

## **Global Forces + Local Factors: advancing policy formation as a function of feedbacks between behavioral and environmental indeterminate systems**

Darla V. Lindberg, Danielle Rivera, David Mosemann, Adam Longenbach, Zachary Jones, Jing Li

### ***Abstract***

An important urban theorist, Henri Lefebvre argued space is a social product, a complex social construction. Therefore, every city and every place produces its own space and its own spatial practice. Assuming that perspective, it would seem the production of an adaptable ecology from a postmodern local condition is possible. Yet most traditional policy approaches to urban planning, resource management, and infrastructure development lag what could offer radical alternatives to modernist ideologies essential to mobilizing a larger view of human interests and environmental rights for the twenty-first century. In this paper, the authors explore an institutional and behavioral relationship to emergent community dynamics at the U.S.-Mexico border more characteristic of indeterminate systems. The goal of the work is to provide a framework for understanding vulnerability and adaptability as a function of feedbacks between behavioral and environmental forces and factors making an alternative mechanism of theorizing space for sustainable development possible.

### ***Background***

Works such as those of Henri Lefebvre have deeply influenced the development of urban theory and urban formation around the world. Based on a generalization of the advancement of industry in the western world throughout the twentieth century, his writings (i.e., *The Survival of Capitalism* and *The Production of Space*) were concerned with the deep transformation of the city into a complete urbanization of society. Widely recognized as a Marxist thinker, themes as *'the right to the city'* and *'the urban revolution'* in Lefebvre writings were especially influential to human geography, as witnessed by both his Neo-Marxist supporters and his Postmodern critics. Influential authors such as David Harvey (*Social Justice and the City*, 1973), Dolores Hayden (*The Power of Place: Urban Landscapes as Public History*, 1995), and Edward Soja (*Seeking Spatial Justice*, 2010) anticipated the city would reach a point where it could no longer support the democratized space and worried openly about the privatization of the public.

Moreover, urban planning, land use management, and both “hard” (roads, utilities, communication) and “soft” (regulating, governing, financing, specializing systems), infrastructure development remains steeply grounded in this bias toward twentieth century urbanization. Characteristic of this, a landmark bill, The National Infrastructure Bank Act of 2007<sup>1</sup> would provide for a national fund to help pay for large infrastructure projects in the United States. Both securing the design of “hard” regularized systems to support urban development and institutionalizing “soft” processes to finance and maintain it, the mechanisms for forming and reforming the world’s cities were never intended to be responsive to current issues of urbanization including relief, rehabilitation or peri-urban development.

So what happens when fluctuating urban economics, shifting demographics, corruption and abuse of power, or natural disasters and stresses either overload the system or weaken a tax base threatening the stability of environments characteristic of twentieth century urbanization? Cities don’t have a strategy to shrink and grow gracefully, even less so for marginalized places and people. Consequently, urban decay, a lack of participatory design, and slumming behavior challenge traditional urban planning and formation like nothing imagined in the legacy initiated by Lefebvre long ago.

In sum, if the late twentieth century zeitgeist – *a spirit of the age that pervades culture, academic thought and politics* – suggests sustainable development involving efforts to cross physical, social, cultural, economic, and political boundaries is essential, then a new kind of social analysis that looks beyond the confines of modern social theory to offer a more emancipatory alternative is required. In this paper, the authors initiate such an analysis in the context of three phases in the changing dynamics of urbanization today – relief, rehabilitation, and development – that are challenging the traditional paradigm of determinate urban growth and design. As a critical first step toward advancing a robust global community we propose a unique communication infrastructure that asserts no one community or approach can do this alone. Using existing and advancing communications technologies we propose a “virtual town center” for essential communication, sharing, data gathering, and feedbacks to orchestrate and coordinate local need with global know how.

