and the seasons, and physical activity in nature, such as hiking or riding horses, contributed to feelings of resilience (Figure ~~5~~6). While the literature addressing the role of nature in fostering resilience is relatively new, children and adolescents have often expressed a desire for nature in Child Friendly Cities research (Chawla 2002) and other studies (Chawla 2014). It is in this realm that Child Friendly Cities could learn from Resilient Cities in considering a diversity of ways to integrate and make visible natural processes within the city (Astbury 2013). In this realm, social equity intersects with environmental justice: in many cities, children from families with lower incomes have less access to nature (Rigolon & Flohr 2014), yet in GUB's processes, they repeatedly express their desire for access to nature in their city.

[FIGURE ~~4~~5]

[FIGURE ~~5~~6]

In reflecting on resilience planning as a specific component of Child Friendly Cities research, it appears that resilience as a construct provides a broader venue for identifying issues within a community. When GUB approached resilience using the wide-ranging definition from the Rockefeller Foundation, young people expressed concerns over economic issues (such as rising prices for housing and rent) and chronic negative influences of global and systemic issues (such as poverty, racism, violence, and climate change). These issues do not affect all parts of cities equally. Therefore, it is important to ask "whose city" and "whose resilience"? As Vale (2014) observed, uneven resilience threatens the ability of cities as a whole to function economically, socially and politically, and resilience can be a useful concept and practice to the extent that it helps improve the life prospects of disadvantaged groups. A special issue of *Urban Studies* examines the role of governance in connecting these issues of social justice and progressive change to ecological realities (Beilin & Wilkinson 2015). The possibility of intentional resilience (Porter & Davoudi 2012, p. 305) creates opportunities for creating a moral compass to guide resilience enhancing actions.

**Integrated, multilevel, multisectoral approaches to governance**

Following its Preliminary Resilience Assessment, Boulder identified priority areas for resilience planning. One of these is to improve governance so that resilience is integrated throughout planning processes rather than seen as a separate endeavor (Guibert 2015). In particular, city leadership has underscored that residents within Boulder do not feel much ownership over decision-making. Exactly how resilience planning will unfold in the city remains to be seen, but

city leaders are clear that it will not happen through city planning initiatives alone. It will rely on a citizenry that engages in issues and helps lead efforts.

When UN-Habitat compiled a database of best practices worldwide in alleviating poverty and promoting equity in diverse sectors including governance, environmental quality, housing, and infrastructure, among others (e.g., UN-Habitat n.d.), its evaluation of partnership practices showed that the most effective approaches integrate thematically interrelated sectors, coordinate different levels of government, and involve complementary roles for stakeholders in the public sector, the private sector and civil society (Van Vliet--2009). As the city's resilience planning moves forward, GUB can contribute to these processes through its history of support networks that build competence and capacity.

The experimental approach to GUB's work has resulted in much inter-generational learning and the formation of social capital. Resilience planning could learn from GUB's approach to Child Friendly Cities which develops participants' capacity to participate, deepens participants' knowledge through collaborative research and dialogue, and integrates participant ideas into tangible outcomes across city departments. As GUB's work has grown and partnerships with additional city departments expanded, the value of a multisectoral approach is increasingly realized. Children naturally bridge sectors when they conceptualize a city. GUB can act as a bridge between departments, by integrating children's ideas from a single project into sectors from transportation to parks or housing.

## Wellness and Protective Factors

As described earlier, protective factors can be internal as well as external to an individual. When teachers identified benefits that their students derive from participation in GUB's participatory processes, their observations included many protective factors. As one teacher stated:

> Today's students thrive when they are engaged in meaningful school work that provides rigor and connection with the community in which they live. Growing Up Boulder provides that critical bridge between the City of Boulder and the voices of her youth. . . . Students come to know that their voices matter, they realize that civic engagement is an important lifelong action, and their emotional intelligence matures while working within diverse cooperative groups (Hill 2015).

Children develop such protective factors as social competence, problem-solving skills, a sense of self-efficacy, and a belief that life has meaning. By interacting with adults in decision-making capacities, they also come to understand resilience as an interactive process in which people care and support each other while also striving to make their shared communities better. These protective factors contribute to individual resilience while the participatory processes also contribute to community resilience.

## The Way Forward

At the time of this writing, initial steps have been taken to connect GUB and the Boulder Department of Parks and Recreation to a statewide initiative for green space enhancement and ecological restoration, with broad implications for social and ecological resilience. The Department of Parks and Recreation hosted a series of events to promote nature play by creating spaces designated for children's free play in natural areas around the city. They held a public charrette to engage city residents of all ages, beginning with the ideas for child friendly green spaces and nature-based activities that GUB children and teens have already expressed. GUB will further advance these efforts by working with the city to map existing natural assets, overlay these with public housing and park amenities, and identify opportunities for intergenerational planning and community-based design and construction in city parks. To connect this initiative to the state vision of "rewilding" ecosystems, the design and creation of nature play areas will need to include planning to enhance habitats for biodiversity, with the goal of connecting neighborhood habitats to regional ecosystems. How these initiatives can contribute to social and ecological resilience will need to be explored, but by bridging multiple city agencies, the school district, and community-based organizations that work with children and adolescents, GUB has built a foundation for these next steps.

GUB has also begun a collaborative research process with partners at the National Autonomous University of Mexico to explore children's perceptions of resilience at varying scales within the cities of Boulder and Mexico City. Mexico City is part of the Rockefeller Foundation's 100 Resilient Cities network, yet it was the pairing of two universities involved in Child Friendly Cities research that provided a framework to expand children's participation in resilience

planning to Mexico's process. In this case, the social capital common both to resilience and participatory processes provided the catalyst for children's inclusion in another city's resilience planning.

~~Children have much to offer their cities. When Child Friendly Cities contribute to larger urban processes, they encourage the transformative processes that cities seek to create through resilience planning. In this way, the realization of Child Friendly Cities may pave the way for Resilient Cities as well.~~

## Conclusion

When children's rights and urban resilience are considered together, they expand our conceptualization of wellness, promote social justice and well-functioning ecosystems, support children as agents of change, and highlight the importance of multilevel, multisectoral structures of governance. Integration of child friendly principles into larger urban processes can thus encourage the transformative processes that cities seek to create through resilience planning.

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