

## **The Entwinement of Housing, Neighborhoods and Wellbeing      September 29, 2014**

Distinguished Faculty and Staff, Policy Advisory Board Members and friends.

It is an honor to have been invited to give the Joint Center for Housing Studies of Harvard University the 2014 Dunlop Lecture, and to join the company of so many distinguished previous speakers.

Professor John T. Dunlop was born in Placerville, California and spent his earliest years living his family's pear ranch. When Dunlop was four, his parents, who were Presbyterian missionaries, moved his family to the Island of Cebu, the densest island of the Philippines. Dunlop only returned to the United States after he graduated from high school. Dunlop graduated from the University of California Berkeley with highest honors, and a PhD in Economics.

In 1937, Dunlop received a Fellowship to study economics at Cambridge University with John Maynard Keynes. John and his wife, Dorothy, shared a small house with John Kenneth Galbraith and his wife Kitty. For the next 60 years, Dunlop and Galbraith were close friends and colleagues, with offices just two doors apart at Harvard.

Dunlop advised every President from Franklin Roosevelt to Bill Clinton, balancing an extraordinary career as a cabinet officer, writer, thinker, and teacher. But he was perhaps best known as a mediator -- settling significant national labor disputes, such as the eight year battle between the Campbell Soup Company and the Farm Labor Organizing Committee regarding the conditions of migrant workers who supplied Campbell with tomatoes. At Harvard, in the highly volatile time of 1969-71, he mediated a peace between rancorous students, faculty and the administration. In 1973, Dunlop went back to Washington and replaced Donald Rumsfeld as the Director of the Cost of Living Council. I wish that more recently Dunlop could have also replaced Rumsfeld as Defense Secretary.

And along the way, in 1971 Dunlop formed the Joint Center's Policy Advisory Board, a distinguished group of advisors whose role is to help the Joint Center identify emerging issues and trends, and who have been meeting here today.

The Joint Center's work has been essential to shaping our nation's housing policy. Amongst its extensive work, its annual State of the Nation's Housing report is a must read for those interested in housing issues.

## America's Housing Challenges

Sadly, its 2014 report notes that more than a third of American households and more than 50% of American renters pay more than a third of their income for housing costs (1) And in high cost communities, even middle income families cannot find affordable housing. In Los Angeles and Orange Counties, once a mecca of middle class homeownership, fewer than 25% of the homes on the market today are affordable to middle class buyers. (2)

Housing is the platform from which family success grows. It is typically a family's largest cost. Over 80% of poor families pay more than a third of their income on housing and 69% pay more than half. (1) Add the cost of food, transportation, utilities, phone and internet, clothing, education and health care, and it's hard to see how they can possibly make it all work. That's why so many poor families double and triple up, living in over crowded conditions, or are always on the move, living wherever they can. Working lower middle class families, trying to balance two part time jobs with unreliable hours also often live in overcrowded housing, because they need the free childcare that is provided by the presence of other adults while they are out working.

Housing comes with a second cost, transportation. Poverty is increasingly a suburban phenomenon, with over 50% of America's families now living in the suburbs, and the global poor often living in informal slums sprawling out from the edge of cities. Suburban poor working American families often spend 20-30% of their income on auto-based transportation. To add to this burden, they often live in poorly insulated, energy inefficient homes with huge utility costs.

And those lower income families that are able to find a stable place to live, live from paycheck to paycheck. One missed paycheck or family emergency sets off a cascade of missed payments and difficult choices. If a parent misses a day to take a sick child to a clinic, they may be fired, demoted, or have their work hours per week reduced. That can put them over the financial edge, and make them unable to pay their rent.

This vulnerability effects a much larger percentage of Americans then just its poorest. A 2011 study by the National Council for Credit Counseling found that 64% of Americans have less then \$1,000 in savings to deal with an emergency expense, and 30% had no savings whatsoever, other than retirement funds. (3) Savings are a critical element of a family's economic resilience. This sense of "living on the edge" undermines their overall sense of wellbeing. The stress of just getting by is enormous.

Furthermore, affordable unsubsidized housing is often older, in very poor condition, and is being abandoned or demolished. According to the Joint Center's 2011 report, more than 29% of the housing stock that was rented to low income families in 1999 was abandon or torn down by 2009 (4), reducing the supply of affordable housing.