### ***Urbanization – infrastructure and population growth***

By 2008, half of the world’s population lived in urban areas. This change in urbanization happens in two ways. The first involves the physical growth of a city from the inside characterized by the determined development of infrastructure, services, and systems contributing to employment opportunities. In fact, the city is often boasted to

be the most sustainable model because it efficiently uses and provides resources contributing to multiple levels of society building. The second way urbanization happens involves population growth coming from outside the urban area with a resulting change in density of the city. When growth is unplanned or unanticipated, as when a city must respond to growth due to people migrating from military conflict, failed states, or environmental disasters, the capacity of the infrastructure is challenged in many ways. Not surprisingly, urbanization trends indicate higher unplanned population growth rates are the main cause of urbanization in developing countries in Africa and Asia, while developed countries like the United States of America and the United Kingdom have a far higher growth in planned development levels. Confronted with either type of urbanization magnitude (planned development or unplanned population growth) means new local factors and larger global forces are colliding. Feedback systems that can support research, the gathering of relevant data, including other methods of monitoring the welfare of inhabitants in these emergent dynamics are essential.

One core problem is housing. Although people migrate to urban areas for many reasons, most people move looking for jobs. Available housing options for many of the poor or low-income populations migrating from rural or conflict conditions are often sub-standard. Often illegal and unplanned settlements are lacking in the basic public infrastructure necessary for healthy water, garbage collection, and sanitation. Without the connection to infrastructure (an address, a utility bill, a tax base) to provide both access to services and a financial base to support the services, inhabitants tend to get lost under the radar and local governments generally ignore inhabitants living in these settings.<sup>2</sup> So necessary feedback mechanisms that might otherwise advocate for improving conditions or removing conditions are not developed. With different types of access to land or property and different social/behavioral/ economic situations, different types of slums exist. Squatter slum residents do not own the land. Unlike a renter, there is no landlord so they also have to maintain their own structures. But because they don't own the land they have no access to an equity return on the structures they may have built or maintained. In other situations the resident may own the land but because of economic disparities the housing and the infrastructure are seriously deteriorated. Residents in several unincorporated *colonias* along the U.S.-Mexico border make payments for their land or housing but because they hold no title they gain no equity and the landowner makes no provision to improve the infrastructure. Therefore, there is no one-size-fits-all approach to addressing these communities. Upgrading and resettlement or decentralization could be applied in different cases. Where slum communities have secure land tenure, upgrading could apply. Decentralization or resettlement must consider the displacement of residents from their essential livelihood and reliance on public transportation.

Given it is estimated that a little over one billion people live in slum settings worldwide and that number is expected to double by the year 2030<sup>3</sup>, it would seem urgent to consider alternatives to twentieth century mechanisms of "hard" and "soft" urban infrastructure and services. At stake is the looming inability of necessary urban infrastructure and services to keep pace with the rapid and unplanned urban population growth. This is a challenge for every country, every discipline, every organization, and every expertise. Learning how to learn about and help one another is a critical first step. The way we engage in collaboration with other expertise and with the efforts on the ground remain vital to empowering the community and coordinating efforts to provide significant and appropriate design solutions for a sustainable development.

In this next section we present four impediments to being effective in the quest to help as an outsider working to better the conditions of the urban poor. We propose alternatives that begin to build a mechanism for partnering with local individuals, NGO's, relief agencies, or local organizations equipped to interact at various scales of involvement. We also consider three stages of intervention that typically follow a natural disaster (relief, rehabilitation, and development), but when correlated with three unique sites around the world show some particular similarities when addressing the long-term goal of providing the infrastructure for healthy growth and resilient self-sustaining development.

### ***Systemic impediments to resilient urbanization - outsiders***

The first of four impediments to being effective in the quest to help as an outsider with expertise is being perceived as an Imperialist, or someone from the outside with either a self-righteous agenda or with pity for the local inhabitants. The Guidestar database<sup>4</sup> contains over 1.8 million non-profit organizations. Distrust of outsiders (as Imperialists) can develop from negative prior experiences with any one organization. Recent anecdotal information from friends dealing first hand with the aftermath of the tsunami in Japan suggest the best way to be an outsider interested in helping is to first ask, "how can we help?" By acknowledging the real local knowledge by the people on the ground this approach to offering assistance also invites a way to be a ready and willing extension to engage in any way necessary. Responses from the inside include, "be our ears and eyes," "you have access to the news, you are able to guide us with good information." There is a way to intervene to augment what is already in place and

there is a way to be in a position to help. Therefore, working with a local organization or NGO to offer expertise and assistance is a critical way to be a compassionate and knowledgeable outsider.

