Vol. I Spring 1995

PLANNING FORUM

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- **The 'Myth' of Environmental Racism**
- **What's the (non) Point of Pollution Control?**
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The Journal of the Community and Regional Planning Program
School of Architecture
The University of Texas at Austin

Planning Forum

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editor's note...

The graduate students of the Community and Regional Planning Program at The University of Texas at Austin established *Planning Forum* last spring. We intend for this journal to encompass planning theory and practice, but also to present articles which go beyond traditional "planning" perspectives. We actively solicited papers from all professors, students, and alumni of The University of Texas at Austin, and are including articles in this volume which discuss topics as diverse as environmental racism, urban violence in the inner city, displaced communities in Guatemala, and the colonias of South Texas. We hope to make all of these topics accessible to the non-specialist, but we do feel that there is a need to present these issues in a planning context in order to promote the interchange which is vital to planning's success. *Planning Forum* will therefore serve as a medium for exchange among many disciplines. Planning is a profession which influences the future shape of our institutions and communities, including the global community. We therefore feel that the audience of this journal should include not only scholars from many different fields of inquiry, but also policy makers and interested persons from all backgrounds, and we hope that the appealing format of the journal encourages readers to examine its content.

In This Issue

The first section of this volume of *Planning Forum* focuses on the definition of community and the community-building process. These articles deal with disadvantaged or disenfranchised populations and their responses to hostile environments. Raquel Wexler discusses the relationship between violence and community-building in her article on Sandtown-Winchester, a Baltimore inner-city neighborhood which is in the midst of a transformative process. In his article, Guy Lawson reports on the Communities of Population in Resistance, Guatemalan citizens who were driven into hiding by the "scorched-earth" offensive of the Guatemalan military. These individuals responded to the threat of destruction by creating collective communities. Professor Christopher S. Davies analyzes the structural factors which underlie the development of the "colonias" of southern Texas, communities which are born and exist largely outside of the traditional planning context. Finally, John Marshall uses the Aristotelian concept of friendship as it applies to the maintenance of political communities to analyze the failures of urban renewal programs in the United States.

The Point/Counterpoint feature fills a gap that exists in traditional academic journals by presenting the viewpoints of politicians, lawyers, and activists on a planning issue. Following this debate on property rights, the Environmental Policy section presents articles

by Professor Frank Cross and Associate Dean Victor Arnold of the Graduate School of Business Administration. Cross takes on the controversial topic of environmental racism, documenting the failures of both markets and government regulation in promoting environmental justice. Arnold presents an overview of crisis management strategies to be used in the event of a environmental disaster, such as an oil spill or a toxic leak. The final major section of the journal builds on the unique experience of Austin, Texas, a city in which water quality regulation has become a highly polemic issue, involving the city government, developers, and the public. Environmental activists across the country have been drawn into the struggle in Austin to preserve a unique freshwater resource, Barton Springs. Scott Pasternak presents a detailed history and evaluation of Austin's water quality ordinances as they relate to the debate over Barton Springs, and offers an analysis of the City's policy options. The last article was adapted from a project which received the Outstanding Student Award in October, 1994 of the Texas Chapter of the American Planning Association. It summarizes a study of best management practices for controlling urban nonpoint source (water) pollution.

This journal has been produced by dedicated graduate students; it has been an enormous undertaking on top of other commitments. I would like to express my personal gratitude to those staff members who "stuck it out" to the end. This journal could not have been produced without the support of the School of Architecture and the Dean, Lawrence Speck, or Kent Butler, the Director of the Community and Regional Planning Program. Susan Handy, our faculty advisor, has been an invaluable resource, as has our entire Advisory Board. Roland Pantermuehl also graciously contributed advice and resources. Finally, we would like to extend a special thanks to Michael Bomba and David Cladel, for putting together the initial proposal that started us on this unimaginable journey.

We hope you enjoy this inaugural issue and would be pleased to receive any comments or suggestions you might have.

Sincerely,

Laura Powell

Laura Powell
Editor

URBAN VIOLENCE AND COMMUNITY REVITALIZATION:

The case of Sandtown-Winchester

Raquel Wexler

The World Health Organization's re-conceptualization of a healthy society is that of a constructed space where humans strive to create a place of "complete physical, social and mental well-being" for all persons. Likewise, Hector Abad Gomez has conceived of a new discipline called "poliatrics," referring to the "treatment of diseases of a city or a state."[1] However, the designation of the disease and its symptoms is not only an epistemological issue, but has become a political concern. Many perceive that violence [2] in itself is a disease, advocating a "get-tough-on-criminal" approach to *address* the phenomenon in its crisis state, while others assert that violence is symptomatic of a[n] [dis]articulation of acute politico-economic distortions and perversions of power among members of a community and thus seek to *redress* urban deprivation at its heart through preventive measures. The fundamental polarization of these world-views has paralyzed public policy debates, leaving citizens, lawmakers and planners impotent to act while engendering near despair within our nation's cities.