But this is not just an American problem. This gap between the housing needs of the nation and the ability of the Federal Government to fund affordable housing exists in almost every

country today. The World Bank estimates that globally there were 1.6 billion people in 2005 who lived in substandard housing, and 100 million homeless. (5)

### **Low Income Communities and Endemic and Episodic Stress:**

For low and moderate-income families, the challenge of finding and keeping safe, secure, well-located places to live is very stressful. Low-income communities are also rife with other stressors, such as crime and neighborhood violence, low-wage, low opportunity work, lack of access to health care, poor food and poor schools. These endemic stresses never go away, they are always there. The residents of these neighborhoods have fewer financial reserves, but also lower cognitive reserves. A recent study by Dr Anadi Mandi and colleagues, a behavior economic at the University of Warwick indicates that the logistical demands of poverty itself impedes mental cognition by up to 13 IQ points. (6)

And although these communities are often characterized by their relative isolation, they are subject to the same global trends that are affecting every community on earth -- climate change, globalization, growing income inequality, financial volatility, epidemics, the migrations of climate refugees and others. These macro trends are characterized by their volatility, adding episodic stresses to the endemic ones these neighborhoods face.

When the episodic stresses such as Hurricane Katrina, Superstorm Sandy, the fires in California, the floods in Colorado and the tornados in Missouri, or waves of foreclosure strike a community that is already saturated with endemic stresses, the community's residents, and the social service systems that support them deeply lack the resilience to respond.

### **A Secure Base**

Children's Health Watch notes that "A safe, stable home is important for children's physical and mental health today and their growth and learning abilities tomorrow." (7) I suspect that everyone who follows the work of the Joint Center has long believed this. But over the last 20 years, advances in cognitive science have deepened our understanding of the development of the mind, and the critical relationship between cognitive health, the health of the individual, the family and the community. And we now more deeply understand the importance of a safe, stable home as a secure base.

In the 1988, British psychologist John Bowlby published "*Secure Base*", in which he described the importance of a secure psychological base in the development of healthy children. Bowlby described it as "as secure base from which a child or adolescent can make sorties into the outside world and to which he can return knowing that he will be welcomed when he gets there, nourished, physically and emotionally, comforted if distressed, reassured if frightened." (8)

The premise of this lecture is that there is a deep interdependence between the cognitive security of individuals, their families and their environment and their physical and mental health, and that these factors deeply affect their functioning in the world.

There are many contributors to a sense of security or the lack of it, but it is very clear that the endemic stresses of living in low income communities corrodes a developing child's sense of security. Add to this the episodic stresses of large scale events that are out of the control of any individual or community, and the cognitive security needed to grow healthy children becomes frayed. These cognitive stresses have lasting, negative impacts on the child's physical and mental health for the rest of their lives, and these impacts ripple through their communities. The best answer to mediate the cognitive diseases caused by these endemic and episodic stresses is to provide children with a secure base, and supplement it with the trauma relieving strategies.

A few years ago, a leader of a not-for-profit low-income housing development company, desperate to increase the supply of affordable housing in his community said at an Enterprise Rose Fellowship meeting "My community suffers from terrible overcrowding. We often have 13 extended family members living in a single home. Inevitably, one evening an uncle comes home drunk and rapes a young girl. Everyone in the home knows it happened, everyone feels complicit, everyone is damaged. If I can just move every single mother and her children to their own safe, green apartments, then we can begin to help them move forward with their lives."

### **Adverse Childhood Experiences**

The rape of a child is a horrible thing. The medical community labels it an *adverse childhood experience*, or ACE. ACE's are significant negative childhood experiences that deeply affect the child's development -- they fall into three categories: *abuse, neglect and household dysfunction*. They include emotional abuse, physical abuse, sexual abuse, physical and emotional neglect, excessive noise at home, sudden eviction, observing one's mother being subjected to violence, property victimization, peer victimization, exposure to community violence, socioeconomic status, parents always arguing, household substance abuse, household mental illness, parental separation or divorce, and a parent who was sent to prison. (9)

The effects of ACE's on the health and life outcomes of the victims are significant. In 1993, Dr. Robert Anda, an epidemiologist at the Centers for Disease Control and Dr. Vincent Filetti, an internist at Kaiser Permanente in San Diego, began a decade long study of more than 17,000 people in the Kaiser system to better understand the impact of ACE's. Approximately 75% of the population that they studied was white and had a college degree, yet 12.6% had an ACES score of four or more. ACES produce a dose/response effect, the more ACES the deeper the lifelong effects. Adults who had experienced four or more ACES as a child are twice as likely to be smokers, 12 times as likely to attempt suicide, 7 times as likely to be alcoholic and 10 times more likely to inject street drugs. (10)

A child with 4 or more ACES is also four times more likely to have intercourse by the age of 15, and 40% of the girls with 4 or more ACES become pregnant as teenagers.