The second impediment to being an outsider is the lack of knowledge about incentives that make sense to a local culture or place. Being on the same “wavelength” is an important part of helping to design interventions that will resonate with the local culture. What one culture holds sacred is not the same in another culture. Care needs to be taken to align desired outcomes with appropriate strategies for getting there. In dealing with local laws and bureaucracy it may seem illogical to an outsider unaccustomed with local practices and norms to proceed in a particular way. But it is essential to involve local expertise and influence. Working with a local friend or contact is important to nurturing a “hands off” approach to helping.

A third impediment to being an outsider is the need for accountability and reliability for building trust on either side of the recovery effort. This is necessary in order to build alliances to expand the necessary just-in-time support and to build an investment in future endeavors. Working with others is essential to assure checks and balances, justice and fairness, to act as charity navigators through the process, and to serve as watchdogs to assure results. That allows expertise to flow in a way that can effectively meet the needs on the ground.

The fourth impediment to being an outsider is working to overcome the feeling of alienation - or wanting to help but not having access to the mechanism that is going to be the most effective use of each expertise seeking to help. Coordinated efforts for volunteers, supplies, support, expertise and research need critical feedback infrastructure.

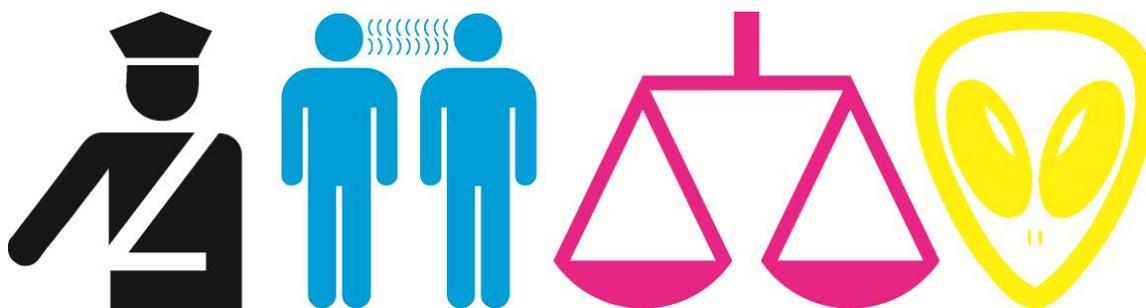


Fig. 1. Four impediments to being effective in the quest to help as an outsider: being perceived as an imperialist; desiring to be on the same wavelength with the local culture to know what incentives make sense; needing reliable and accountable connections; and feeling alienated from knowing how best to contribute to any given situation.

### ***The virtual “town center”***

One way to address these impediments is by creating an infrastructure (hard and soft) that can build partnerships with others in time of need allowing the outsider to serve as a resource for various endeavors in the effort of rebuilding or building a global community. Our investigation explored developing an innovative use of existing and developing cell-phone and communication technologies as a way to build a virtual “town center” capable of serving both as a conduit to expertise around the world but also as a resource for users accessing valuable just-in-time information and services while on the ground. The system developed utilizes 12 icons that correlate to the 12 keys (0-9, \*, and #) found on a traditional phone. A cell phone installed with our SIM card then displays this arrangement. Pressing and holding any of the keys acts as a “speed dial” and promptly brings up the respective category. The system works at multiple scales. At the first and most basic scale, “feature” cell phone users can use the system primarily to communicate and find and report information through SMS (text messaging). In a post disaster situation this can be as simple as finding out where vital resources are located (food and water distribution or health clinics) to reporting emergencies or conflicts. As relief camps begin to be established, relief groups can employ Internally Displaced Persons (IDPs) – for minimal compensation to monitor water and food stocks located in each camp cluster and report levels to aid works using the cell phone system. This empowers residents to begin participating in rehabilitation efforts and provides aid groups with up-to-the minute reporting on vital supply levels. These reports can be accessed by developed applications (apps) for smart phones carried by aid workers that could graphically represent supply levels by camp location and greatly assist in coordinating distributions. At another level smart phone apps can link aid groups to development guides and tools and to outside expert groups assisting in development plans. These are just a few examples of the capabilities of these systems. Charging the cell phone is accomplished by a “closed loop” support unit comprised of solar powered energy systems, latrines, showers, and public Internet access points. As a community sets up structures for relief, one closed loop unit would be installed in

a cluster capable of supplying 8 families. These units will begin to coordinate development and growth patterns and supply the infrastructure needs of each neighborhood or community as it moves through the stages of recovery from relief to rehabilitation on to resilient and self-sufficient development.