Community development, in the post-modern paradigm, is an ever-evolving revolutionary process that is not defined or limited to tactical objectives and broad-ranging solutions, but is rather, an *approach* (a leap) to realizing more equitable standards and a "healthier" way of life for all people. Development in this vein is not only a participatory process, but also, as its etymological roots imply, an emancipatory one, unraveling the untapped potential of individuals and communities. Development also implies consensus building—the articulation of a plurality of voices that jointly reshape the direction of potential outcomes. This new paradigm redefines the constructs of community and authority and dismisses divisive concepts of self and "other," for the zero-sum game is deemed no longer operable in a world that is inextricably bound by the course and tenure of human relationships.

For years the debate surrounding preventing crime and improving conditions in crime-ridden cities has been dominated by two seemingly incompatible positions. The "get-tough" approach holds that crime is the result of an inadequate criminal justice system and lobbies for moral fastidiousness, more prisons, and stricter punishments. By contrast, the "root causes" thesis argues that crime is the result of systematic disadvantage, prejudice, and neglect. Proponents of the latter theory recommend job training programs, economic development, and increased social spending within poor communities. The implicit assumption of the first position maintains that crime must be contained before conditions in the community can improve; whereas the second assumes that community life must improve before crime can be controlled.

A third position, allied with communitarian philosophy, argues that in light of pervasive urban degradation, those persons and communities who are most at risk deserve additional assistance from society because community building is inherently a good in itself. Therefore, the social amenities (i.e. less crime) that may accrue to society because of investment in inner-city communities are benign yet extraneous to the larger social and moral questions at hand. After all, proficiency in illegal activities is not the special penchant of low-income groups, but is mastered by privileged individuals as well. However, the legacy of American social welfare policy—fueled by interminable optimism and inspired by notions of individual rights and personal freedom—has narrowed the permissible realm of government intervention to only those individuals who are unable to sustain themselves in the free marketplace.[3] Establishing "legitimate" claims for assistance has become increasingly

onerous in this fiscally conservative anti-tax era, thus rendering the need to identify the social costs and benefits of intervention more compelling.

In the face of an urban crisis that threatens to erode the social, political, and economic fabric of our nation, planners, policy-makers, and community leaders alike are beginning to re-explore the numerous causes of poverty and its systematic perpetuation in order to engage in innovative collective responses. Baltimore—the 13th largest city in America and one of its most violent—is an example of a city which is implementing innovative strategies to concurrently combat crime and urban degradation. The Sandtown-Winchester neighborhood, located west of downtown Baltimore, is a community of 10,305 residents, almost exclusively African-American; it is a place where the vast majority of its children live in poverty.

Sandtown-Winchester is one of the three most violent neighborhoods in the City of Baltimore. A reversal in this trend would indicate that neighborhood residents are effectively engaging in activities to defend their neighborhood, discourage drug-dealers from establishing their markets in the neighborhood's streets and "create an environment that deters crime and returns the street and open spaces to residents."[4] Thus, decreases in theft, vandalism, and more indirectly, homicide rates can be considered an indicator of heightened community intolerance to illicit activities, just as improvements in housing maintenance and citizen-driven beautification projects are an indicator of community pride. In the case of Sandtown-Winchester, these processes mark an insurgent transformation of self and community via popular participation in public life.

The Community Building in Partnership, Inc. (CBP), a nonprofit corporation whose board is composed of neighborhood residents, city officials, and Enterprise Foundation representatives, has inaugurated a comprehensive strategy for conceptualizing community restructuring initiatives. Their holistic approach to combatting crime and underdevelopment—both the symptom and the disease—is forging a fresh perspective of a neighborhood's potential for community strengthening and emancipatory development.