There is a deep connection between a child's ACES score and their health. As an adult, if they have experienced four ACES or more, they are 260% more likely to have Chronic Obstructive Pulmonary Disease (COPD) than someone with an ACES score of zero. They are 240% more likely to have hepatitis, 250% more likely to contract a sexually transmitted disease. Experiencing six ACES increases one's chance of getting lung cancer by 300%, and one is likely to live 13 years shorter. And the number of ACES one has experienced proportionally increases the risk of being hospitalized for an autoimmune disease such as rheumatic disease. (11) Since that initial study, there have been many population studies of the effect of ACES on children, and the results have been confirmed over and over again.

These terrible adverse childhood experiences are prevalent all over the world, but they are particularly concentrated in low-income communities.

David Bornstein, the co-founder of the Solutions Journal Network writes "Imagine if scientists discovered a substance that increased the risks of cancer, diabetes and heart, lung and liver disease for millions of people. Something that also increased one's risk of smoking, drug abuse, suicide, teen pregnancy, sexually transmitted disease, domestic violence and depression -- and simultaneously reduced the chances of succeeding in school, performing well on a job, and maintaining stable relationships? It would be comparable to hazards like lead paint, tobacco smoke and mercury. We would do everything in our power to contain it, and keep it far away from children, right?" (12)

### **Toxic Stress**

Adverse childhood experiences cause what Dr. Jack Shonkoff, the director of Harvard's Center on the Developing Child, labeled *toxic stress*.

Not all stress is toxic stress. Some stress is actually positive and advances cognitive growth. For example, if a child experiences moderate stress, such as having to read a poem to a whole school assembly, and they live in a supportive environment with protective adults, this positive stress develops coping skills, and makes the child more resilient.

There are also tolerable stresses, such as the death of a grandparent, which may be severe, but with support, the child's mind recovers.

But toxic stress is so frequent or intense that it permanently affects the body's stress responses.

## **The ACES Mechanism in the Brain**

When a human encounters a threat, the brain sends messages to the hypothalamus, the part of the brain that regulates the body's autonomic and homeostatic systems. The hypothalamus compares the threat to the memories in the hippocampus, and if the memories are bad, it releases hormones that trigger the pituitary gland to instruct the adrenal glands release two hormones -- cortisol and adrenaline. This neural network is called the HPA (hypothalamus, pituitary, adrenal) axis.

Imagine that you are walking through the woods and you come across a bear. The HPA axis releases adrenaline, which quickly prepares you for fight or flight by speeding up your heart, and contracting your pupils to focus your attention. If you have to run for a long time, then your pituitary gland releases cortisol, which increases your blood pressure and blood sugar, and turns down your immune response, to enhance your long distance running ability.

Under normal circumstances, after the stress passes, the HPA relaxes and returns to normal balance. But if the stress is continuous, or if the stresses are traumatic, the HPA pathway is jarred open, and remains permanently on, even when it is not needed. Its neural patterns become fixed "grooves".

Children who encounter adverse childhood experiences have their HPA's wired on. They also develop smaller prefrontal frontal cortex's, producing less robust control connections between it and the amygdala. This circuit is a key system for self-regulation, particularly the ability of people to regulate their reactions to perceived threats. And thus, children who suffer from continuous toxic stress or frequent ACES are more likely to be recessive, withdrawn, are less able to pay attention in school and to participate in activities or to make friends. In effect, until puberty, they are permanently in the flight mode. And then, after puberty, they shift into the permanent fight mode. The overactive HPA axis condition is expressed as continuous anger and anxiety. Combined with the inability to pay attention and self regulate, key functions need to perform well in school, this neurological condition leads to boys dropping out of school, joining gangs, and engaging in crime and other high risk behaviors. Girls also drop out, and seeking affection without self-control, become pregnant. And then, as resentful, stressed out, poor mothers, they pass on the condition to their children.