Fig. 2. The virtual “town center” hardware: fitting out a recycled feature cell-phone to include a new keypad showing universal icons and numbers designating essential services such as water, information, food, medical assistance, Internet access, etc. The cell-phone in the hands of individuals send information and essential feedback from the inside to coordinated expertise seeking to help.

### ***Systemic impediments to resilient urbanization – phases of recovery***

Next we consider the three phases of recovery described above - relief, rehabilitation and development - and examine them against the backdrop of three very different and current conditions to show how the virtual “town center” would facilitate feedback and coordination of expertise. According to Steve Corbett and Brian Fikkert, three pivotal moments succeed natural disasters – relief, rehabilitation and development.<sup>5</sup> **Relief** is a first response at the moment of crisis and involves efforts and assistance for sheer survival (emergency medical attention, shelter, water, food, information). **Rehabilitation** is a second response that initiates recovery or “digging-out.” Organizations and agencies position themselves to assist in stabilizing infrastructure, organizing volunteers for rebuilding, coordinating services and readying the process of post-disaster recovery. **Development** moves a community to self-sufficiency and resilient community networks. Development in war-torn Germany and Japan took several decades. The condition of a community’s social/ political/ economic infrastructure before a disaster often determines the response to recovery post disaster. If a country like Haiti lacks the infrastructure for a stable society (institutional, Rule of Law) and lacks the political will for a resilient standard of living pre-disaster, it will have a difficult time coordinating an effort to rebuild itself when already weakened systems are stressed even more.

In our investigation, we correlated three unique sites around the world, Corail-Cesselesse, Haiti; Lima, Peru; and El Paso, Texas, all at different stages of relief, rehabilitation and development. While the cultures, the conditions, and the circumstances for need are quite different at each place, the similarities in the need for a particular type of intervention by an outsider with expertise and resources reinforces our virtual “town center” approach to forming a global community capable of responding with resources and aid.

### ***Corail-Cesselesse, Haiti - Relief***

Our first site addresses the state of **relief** at Corail-Cesselesse, Haiti. On January 12, 2010, a 7.0 magnitude earthquake struck 16 miles outside the capital city of Port-au-Prince. In the aftermath, over 300,000 persons were reported dead, 2.3 million homeless, and 1.5 million registered into IDP (Internally Displaced Persons) Camps. The combination of a large percentage of Haiti’s population living in the capital city of Port-au-Prince, high density and overcrowding, and a lack of building codes or ordinances, the lasting effects of the Earthquake were tremendous. Those overseeing the recovery process promised to take the opportunity to start fresh in Haiti. But a long rooted history of corruption, inequality, and a caste system preventing ordinary Haitians from obtaining property or capital has crippled efforts. After the earthquake, IDPs set up informal camps composed of makeshift shelters constructed with scavenged materials. Relief agencies, organized under the umbrella of the UN agency OCHA (Office for the Coordination of Humanitarian Affairs) utilizing a developed cluster system, have worked to register and supply the camps with the basic necessities. Meanwhile, slow progress in rebuilding efforts inhibiting camp residents from returning to their homes raised concern of camps residing in flood zone areas as the hurricane season approached. In an effort to remove IDPs from potentially life-threatening situations, a few “model” camps outside of the Port-au-Prince area were planned and established. One such camp, Corail-Cesselesse, provided a new home for some 5000

persons originally residing at the Petionville Golf Club Camp. What appeared to be a successful endeavor – with many infrastructure elements provided for by international NGOs such as drinking water stations, shower stations, latrines, a community tent for meetings and education – eventually gave way to continued poor planning efforts in the Haiti recovery efforts. The camp’s location was hours away from the city center by public transportation. Residents had no opportunities for work or commerce. The camp was vegetation-less and *ironically* evacuated during a Hurricane over concerns of hurricane-proof tents would not be able to withstand the high winds. Additionally, persons leaving the overcrowded camps of Port-au-prince began to settle the land around the camp, but without proper sanitation and water supply, so have created a hot-bed for a cholera outbreak and further unrest. Historic issues for Haiti include a lack of building codes for improving building standards, kleptocracy or an opaque government, and the decline of arable land to reintroduce an agricultural economy. The earthquake put Haiti in a relief situation. Barriers to rehabilitation post-earthquake include a displaced population, lack of political will, and a physical state of rubble that is labor intensive and dangerous without proper equipment to remove. To begin to assist in rehabilitation efforts it is important to plan now to characterize resilient development for Haiti. Experts accessible through the virtual “town center” can help with that planning.