Community Perceptions of Violence

Time and again we have heard the African proverb, "It takes a village to raise a child." Yet, one cannot preempt a discussion of social obligations without first exploring the ontological nature of the village—or in this case, the community. In the past, traditional communities were ascribed by geographic delineations that established the socio-physical landscape. This identification of boundaries through a process of differentiation subsequently defined all other nonmembers. In contemporary information-driven America, communities are represented by negotiable, non-geographical attributes–race, ethnicity, gender, class, profession, and behavioral constructs. The fundamental distinction between these post-modern communities and their antecedents is that they have become progressively imaginary, for we will "never know most of [our] fellow-members, meet them, or even hear of them, yet in the minds of each lies the image of their communion."[5]

Accepting ownership for unknown individuals is a tall order, for many Americans would prefer to believe that "we roam at large in a land of strangers, where we presumptively have no obligations towards others except to avoid the active infliction of harm."[6] *The task of community-definition is one of simultaneous self-interest and self-subordination among individuals who recognize that community is a nonphysical, negotiated space of diverse, multilayered and unbounded yet highly contingent identities.* In this vein, community-definition acquires prescriptive characteristics and it is through the process of inclusion, and subsequent exclusion, that the process assumes community-building attributes.

Race and class issues, in combination with a lack of role models and deficiencies in social services such as education, heath care, employment opportunities, job training programs, and housing, are a few of the structural elements that contribute to chronic poverty and violence. One could say that these are *external* factors, for they are beyond the control of any single individual or institution. However, low self-esteem, lack of motivation and nonprofessional work attitudes often precipitate drug use and poverty. Such negative forecasts require changes at the level of the individual, the *internal*, through a transformation in perception. For example, in the past, fear of the "other" has prevented many Sandtown-Winchester residents from forming close ties with neighbors, local police, community churches, and businesses that are necessary to combat crime in a comprehensive manner. However, this began to change as residents began to perceive that the fate and well-being of

one individual or a neighborhood block is contingent on sustaining a high quality of life among members of the entire community. In the face of common destiny, the internal/external dichotomy quickly dissolved, as did the compartmentalization of strategies that has become typical of more traditional urban renewal schemes. Thus began the integration of private, public, and grassroots forces in Sandtown-Winchester.

The Development Training Institute Inc., a national organization which provides training and technical assistance to community-based organizations throughout the United States, identified organizational effectiveness issues that inhibit neighborhood organizing. Two of the six obstacles mentioned were increased racism and class discrimination.[7] When combined with violence, these problems threaten to arrest the potential development of all members of the community by accentuating the schism between the white middle class and its members' subsequent objectification of "others" (blacks, Latinos, members of slums and urban ghettoes). In light of the ongoing inundation of information about crime, arrests, and imprisonment, which creates false images of the pathology of young black males, it is not difficult to imagine why the middle class has become fearful of inner-city youth. According to the National Crime Survey of 1987, the majority of persons victimized by violent crime reported that their attackers were white, a quarter reported that they were black, and 7.7 percent reported "other" or "unknown."[8] This information contradicts the widespread belief that the typical violent criminal is a young black male.

Tragically, many of these negative beliefs are secretly harbored and internalized by middle-class blacks who do not feel socially or politically aligned with low-income African-Americans, preferring the luxury of retreat to black middle class suburbs outside of Baltimore City. The most devastating of community-alienation consequences is indicated by poor inner-city residents who fear their neighbors. As long as the severity of urban symptoms, (i.e., high crime, unemployment, poverty, etc.) are localized within a geographic space, improvements in the quality of life of all urban residents within the neighborhood's parameters will require community-wide cooperation and aggressive coalition-building. Constructing a sense of community amongst fragmented groups presents an onerous task.

Violence is a false means of concurrently articulating frustration and power—a negotiation of dialogue, identity formation and recognition. To assume that all violence is "senseless" or arbitrary is to obfuscate and negate the reality that is lived and felt by the perpetrator.

Interpretations of Violence

There are many reasons why people [re]act violently. However, the violence that now underscores social relationships in many low-income communities is particularly daunting to the general public that has shielded itself from crime through the construction of middle-class neighborhoods, suburbs, and shopping malls. Violence is a *false* means of concurrently articulating frustration and power—a negotiation of dialogue, identity formation, and recognition. In this vein, violence is indeed a reaction to events (both present and past) and systematic degradation. To assume that all violence is "senseless" or arbitrary is to obfuscate and negate the reality that is lived and felt by the perpetrator. Violence has many purposes, but often it serves to gain recognition, attention and respect from community members or "other" individuals. It is an indication of the perpetrator's perceptions of hostility and neglect of an unempathetic society. It is therefore an act of subjugation, an enactment of powerlessness.

To someone who perceives himself to be powerless, often the most convenient channel for articulating "power" is a gun. Some who have killed report that they "felt like God." It is an act of frustration because many of those who are violent do not possess a direct means of realizing their aspirations; others are unable to envision a different future for themselves. Yet violence gives a frustrated youth on the streets a mythical sense of power—a power that will always be denied him within the world of the "other"—a society built on privilege, social standards and norms that he will never know. This characteristic is illustrated through the autobiographical description of a young black man enjoying the senseless torture of a white man in prison.