And this condition is inheritable. There is now ample evidence that the effects of toxic stress on young rats produces epigenetic changes that continue across generations. One of the key genes that is effected is the NR3C1 gene. (13)

Recent research has translated these rat studies to humans. Seth Pollack, at the University of Wisconsin's Waisman Center's Child Emotion Research Lab, recruited 50 children with a history of abuse to study their genes and discovered that their NR3C1 genes were methylated in the very same sites that the gene was methylated in highly stressed rats. (14)

The Center also measured the size of children's amygdalas and hippocampus's, and observed that children who experienced poverty, neglect or physical abuse had smaller amygdalas and hippocampus's than children who had not experienced these stresses. (15)

ACES is now known to cause methylation variations in genes are correlated with psychiatric disorders and medical morbidity, suggesting that ACES contribute to the vulnerability for developing psychiatric disorders. (15)

Research by Bruce McEwen, the head of the Margaret Milliken Hatch Laboratory of Neuroendocrinology at the Rockefeller University and colleagues, shows that parental care effects the epigenetic regulation of hippocampal glucocorticoid receptor expression, impacting the transmission of suicide rates. (16) Teresa Brockie found ACES causes epigenetic variations in multiple studies of Native American communities. (17)

### **The impact of poverty, housing instability, overcrowding and eviction on children**

Overcrowding, excessive noise and transience also affect young children. Studies by Gary Evans, a research scientist in Cornell University's Departments of Human Development and Design and Environmental Analysis, indicate that overcrowding produces a negative effect on children's interpersonal behaviors, mental health, motivation, cognitive development, and biological measures. Overcrowding is not a function of family size in itself or even family income. Rather it is caused by the density, or number of people per room.

Parents in crowded homes are less responsive to young children, perhaps due to their own adverse childhood experiences. Evan's research shows that parents who raise children in crowded homes speak less frequently to their children and use less complicated words. (18) And a study by Betty Hart and Todd Risley of Rice University calculated that after four years, children on welfare will have heard 30 million fewer words than children from high income families. And yet the low-income child will have heard 125,000 more words of discouragement, while the high-income child will have heard 560,000 more words of praise. (19) This too has a cognitive effect.

Parents who raise children in overcrowded homes are more likely to engage in punitive parenting, significantly increasing the level of children's distress. This is not a function of the family's income, rather, it is correlated with chaos and disorder in the home. Evans notes "Elementary school-aged children who live in more crowded homes display higher levels of psychological distress and they also have higher levels of behavior difficulties in school.... Chronic overcrowding influences children's motivation to perform tasks. Independent of household income, children aged 6-12 show declines in motivational behavior and also demonstrate a level of learned helplessness—a belief that they have no control over their situation and therefore do not attempt to change it—although they have the power to do so." (18)

The 21<sup>st</sup> Century job markets require people not only with an increasing range of technical skills, but also the cognitive skills of attention, flexibility, and complex use of language.

Children who grow up in over crowded, chaotic homes, or with abuse are most likely being condemned to a future of failure.

Housing evictions are also a driver of ACES, and the financial crisis has not helped. In Milwaukee County, between 2010 and 2013, the number of eviction cases increased by 43 percent. Evictions in Maine increased 21 percent and 11 percent in Massachusetts. (20) Matthew Desmond, a Harvard Sociologist who studied evictions in Milwaukee said “You would think that evictions is caused by job loss, but we found that eviction can actually cause you to lose your job.” (20) And once evicted, people have higher rates of depression, material hardship, hunger and lack of medical care.

### **Vicarious Trauma**

In 2003, Diana Rose, the founding President of the Garrison Institute began a program to address the endemic stresses that New York City area domestic violence shelter social workers are subject to, and the effect of those stresses on their effectiveness and wellbeing. She, and noted meditation teacher Sharon Salzberg, founded the Contemplative Based Resilience program, to understand and help relieve the stresses that the social service workers in the system were experiencing. They began with the work of Laurie Anne Pearlman, who was then the President of the Trauma Research, Education and Training Institute, and had extensively studied vicarious trauma, or trauma transference.

Vicarious, or secondary trauma occurs when trauma passes from the traumatized population to its caregivers. This little known phenomena is one of the major causes of the burnout, stress, depression and even suicide that effects social service and medical workers who altruistically serve low income and troubled communities.

If we are going to address the epidemic of ACES and toxic stress, then, as with any epidemic, we also have to protect the service professions who come in contact with the epidemic.

The Contemplative Based Resilience project uses a four pronged approach to mediating vicarious trauma -- yoga, because trauma is embodied, meditation to detoxify the mind, psychosocial education and community building. The Garrison team has gone on to apply its work with humanitarian aid workers around the world. (21)

### **The Solutions**

In 2007, Dr. Nadine Burke Harris M.D. completed her pediatric residency at Stanford and joined the California Pacific Medical Center, a private health care network, to open a clinic in the Bayview-Hunter's View neighborhood, one of the poorest neighborhoods in San Francisco, and one with some of the greatest health disparities. San Francisco's Hope SF program, which is working to transform the City's public housing, noted that between 2005-07, there was ten times more violence at Hunters View than in San Francisco as a



whole. In Hope SF communities, 73% of able-bodied adults are unemployed and 53% of the project's students are chronically absent from school.