### ***Chilca, Peru - Rehabilitation***

The second site consists of the informal settlements of Chilca, Peru, located in the peri-urban regions outside Lima Peru. These settlements are largely a result of increased migration of populations from the sierra and jungle regions of Peru in the 1960s and 70s to the metropolis of Lima due to economic crises and subsequent terrorism by groups such as the “Shining Path.” Plagued by years of corrupt local governments and subliminal discrimination of the indigenous peoples who migrated from the sierra, most residents in these settlements act in self-interest, leading to a social climate of mistrust and suspicion that cripples the potential for community action and development. Corrupt local governments profit from the community's inaction, accepting bribes by major industry's to wave zoning codes and allow them to move into the area disrupting the urban fabric and consuming and polluting limited natural resources. The results are settlements that fail to abide by building and zoning codes and lack public infrastructure for water and sanitation. Furthermore, because of the settlements' informal nature, residents cannot hold claim to their property as a source of equity forcing them to live beyond their meager means and practice methods that quickly exhaust available resources furthering the settlement's poverty. Historic issues for Chilca and Lima reside in long established beliefs and traditions set in place through a history of government corruption, and adherence to old ways. Because the informal settlements as a result of rural terrorism (“Shining Path”) have become accepted, Chilca is in a rehabilitation situation. Residents simply want to return to their former life. Barriers to resilient development are support of community infrastructure.

### ***Colonias, El Paso, Texas - Development***

The third site includes the unincorporated *colonias* situated outside of the city limits of El Paso, Texas. HUD defines *colonias* as rural neighborhoods within 150 miles of the U.S.-Mexico border. They are scattered along the border as makeshift settlements, commonly on private land. The residents may make payments to the landowner but they may never receive title to the land. Residents are typically very poor making it difficult for them to pay for roads, sanitary-water, and sewer systems. Because they are also not able to organize in a “civic-minded” way, they are not able to form together as a community and lobby or fight for certain services. They tolerate sub-standard housing, little or no street lighting, and live without public services such as clean water, garbage removal, transportation, or police protection. If a resident is unauthorized to be in the U.S., or unrecognized by the city due to migration and transience, there is no mechanism for the resident to participate in governance impacting their situation. Historic issues for the *colonias* involve a mobile/ migrant population, physical inaccessibility to infrastructure, and a lack of access to government mechanisms. Increasing economic disparity at the U.S.-Mexico border disadvantage the *colonias* residents from moving toward more resilient development. Advocacy to build community networks are needed to remedy lack of access to land ownership or other resources such as health insurance, education, and environmental infrastructure characteristic of resilient development.

What these three sites have in common is their lack of awareness that their situation may not be unique or that there is a way to improve their conditions. While local efforts to intervene seem encumbered by third party involvement (university researchers, government agencies, humanitarian groups), the feedback infrastructure that could begin to extract data in any coordinated effort to assist inhabitants is not in place. This is essential to begin to construct the necessary knowledge, services, or resource systems for any of the inhabitants to be self-sufficient on the inside. Our proposal is to develop the critical infrastructure to provide this link to the outside. Given nearly every resident carries at least a feature cell-phone, our proposal seeks to leverage this near-ubiquitous communication technology to shape coordinated networks with essential expertise with the outsider.

### ***Bringing outsiders and phases of recovery together - the virtual “town center”***

The goal of the virtual “town center” would be to make available all resource infrastructure to coordinate an array of organizations and agencies and information assisting in relief/ rehabilitation/ and development of the world’s urban settlements. The *Colonias* Monitoring Program (CMP)<sup>6</sup> is an example of how the virtual “town center” could connect residents and local experts at the U.S.-Mexico border with knowledgeable resources such as the Stuckeman School of Architecture and Landscape Architecture at Pennsylvania State University. By providing a publicly accessible, binational, GIS database the CMP connection enables civic leaders and citizens to inventory, analyze, and monitor growth, housing, and infrastructure in border communities to enable partnership with academics and policy makers. High-technology tools could provide NGOs and advocacy groups with real-time information and resources to assist in planning efforts and development along the border. The information is state-of-the-art, sustainable and comprehensive including international and sister-city agencies and organizations.