I sat watching, enjoying the HELL out of it, loving the sight of a powerful white man squirm in the clutches of powerless blacks...and I hoped he felt at that moment the same way I'd felt for much of my life: like an alien in a hostile world where he couldn't win, like the victim of recurring injustices against which there were no appeals.[9]

In prison, the social pyramid is inverted and roles are reversed. Yet outside of prison, a frustrated person does not have access to his perceived roots of subjugation (racism). To compensate, inequitable social relationships that extend beyond the neighborhood are replicated and distorted within power relationships in the deprived community. The respect that the disadvantaged youth will never gain from Anglo-America is *demanded* of his black community members.

They'll kill a nigger for dissin' [disrespecting] them. Won't touch a white person, but they'll kill a brother in a heartbeat over a perceived slight...I can't do much to keep white folks from dissin' me, but I damn sure can keep black folks from doing it.[10]

It would appear that much of the violence is a result of two problems: the historical legacy of slavery/Jim Crow which has led to a population of severely disadvantaged people; and, the *perceived* structural obstacles of the same disadvantaged people. The obstacles do exist, but they are negotiable. People (communities) are most inhibited by their inability to re-conceptualize their own life and future.

A psychologist friend once explained that our fates are linked partly to how we perceive our choices in life. Looking back, I see that the reality may well have been that possibilities for us were abundant. But in Cavalier Manor, we perceived our choices as being somewhat limited.[11]

Thus, one of the most tragic aspects of black violence is that the negative perceptions are internalized and consumed by black youth who in turn begin to identify with these same images of violence, and "feed hopelessness and cynicism back to the younger generation, reinforcing the lore of the streets—which hardly originated among black people."[12]

The experience of Sandtown-Winchester provides a positive example of inner-city residents who envisioned a better future for themselves and actively participated in the realization of their goals. However, vision alone will not automatically improve housing and employment opportunities. The will of a few must become the dream of many, for the whole is greater than the sum of its parts. However, although communities need to take responsibility for their own revival, they cannot do so without substantial private and public sector help. Specifically, unless the dominant middle class perception that violence in the black community is inevitable and beyond control is transformed, policy makers, police, and society will continue to tolerate high levels of crime, poverty, and degradation within low-income minority neighborhoods, as long as it is localized and contained within "other" geo-spatial locations.

SANDTOWN-WINCHESTER: A LEGACY OF INEQUALITY

Socio-economic and Physical Characteristics

Until the 1950s, jobs in Sandtown-Winchester were abundant and segregated housing patterns maintained an economically diverse group of residents within the community. The expansion of highway development, combined with the subsequent relaxing of segregated housing settlements, prompted the departure of the black middle class to the suburban hinterlands, taking with it most of the community's wealth, employment opportunities and institutions. Socio-economic conditions have continued to deteriorate in the neighborhood since the 1950s. Since this era, the neighborhood has been rendered unrecognizable to former residents, one of whom commented, "this couldn't be the neighborhood I grew up in, no matter what."[13]

As of 1990, Baltimore's census indicates that 49.4 percent of all neighborhood residents live in poverty. This marks a striking contrast with state and national averages which remain level at 8 and 13 percent respectively.[14] Unemployment ravages the community, for nearly a quarter of

working age residents are officially unemployed compared to 4.9 and 9.2 percent in the Baltimore Metropolitan Statistical Area (BMSA) and Baltimore City, respectively. Fifty percent of household annual incomes are below $11,000 and a quarter fall under $5,000.[15] The 1990 median household income in Sandtown ($11,429) is half the median income of Baltimore City and a third of the median income in the BMSA (See Table 1).

The effects of poverty have dramatically inhibited the development of the community's children. Sixty-eight percent of all children live in poverty and almost three-quarters of all children live in single parent female-headed households.[16] Only half of all pregnant women receive prenatal care in their first trimester and only 40 percent of children are fully immunized by the age of two. Thus, approximately 16 percent of all babies are born with low birthweights.[17] At the forefront of the issue is the fact that health insurance is virtually nonexistent for a large segment of the community.