Dr. Burke Harris was surprised by the degree of health issues her pediatric patients had, and set out to discover why. Once she learned about ACES and toxic stress, and understood them as the likely cause of the health epidemic in the Bayview-Hunters View community, she set out to find a cure.

Dr. Burke Harris's project, now called The Center for Youth Wellness, has developed a multidisciplinary approach focused on identifying, preventing and undoing the chemical, physiological and neurodevelopmental consequences of ACES.

The Center for Youth Wellness uses a multipronged approach, working with both affected children and their parents. Its work begins with an assessment done in the clinic, home and school to determine the child's exposure to adversity and the depth of its effects on the child's wellbeing. The Center then educates the families on the causes and symptoms of chronic stress, and provides the families with stress reducing solutions. Children and their families are also provided psychotherapeutic treatments by the UCSF's Child Trauma Research Program and the Early Life Stress and Pediatric Anxiety Program at the Lucile Packard Children's Hospital.

The Center for Youth Wellness also trains its patients in mindfulness and coping skills, which help patients and their families build their cognitive resilience to manage future stressful events.

And Hope SF has initiated a program of "trauma informed" management, integrating trauma awareness and solutions into all of its public housing work.. This begins by recognizing the deleterious effects of trauma on both its residents and staff, and then figuring out how to integrate solutions at every level of the system, addressing endemic and vicarious trauma at the individual and project level.

### **Cognitive Ecologies**

Just as the world needs a healthy natural ecology to thrive, it also needs a healthy cognitive ecology, or mental landscape of thinking, feeling and relating. If we are going to ease endemic poverty, we need to recognize that it persists in an invisible, pervasive cognitive ecology of toxic stress that deeply permeates not only families living in low income communities, but also the caregivers who are trying to support them. We should also note that although toxic stress is both concentrated and exacerbated by low socio-economic status, that it is increasing throughout all levels of society.

This cognitive ecology is the soil of civilization. The work of community development must include the creation of positive cognitive ecologies so that humans and natural systems will thrive.

### **Add Environmental Toxins**

Environmental toxins have also been shown to negatively impact neural development, measurably degrading the intelligence of children, especially if their mothers are exposed during pregnancy. Outdoor air pollution, generated by burning fossil fuels pollutes air with polycyclic aromatic hydrocarbons (PAH), methylmercury (Me Hg), sulfur, nitrogen oxides and other toxins. Indoor toxic exposures include lead, mold, pests, pesticides, and excessive dust. All of these toxins may be present in any home, but they are typically concentrated in low-income homes and neighborhoods. For example, in low-income homes, families often open gas fired ovens and use them for heat.

Dr. Fredericka Perera of the Mailman School of Public Health notes that the direct toxic effects of exposure to these chemicals include increased infant mortality, lower birth weight, deficits in lung functioning, increased childhood asthma, developmental disorders, intellectual disabilities, attention deficit hyperactivity disorder and an increased risk of childhood cancers. (22, 23)

Prenatal or early life exposure to alcohol, nicotine, and cocaine also can have what the Center on the Developing Child call “devastating and lifelong effects on the developing architecture of the brain.” (24)

### **The Cognitive and Environmental Toxic Soup**

The combined cognitive effects of toxic stress and toxic chemicals cannot be good. If a child’s immune response is rendered less effective by cognitive stress, then they are likely to be more vulnerable to neurotoxins and other stresses.

This toxic soup is pervasive, but to many, invisible. It is critical that we identify its components and its compounding effects.

### **Four Strategies to Combat Toxic Stress**

Although work on toxic stress is in its early years, four strategies to relieve it have emerged. The first takes us back to housing -- a safe place that is physically, psychologically and environmentally safe, non chaotic and nurturing. It is becoming increasingly clear that such housing is the ground of physical, mental and social health. E.O. Wilson, in *The Social Conquest of Earth* notes that all social species are also nesting species, and that a safe common nest is the ground of an altruistic society. Dr. Esther Sternberg, the Founding Director of The University of Arizona’s Institute on Place and Wellbeing, has shown how the physical environments in which we live and work can trigger the brain’s stress or relaxation responses. And Richard Louv has documented how important it is for the places that we live and work to be connected to nature.