The “town center” could also guide local residents and organizations needing information coordinated by the U.S. Geological Survey (USGS) and the U.S. Department of Housing and Urban Development (HUD) in cooperation with the Mexican Instituto Nacional de Estadística Geografía Informática (INEGI). Joint programs to create Internet-enabled geographic information systems (GISes) could help cities along the U.S.-Mexico border manage issues related to urban growth and low-income housing developments. Experts around the world could access the “town center” to work on research and innovative solutions requiring complex coordination and cooperation with multiple institutional actors. Databases developed by the CMP could use integrated data from the National Map (USGS), the U.S. Census Bureau, and INEGI, to work with binational partners, including Federal, State, county, and town representatives, as well as interested youth and advocacy groups.

Sister-cities along the border use an expanded GIS database to include layers that can facilitate planning for urban growth and infrastructure needs for the *colonias*. Sister-cities chosen for this project include Nogales, Arizona and Nogales, Sonora/ Douglas, Arizona and Agua Prieta, Sonora/ El Paso, Texas and Ciudad Juarez, Chihuahua/ Eagle Pass, Texas and Piedras Negras, Coahuila. Because these sister-cities share in international manufacturing and commercial opportunities their *colonias* have spread rapidly. For the sister-city of El Paso/Ciudad Juarez, the Web-based GIS database was developed under local partnership with the binational Paso Del Norte Mapping for Public Access collaboration, administered by the city of El Paso and the Instituto Municipal de Investigación y Planeación.

Local data layers include such critical infrastructure as police, fire stations, hospitals, schools, and boundaries for enterprise communities, “empowerment zones,” and police, school, voter, and irrigation districts. Future plans include incorporation of local data from Dona Ana County, New Mexico, and geospatial-database access to the most current El Paso County *Colonias* Regional Water and Wastewater Plan. Rationale for developing the layers in the database includes providing Web-based planning tools for estimating development costs for the *colonias*. It also includes the integration of existing binational geospatial, statistical, and demographic data, and provides geographic-analysis tools that can enhance the decision-making processes of city and county planning departments. The purpose of the layers is also to provide the infrastructure for local governments and non-profit agencies and researchers to employ the system to facilitate access to grants and other knowledge building mechanisms to improve the living conditions in the *colonias*. Future plans for other sister-cities along the border using a tool like the database are to include zoning information and transportation-development plans.



Fig. 3. Waterlines and sewer lines in El Paso, Texas.

The virtual “town center” is scalable to the world and is also scalable in time. The infrastructure can universalize access to humanitarian basics at a time of relief and can be a resource for developing self-sufficient communities well into development. Similar to the universally recognized presence of the Red Cross, the “town center” could be a beacon to help alert and signify where good information can be attained linking locals in need with a ready and willing expertise on the other side of the world. The World Urban Campaign is a great example of a platform already in existence for the “town center” to tap into for public, private and civil society actors to discuss policies and share practical tools for sustainable urbanization around the world.<sup>7</sup> Tracking recent reports backed by the UN Population Fund (UNFPA)<sup>8</sup> this example shares a new vision for urban planning to transform the way cities across the developing world allow for a self-sustaining development:

In many of the world’s cities, governments seek to force poor communities into high-rise apartments so that the large informal settlements they occupy can be cleared and replaced with new developments of condominium and other buildings to draw foreign investment. “Most members of poor communities are used to living and working centrally and close to the streets,” said Arif Hasan, an architect and lead author of the new study. “When they are relocated to high-rise apartments, they are immediately beset by social and practical problems. They rarely want to move but don’t have a say in the matter.” His research shows that when left to their own devices, dwellings in poor urban communities tend to grow incrementally, according to their needs and their ability to pay. But without proper planning and support, this growth is not as efficient as it could be, potentially leading to congestion. Support through the virtual “town center” could assist advocacy groups and designers with the necessary tools and information to provide the proper planning and design. Studying four communities in Karachi, Pakistan, Mr. Hasan found that better managed incremental growth – not an ad hoc process – would lead to better social and physical environments.<sup>9</sup>