Education is positively linked to future earning potential and social mobility, yet only 10 percent of elementary school students meet Maryland School Performance Standards.[18] Less than half of the 25+ age group of residents have completed high school or equivalency examinations and 12.5 percent of all students were not promoted to the next grade during the 1990-92 school year.[19] Sandtown contains three elementary schools, two middle schools, a trade school, and Frederick Douglass High School. Today the schools rank among Maryland's worst; 20 percent of Sandtown's students drop out each year.[20]

Similar to other inner city communities around the country, a substantial percentage of Sandtown-Winchester residents suffer from severe health problems. Use of preventive medical care is not common among the one-fifth of residents who do have access to medical assistance. This is particularly true of the neighborhood's African-American males, 90 percent of whom have no health insurance or access to primary care. These structural obstacles exacerbate health conditions that are further aggravated by poor nutrition and frequent tobacco, drug, and alcohol consumption. The combined impact of these conditions often results in complication of medical conditions. Sandtown also bears the sixth highest rate of reported AIDS cases in Maryland.[21] A critical need exists to provide health and social services through a delivery system designed to overcome these structural barriers and promote health awareness, early disease detection, and eliminate damaging behaviors.

These social indicators mentioned above are reflected in the physical deterioration of the community during the previous four decades. Land use in Sandtown-Winchester consists primarily of attached, two- to three-story brick homes. Almost a quarter of the neighborhood's dwelling units lie vacant, thus providing drug-dealers a convenient space to conduct illegal activity and posing a threat to neighborhood families. Such negative uses also invite fires, trash accumulation, and rodent infestation.

Three-quarters of residents live in substandard housing and only 20 percent of units are owned by the people who lived in them.[22] The majority of Sandtown residents have lived in their homes for more than five years and the median value of owner-occupied units is $20,400 - or one-fifth of the median value of units located throughout the BMSA and less than half the median value of units located within Baltimore City. In approximately 1,500 households, residents spend more than 30 percent of family income on housing-associated costs.[23] This is especially burdensome for the quarter of Sandtown residents whose annual income is less than $5,000. Absentee landlords intensify the problem, as do some tenants who presumably lack the motivation, knowledge, and/or resources to properly maintain their houses. A combination of these adverse conditions contributes to overall neighborhood decline and disinvestment.

Nonresidential land use encompasses neighborhood businesses, as well as manufacturing, governmental services, three elementary schools, a recreation center, and numerous (40) churches. Before the CBP initiative began, accessibility to conveniently located and competitively priced quality retail goods and services was identified as a key concern by many residents. Although "mom and pop" convenience stores are scattered throughout the community, goods were generally overpriced and of substandard quality. Minimal patronage of the area's businesses, minimal investment by commercial lending institutions, heightened perceptions of crime, and poor management skills of local business owners have contributed to the absence of a viable retail center in the neighborhood.

Most of Sandtown's residents previously sought employment opportunities, shopping, and leisure activities outside of the neighborhood. Sandtown lacked a central gathering place where residents could meet for organized

Comparison of Socio-economic and Housing Characteristics, 1990 (in percents)

	Sandtown-Winchester	Baltimore City	Baltimore MSA
Persons under 18 living in poverty	68	33	14
One parent, female-headed households w/children under age 18	74	49	26
Persons over age 25 with high school ed. or equivalent	43	61	75
Unemployment Rate	22	9	5
Housing units vacant for six months or longer	20	4	2

Source: City of Baltimore. March 1993.

Table 1

activities. Existing recreation facilities and programs for youth in Sandtown-Winchester were inadequate. Residents often cited the need to renovate existing sport and recreational facilities and lamented the absence of innovative programs, activities and facilities to attract hard-to-reach youth. Among their chief concerns were the lack of opportunities for the community to come together for neighborhood events and the scarcity of inter-generational activities and programs.

Crime in Baltimore and Sandtown-Winchester

Between 1987 and 1990, the highest and lowest homicide rates in Baltimore took place in the western (75.4) and northeastern (14.7) police districts—respectively the poor black, and wealthier, predominantly white areas of the city. During an 18-month period (ending June 30, 1987), five low-income black communities (out of Baltimore City's 261 neighborhoods) were the location for 17 percent of the city's 377 recent homicides.[24] Sandtown-Winchester, a small area of 72 square blocks and 280 streets, led the city during this 18 month period with an average of more than one slaying per month.[25] The perception that all citizens of Baltimore are presently at great and equal risk to fatal violence is false, for the majority of homicides are contained within the narrow confines of socio-spatial relationships of what is know known as the inner-city. Thus, it is the residents of low-income neighborhoods who are the most at risk.

Between 1990 and 1991, 2,897 crimes were reported in the six census tracts that compose the neighborhood.[26] The most frequent crimes committed were larceny (theft), burglary, robbery (armed and unarmed), and aggravated assault, in descending order (See Chart 1).