Dr Megan Sandel, co-principal investigator with Children's HealthWatch writes "For Many of Our Patients, a safe, decent, affordable home is like a vaccine, it literally keeps them healthy". (25)

A safe, green, calming, social, altruistic housing community is not only an essential platform for the restoration and resilience of chronically stressed families, but also for the social and health care workers who serve them. The housing stress documented by the Joint Center's 2014 report applies to many of America's service workers. According to the Bureau of Labor Statistics, in 2013 the median salary of home health aides was \$20,820, 12% lower than the national poverty level \$23,492. (26) Hospital orderlies earned a median salary of \$23,990. The average domestic violence shelter worker earns \$37,000 a year. Substance abuse and behavioral disorder counselors earn a median income of \$40,920, and child and family social workers \$43,290. These incomes are all below the 2013 median income \$51,017. In high cost cities, these families, too, are housing stressed.

We are rapidly accumulating evidence that greener, healthier housing provides a significant public health benefit at very little additional cost. At this point, there is simply no reason to justify the construction of another toxic housing unit.

The second strategy is exercise. Bruce McEwen has demonstrated that exercise stimulates healthy neurogenesis. And we know that exercise is deeply connected to a community's walkability. A study published in the Journal of Preventative Health found that children who live in smart growth neighborhoods get significantly more exercise than those who live in suburban environments designed for driving. (27) As the percentage of poor families living in the suburbs continues to increase, less exercise and social isolation become more significant issues. And walkability is an urban issue, too. A study by the New York City Department of Health and Mental Hygiene discovered that the walkability of New York's neighborhoods vary significantly. Walkability was defined by residential density, intersection density, land use mix, subway stop density and the ratio of retail building area to retail land area. The study concluded that people living in the most walkable neighborhoods on average engaged in 100 more minutes a week of physical activity than those living in neighborhoods with low levels of walkability. (28)

The third strategy is the development of mental quiet and space. Dr. Richie Davidson, the Founder of the Center for the Study of Healthy Minds, also at University of Wisconsin's Waisman Center, has extensively studied the efficacy of mindfulness training on stress, and has documented positive neurological and immunological benefits from it. (29) His lab has also published research indicating that a range of contemplative practices can increase children's self regulation, attention and pro-social behaviors such as compassion and empathy. (30) And the Garrison Institute's CBR program has demonstrated the efficacy of meditation in alleviating the vicarious trauma of the social service sector. Dr. Burke Harris told me that once she began attending the meditation classes for her patients, she discovered that the peacefulness it engendered also increased her own resilience.

Both McEwen and Davidson's work shows that contemplative practices such as meditation can stimulate the regrowth of health brain structures in as little as eight weeks. The work of

Tania Singer, the Managing Director of Social Neuroscience at the Max Planck Institute for Human Cognitive Brain Science, shows that contemplative practices increase empathy and pro-social behavior. And empathy and altruism are essential elements of healthy communities.

The fourth solution is the benefit of being part of a community that models thriving, supportive, healthy human connections. Eric Klinenberg's study of the response of Chicago neighborhoods to the stress of heat waves indicates the importance of social networks in individual and collective resilience. In 1997, Chicago was struck by a deadly heat wave. Most of the people who died were poor and elderly. They often didn't have air conditioning, or if they did, they couldn't afford to turn it on. They were afraid to open their doors or windows at night, for fear of intruders. Of the ten communities with the highest death rates from the heat wave, eight were predominantly African American, and experienced high rates of crime and levels of unemployment. But oddly, three of the ten communities with the lowest death rates were also African American, poor, and had high rates of unemployment and crime.

For example, the Auburn Gresham, a poor neighborhood had a culture of altruism, carried out through church and voluntary association networks. The death rate in Auburn Gresham was only 3 per 100,000, one of the lowest rates in the city, even lower than the death rates of many prosperous, white neighborhoods on the North Side. (31) Klinenberg concluded that the differences in the rates of death correlated with the strength or weakness of the social networks in each community.

These four strategies provide the ground upon which psychosocial interventions can be most effective, transforming trauma into resilience.

Building enough safe, green, walkable, sociable affordable housing is a key first step in the creation of a safe base for families to begin to move forward with their lives. The housing must also be energy efficient, and easily connected to transit if it is going to really help reduce some of the financial stress on working families.

But a safe base of housing is not enough, the housing must be part of a safe neighborhood.