### **Conclusion**

As the world becomes increasingly urban, the health and welfare of the urban poor and the resultant global commons is at risk. Decades of progress in public health could be overturned, and the stage could be set for a new level of devastating pandemics and widespread disparities. Designing the infrastructure, now, to better assist in providing support and resources is needed to avert such disasters. The Red Cross, AmeriCare, and other globally significant emergency response institutions will remain essential. What is needed is another layer of engagement that can activate and coordinate support for a range of recovery needs. Limitations to the capacity for outsiders to connect significantly and appropriately with local residents and supporting agencies prevent them from serving as resources and willing knowledge centers in the various stages of recovery including relief, rehabilitation, and development. Similarly, communities in rehabilitation or development, *which can take decades*, are often given back page coverage as new disasters and urgencies occupy the world’s attention. In this paper, the authors examine the common ground of three communities in very different phases of relief, rehabilitation, and development from different parts of the world. They also addressed four systemic impediments to being an outsider with expertise and a desire to help. Using an innovative deployable and recyclable cell-phone technology, the authors propose a virtual “town center” to connect communities in relief/ rehabilitation/ and development with outsider expertise and support. The innovative *Colonias* Monitoring Program at the U.S.-Mexico border gives insight into how coordinated infrastructure such as the virtual “town center” can help bridge the gap between local emergent dynamics and global expertise and support. Vulnerability and adaptability set in this context becomes a matter of designing the requisite infrastructure to facilitate feedbacks (conversations, collaborations, data gathering) between human need and human know-how.

The larger understanding as a result of this work is to arrive at a new mechanism for theorizing space for sustainable development. No longer is the world cut off by geo-politically bounded states when issues of relief, or rehabilitation, or development are called into action. Communication technologies, tools for data gathering and sharing them instantly and dynamically, accompanied by universal languages/ symbols blur those boundaries and offer a more emancipated alternative to defining community and engagement. The social analysis that recognizes a very small world looks beyond the confines of twentieth century social theories hampering global action. Instead, we leverage unique expertise from every corner of the world to be ready and willing to help our neighbors in time of need and as resources making sustainable development a realistic objective for the twenty first century.

### ***Acknowledgements***

This work was funded by and exploratory/ development grant from the Department of Health and Human Services National Institutes of Health/ Fogarty International Center. Grant Number 1R21TW008378-01.

The authors acknowledge Marcel Salathe, Mary Poss, Timothy Reluga, Jill Findeis and Rachel Smith for useful discussion of the paper.

#### Notes:

1. National Infrastructure Act of 2007

[http://uspolitics.about.com/od/legislation/1/bl\\_s775.htm](http://uspolitics.about.com/od/legislation/1/bl_s775.htm) [last viewed 4.15.11]

2. Shack/ Slum Dwellers International (SDI)

<http://blog.sdinet.org/?cat=51> [last viewed 4.10.11]

3. UN-Habitat. Twenty-first session of the governing council

[http://www.unhabitat.org/downloads/docs/4631\\_46759\\_GC%2021%20Slum%20dwellers%20to%20double.pdf](http://www.unhabitat.org/downloads/docs/4631_46759_GC%2021%20Slum%20dwellers%20to%20double.pdf) [last viewed 4.15.11]

4. Guidestar database

<http://www2.guidestar.org/rxg/analyze-nonprofit-data/index.aspx> [last viewed 4.12.11]

5. Fikkert, Brian, and Steve Corbett. *When Helping Hurts: Alleviating Poverty without Hurting the Poor and Ourselves*. Chicago, IL: Moody, 2009. Print.

6. Colonias Monitoring Program. U.S. Department of the Interior, U. S. Geological Survey.

Fact Sheet 2004-3070. August 2004.

<http://egsc.usgs.gov/isb/pubs/factsheets/fs307004.html> [last viewed 4.10.11]

7. World Urban Campaign. UN-Habitat.

<http://www.unhabitat.org/categories.asp?catid=634> [last viewed 4.10.11]

8. United Nations Population Fund (UNFPA)

<http://www.unfpa.org/public/> [last viewed 4.15.11]

9. Arif Hasan. Press Release, UNFPA

<http://www.unfpa.org/public/news/pid/5037> [last viewed 4.15.11]