Sandtown-Winchester has long been affected by drug-related crimes and substance abuse. In 1990, 462 residents of the community were arrested for crimes relating to drug abuse.[27] According to the State of Maryland's Alcohol and Drug Abuse Administration, approximately 570 residents of Sandtown were admitted to some type of drug-treatment program during 1990. Approximately three-fourths of those admitted were African-American males, 71 percent were between the ages of 21 and 40, 69 percent were unemployed, and the majority had not received a high school diploma. The negative externalities associated with drug-abuse affect family cohesiveness, scholastic achievement, job performance, and public health indicators.

The Vision in Action

The Sandtown-Winchester transformation was conceived in 1989 through a series of discussions amongst the Enterprise Foundation, newly elected Mayor Kurt Schmoke, and the church-based grassroots organization Baltimoreans

United in Leadership Development (BUILD). The following year, Schmoke approached the neighborhood residents and created the Community Building in Partnership, Inc. which included Sandtown-Winchester residents, the City of Baltimore, the Enterprise Foundation, and BUILD. From the plan's inception, the City of Baltimore sought to develop a nontraditional urban renewal program built upon grassroots development philosophy. This initiative differed from traditional top-down strategies in that the Mayor envisioned a program that would correspond to local needs as perceived by residents of the community.

In order to gain public attention in the initial stages of the community planning process, in May 1990, the Sandtown-Winchester Improvement Association (SWIA), a non-profit grassroots organization, and BUILD organized a large public meeting led by Mayor Schmoke at the Gilmore Elementary School located in the neighborhood. Over 400 residents attended the day-long meeting and were asked to "dream" a possible future for Sandtown-Winchester. No dream was left out of the program because it was considered unfeasible. After the meetings, the participants shaped the Community Building in Partnership Vision Statement, which included the following declaration:

> *Sandtown-Winchester residents seek to build a viable, working community where neighborhood residents are empowered to direct and sustain the physical, social, and economic development of their community... Ultimately the renewal will create a quality of life in Sandtown-Winchester that is desirable and fulfilling to existing residents, provides for community self-determination, and is attractive to potential newcomers.*[28]

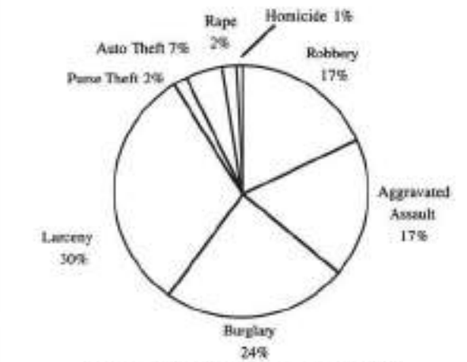
During the summer of 1990, SWIA and BUILD intensified their efforts to involve residents in the community-building process by arranging home meetings and small focus groups. As a result, additional needs, problems, and resources were identified and the process of recruiting potential neighborhood leadership began. Several workshops were conducted for dozens of residents on leadership skills and group management studies.

Information gathered from the community-wide meetings helped community leaders design eight workgroups which were charged with addressing specific community concerns and undertaking more detailed planning. Workgroups were organized around the following themes:

- Physical Development
- Community Economic Development/ Employment Development
- Health Care
- Education
- Family Support Services
- Substance Abuse
- Crime and Safety
- Community Pride and Spirit

Workshop members convened in joint sessions to discuss common concerns and build consensus around how the various community issues and problems might be addressed. The workgroup chairs, community leaders and public officials collectively directed the workshop process over an eight-month period, from October 1990 to May 1991. After numerous public meetings and the continuous recruitment of community residents, a special one and a half day "charette" was organized in May 1991 to give community members an opportunity to review the workgroups' recommendations. More than 150 people attended, evaluated and validated the working groups' recommendations.

Reported Crimes in Sandtown-Winchester 1990-1991



Source: City of Baltimore. March 1993.

Chart 1

Building the Dream

The Sandtown-Winchester neighborhood has had a variety of public-private resources to draw upon, such as the Nehemiah project, Habitat for Humanity, and the Sandtown-Winchester Improvement Association—all of which are dedicated to rehabilitating existing structures, creating affordable housing and a better quality of life low-income persons. The $17.4 million Nehemiah Housing Program has provided construction funding for more than 210 new townhomes and rehabilitated 17 units for home ownership. Thirteen million dollars, from the Department of Housing and Urban Development, has been channeled towards the renovation of the Gilmore Homes public housing project, providing 571 units of modernized public housing. Habitat for Humanity has provided an initial $900,000 for the completion of 30 units for home ownership which have been rehabilitated with the help of low-income families and volunteers. These efforts have resulted in the construction and renovation of nearly 300 new units for home ownership and the modernization of 600 public housing units.