### **Neighborhood Effects**

Social scientist Robert Sampson, now at Harvard, spent twelve years at the University of Chicago, where he organized the Project on Human Development in Chicago Neighborhoods (PHDCN) to compare the social performance of the city's neighborhoods, and determine the key drivers of neighborhood social health and their impacts on children and adolescents. (32) Sampson compared neighborhoods with a wide range of incomes, and measures of violence. The study also tracked 6,000 randomly selected children, adolescents and young adults over seven years. The data clearly indicated that civic behavior was clearly spatially clustered, with enormous variability in the performance of neighborhoods.

The study observed that neighborhoods that had the best school performance also had the best health outcomes, the lowest crime levels and the lowest proportion of teen pregnancies. These outcomes were all inter-related. And these were persistent over time - the neighborhoods with the best outcomes remained the best, even as people moved in and out of them. Sampson concluded that neighborhoods themselves have enduring characteristics that both attract and shape the behaviors of their residents. In his groundbreaking book, *Great American City: Chicago and the Enduring Neighborhood Effect*, Sampson wrote “Neighborhoods are important determinants of the quantity and quality of human behavior in their own right.” (33)

Looking at the data, Sampson determined that the two most important factors that effect the quality of neighborhoods are the conditions and perception of *disorder* in a neighborhood, and *collective efficacy*, which he defines as “social cohesion combined with shared expectations for social control.” (33) These two conditions are deeply interrelated, and correlate with toxic stress.

### **Neighborhood Disorder**

The perception of neighborhood disorder has two forms -- social and physical. Physical disorder is manifested with graffiti, abandoned or poorly kept buildings, uncollected garbage and broken windows. Social disorder is reflected in openly solicited prostitution and drug dealing, public intoxication, verbal harassment, loud music and rowdy groups of adolescents. Conversely, neighborhoods that have neat, tree-lined, garbage free streets, and residents that greet each other generate a higher sense of wellbeing.

Sampson’s study correlated variations in a community’s social norms related to the orderliness of their neighborhood. Residents who agreed with statements such as “laws were made to be broken” or “it’s ok to do whatever you want as long as you don’t hurt anyone” were more cynical about their future tolerated higher levels of lawlessness, and its attendant violence. Conversely, the more orderly a neighborhood was perceived to be, the better its health and wellbeing outcomes.

Theaster Gates, an urban artist working in Chicago, asks “what happens to a neighborhood if you think that beauty is important?” (34)

And in 1965, Jim Rouse said in Chicago “we believe, because it is true, that people are affected by their environment, by space and scale, by color and texture, by nature and beauty, that they can be uplifted, made comfortable, made important.” (35)

### **Collective Efficacy**

Sampson posited that when neighbors share expectations of social control in their neighborhood, trust each other and feel social cohesion, their neighborhoods generate much better outcomes. Neighborhoods with high levels of collective efficacy have lower levels of crime, lower rates of teen pregnancy, infant mortality and other measures of health and wellbeing. This holds true whether the neighborhood is black or white, rich or poor. Through dense personal ties, the contagion of behavior helps to facilitate collective efficacy, but they do not cause it.

Neighborhoods with high levels of social control have people who watch out for others kids, they scold teenagers for loud behavior on the streets, and they watch over each other. Reflecting on this, Alejandro Portes, a sociologist at Princeton University, expanded the definition of social capital to include not only social connections and attendant norms and trust but also “the expectations for action within collectivity” (36) ie, that the social connections and trust will produce a positive outcome for the common good.

Sampson found that collective efficacy was strongly correlated with altruism, Neighborhoods with higher levels of altruistic behaviors have better health, wellbeing and safety measures. Empowered people and neighborhoods, who feel that they can make the world a better place are healthier. It turns out that a sense of efficacy, or agency also reduces stress. And so the fourth solution, vibrant social networks help not only mediate toxic stress in children and social workers, but it also creates the ground for healing neighborhoods.

Collective efficacy is an emergent behavior of the complex adaptive system, the neighborhood. It is increased by the success of community organizations such as Parent Teacher Associations, neighborhood watches, tenant associations, community gardens and other purposeful hubs that generate associative behaviors. These associations also communicate their values back to the community. By mapping the location of all of the city’s not-for-profit groups, Sampson discovered that their density was one of the strongest predictors of collective efficacy.

### **The Three Degrees of Neighborhood Influence**

When Sampson looked at the study’s neighborhood data on a map of Chicago, an interesting phenomena emerged. Just as people have three degrees of influence upon each other, neighborhoods also seem to have three degrees of influence on each other. If the crime rate is high in a neighborhood, it is positively linked to crime in an adjacent neighborhood. If the homicide rate in a neighborhood goes up by 40%, its direct neighbors will experience a 9% increase in homicide, and their neighbors a 3% increase. On the other hand, if the indicators of collective efficacy increases in and neighborhood by one standard deviation, the homicide rates for adjoining neighborhoods and their neighbors go down by 15%.