Innovative health care services have been inaugurated in the community. The CBP secured an agreement which ensures comprehensive health care for all Sandtown residents through the newly formed health services consortium which includes the University of Maryland Medical System and School of Nursing, Bon Secours Hospital, Liberty Medical Center, Total Health Care, and the Baltimore City Health Department.[29] Ten volunteer physicians, health professionals, and nurses operate the New Song Family Services Program, funded by area churches, which provides primary care and health education to area residents. The neighborhood's infant mortality rate of 35 per thousand–four times the national average–propelled residents to register pregnant women for door-to-door prenatal care with the privately funded Baltimore Project. There has not been an underweight baby born in Sandtown since registration began.[30]

Many resources have been channeled towards improving educational facilities in the neighborhood. An example of those who are gaining from the provision of such services is Rosalie Franklin, a 60 year-old resident, who is learning to read and write at the Community Support Center. Rosalie's education was ended abruptly after only three years of primary school; because she was illiterate and unable to fill out a job application, she was unable to find adequate employment.[31]

Baltimore City Public Schools has expended $26.7 million for the private management of an elementary and middle schools during a five year period through Educational Alternatives, Inc. This project, known as Tesseract, emphasizes a personal approach to educational development and requires a high degree of parental involvement in the program's management. Volunteers are the driving force behind the New Song Learning Center Program which provides before and after-school programs and scholarships to elementary, middle, and high school students. Future gains on the Comprehensive Test of Basic Skills scores will serve as a litmus test for the effectiveness of this program.

Construction training has been provided through the Nehemiah job training program and Ventures in Community Development for Youth. Federal and state funding has been provided for a Summer Youth Employment Project to help match students and employers for summer positions. Through these and other programs, 168 adults have been employed, 200 residents have received employment or skills training and more than 500 summer jobs have been created for teenagers.[32]

Sandtown residents are aware of the importance of safeguarding their "dreams" and taking ownership for their potential achievements. This new-found sense of ownership is evidenced by the 1,700 newly registered voters in the neighborhood. This serves as an indication of the residents' heightened awareness of the importance of citizen involvement in local and national politics.

Physical improvements in the community are prevalent. The City of Baltimore has trained 17 resident volunteers and one part-time supervisor to serve as resident sanitation inspectors. The City of Baltimore and the National Park Service have jointly earmarked $385,000 for the maintenance and repair of community recreation spaces. Since the program's inauguration, three playfields have been renovated.

The Community Pride and Spirit workgroup had warned that the socio-economic and physical fabric of the neighborhood was progressively unraveling. "As conditions in Sandtown-Winchester deteriorate, so do [resident's] self-esteem, self-reliance and sense of responsibility."[33] Residents have since erected signs along major thoroughfares in the neighborhood that announce, "Welcome to

Sandtown Winchester." Beautification projects have begun, funded by the Baltimore City Community Development Block Grants. More than 100 trees have been planted to complement physical development planning. The "Wall of Pride," a mural that depicted black American legends, has also been repainted. A monthly newsletter, "The Sandtown-Winchester Viewpoint," operated by residents, is available to Sandtown residents to keep them informed of community activities. Although the concept of community pride is an essentially normative phenomenon, this radical physical and socio-psychological transformation undertaken by the community serves as a qualitative measure of the community-building process.

> The case of Sandtown-Winchester illustrates that violence may concurrently serve as a catalyst for introspection, dialogue, mobilization and resistance....

Crime in Sandtown

The Community Building in Partnership, Inc. established five year milestones to measure improvements in the quality of life of urban residents by 1997 if all proposed programs called for in their proposals are fully implemented. One of the goals is a 50 percent reduction in the number of violent crimes in the neighborhood, thereby reducing the level of violent crime to that of a typical middle-income neighborhood.[34]

Michael Randolf, Project Coordinator for Public Safety for the Community Building in Partnership, remarked that of the 280 streets that encompass the neighborhood, 140 have already been "swept through" and each street assigned a "block captain" to inform members of community meetings, supervise the maintenance of the street and survey suspicious activity in the neighborhood.[35] Community policing has greatly increased communication amongst neighborhood residents. This activity, sponsored by the Sandtown-Winchester Improvement Association, requires residents to work with the Western District Police Department to conduct community anti-crime activities.