This means that every neighborhood of a city benefits from improving the health, safety and wellbeing of all of a city's worst neighborhoods. And every family in a city benefits from the alleviation of the toxic stress of any child, no matter how far removed from them. And thus altruism generates a collective benefit for a city.

### **The Long-term Value of Paying for Solutions**

The Center for Disease Control and Prevention, in a study based on 2008 data estimated the total lifetime financial costs associated with just one year of confirmed cases of child physical abuse, sexual abuse, psychological abuse and neglect range from \$124 billion, to as high as \$585 billion. (37) The costs were arrived at by summing short-term health care costs, long-term medical costs, child welfare costs, special education costs, criminal justice costs and productivity losses. And this is the just cost of one year of children over one lifetime, not taking into account the cognitive effects of toxic stress that pass from generation to generation. And thus, if we can invest in preventing and healing this issue now, the long-term benefit to individuals and society will be enormous.

The costs of environmental toxins are equally devastating. A literature review by Dr. Perera found that the 2008 costs of environmentally mediated diseases in US Children, including lead poisoning, prenatal methylmercury exposure, childhood cancer, asthma, intellectual disability, autism, and attention deficit hyperactivity disorder were \$76.6 billion. (38)

We know enough to know that these constitute an epidemic. The system for combatting a single vector of disease, such as a flu requires the systemic integration of many public and private sector actors, from scientists, public health officials, pharmaceutical manufacturers, distributors, inoculators etc. Imagine how much more complex the fight against a multi-vector endemic disease is.

This requires that we think about community development in an entirely different way. We need to recognize that safe, green, well-located housing for populations suffering from toxic and environmental stresses are necessary, but not sufficient. We need to invest far more capital and social service funds now in the alleviation of ACES, toxic stress and vicarious trauma, to preempt unsustainable human, social and economic costs later.

To achieve this, we need a massive social impact-bonding program to bring future savings forward. It must be accompanied by trauma aware health and social services that aggressively work to sever the roots of these endemic illnesses.

The solutions that we invest in must address cognitive stress, financial stress, environmental and climate stress in an integrated way, tying together solutions to increase resilience at the individual, building, neighborhood and city scales.

## **Entangled Altruism is Entwinement**

Quantum physics began with the study of the particle, but it quickly observed that particles were inter-related, that the condition of one particle effects the conditions of others. Quantum theory posits that each particle, alone, is in a pure state, but that in actuality, the condition of each individual particle is entangled, or woven together with every other particle. They named this quantum entanglement.

In the late 1800's, the early psychologists posited that each person had an individual mind, with goals, wants, needs and pre-dispositions, which set our behaviors. But we have learned that we are deeply social animals, and that our behaviors are entangled with others. Our states of mind and qualities of behavior are heavily determined by the collective state of the group and context that we are part of.

Cities are systems of interwoven systems. Every aspect of a city is interconnected through a marvelous web of interdependence. As Dr. Martin Luther King said in his letter from a Birmingham Jail, "We are caught in an inescapable network of mutuality, tied in a single garment of destiny. Whatever affects one directly, affects all indirectly..." (39)

Entanglement is a physical condition of interdependence without moral direction. King's Letter from a Birmingham Jail beseeches his readers to become moral activists, and to do so with love.

If a city adopts altruistic goals, the DNA of altruistic intentions will flow through the city's systems, ultimately touching every bit of the city. When altruism weaves into the fabric of a city, it creates an energized and altruistic culture. It adds a moral direction to the amoral interdependence of nature's entanglement. I call this altruistically directed interdependence *entwinement*.

## **The Entwinement of Housing and Wellbeing**

Housing is a necessary ground of a stable base from which wellbeing grows. (40) But housing alone is insufficient to transform the lives of families living with toxic stress, insecurity, high levels of neighborhood disorder and low levels of collective efficacy.

We are just at the beginning of understanding the interconnection between the wellbeing of children, their families, their housing, their neighborhoods and the cities that they live in, but we do know that they are all entwined. Every step that we take to relieve the toxic causes and conditions of economic, psychological and spiritual poverty for one child improves the wellbeing of all of us. And infusing our entwined human system with pervasive altruism, informed by science, carried out with compassion, and dedicated to the wellbeing of all is the ground upon which the relief of endemic poverty will grow.

Thank you.



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