Identifying, defending, and reclaiming the neighborhood has resulted from a tripartite process of community mobilization and resistance. Randolf detailed the residents' three-step plan to create a drug-free neighborhood "one block at a time," since it was determined that most crimes involve drug-related activities. Initially, the neighborhood increased its intolerance of crime and drugs, which was soon followed by positive behavioral changes and incipient organizational activities. For instance, residents organized marches, erected signs and promoted events that openly displayed community intolerance to crime. Secondly, the community campaigned to create physical obstructions to drug-infested spaces. By boarding up vacant buildings and creating no loitering zones drug dealers were denied space within which to conduct illicit activities. Finally, the residents engaged in the institutionalization of their vision by putting pressure on the justice system. For example, community residents will attend the hearing of a drug offender to protest a light sentence or probation for crimes committed in Sandtown, demanding "no impunity for drug dealers." Randolf explained that this is done to discourage criminal activity, adding, "if you get caught doing drugs in Sandtown, you will go to jail," and therefore, if you want to sell drugs, "go someplace other than Sandtown."

Sandtown residents do however display empathy towards former prisoners, many of whom are brothers, sisters, friends, cousins or neighbors of community members. Sandtown-Winchester has initiated an "adopt an inmate" program for those residents who have been previously incarcerated, in order to prevent previous criminals from becoming second offenders.[36]

Although many of the programs conceived by the Sandtown-Winchester community are in the process of being implemented, there have been noted improvements in crime rates which have directly enhanced the quality of life for all neighborhood residents. Murder has decreased 72 percent since 1987. Between 1992 and 1993, there was a 15.6 percent reduction in violent crime, 22 percent reduction in robberies, 45.5 percent reduction in rape and a 5 percent reduction in assaults. 1992 had seen 17 cases of arson in the neighborhood, whereas none were reported for 1993.[37]

Conclusion

The prognosis for the Sandtown-Winchester transformation appears positive despite two of the most difficult

short-term obstacles facing the community: job training and job development.[38] Most new employment opportunities have demanded highly skilled labor and/or have been created in the surrounding suburban counties—thus remaining far out of the reach of the inner-city labor force. However, Baltimore was recently designated an Enterprise Zone, and the City will receive $325 million in federal grants and corporate tax breaks for urban development activities in geographically targeted low-income areas. These initial outlays will be matched by an anticipated $800 million in private investment which is expected to give a significant boost to the city's community revitalization schemes. Sandtown is one of four poverty-stricken areas in the designated empowerment zone—an area which is home to approximately one-tenth of the city's population, but which accounts for a fifth of its murders and drug arrests.[39] The package seeks to attract businesses to low-income neighborhoods by offering a 20 percent investment tax credit, exemption from several federal regulations, accelerated depreciation of equipment and a $3,000 payroll credit for every zone resident put to work. It is expected that tax credits and lower capital costs will generate employment, rejuvenate economically depressed areas and help revitalize local economic activities. City officials estimate that within two years of its implementation, more than 500 new jobs will be created, each with an average annual salary of $14,560. A decade's passing is expected to generate 8,885 new jobs for zone residents, each with an annual salary of slightly more than $17,000.[40]

Additional strategies to improve city-wide employment opportunities may benefit a number of residents of Baltimore's low-income communities.[41] Aggressive organizing on the part of BUILD and the American Federation of State, County and Federal Employees (AFSCME), the largest public employee union in the city, has resulted in the enactment of the Living Wage Ordinance by the Baltimore City Council. The ordinance will require companies to pay a decent wage for all work done under city contracts, translating to $6.10 an hour this year, with increases of up to $7.70 an hour over the next four years. This will help to ensure the dignity of all work, tie community building initiatives to living wage jobs, and ensure that "public subsidies for private companies [are] tied to public obligation."[42]

Community activists such as Michael Randolf believe the experience of Sandtown-Winchester can serve as a model for other communities. The Enterprise Foundation hopes to replicate the Sandtown experiment by building and rehabilitating housing for low-income families in more than 20 U.S. cities. However, skeptics charge that a great deal of money is being spent to revive a relatively small area, arguing that there are thousands of Sandtowns across the United States and limited amounts of funding available. Already many are asserting that too much attention, energy, and resources are currently being spent in the area.[43] They conclude that the prospect of transferring the Sandtown experience to other cities is rather unlikely.

White House economic advisors estimate that the direct costs of urban poverty total $75 billion annually.[44] At one time the Bush administration estimated that the country spends more than $750 billion per year to sustain communities in their present impoverished state.[45] Despite the substantial amount of financial investment required to plan, implement, and sustain a comprehensive community rebuilding process, the Sandtown experience seeks to: (1) dispel the image that poverty and crime are *inevitable* and *inherent* to low-income communities; and (2) convince the public, through cost-benefit estimates, that public-private partnerships that are more responsive to local conditions will ultimately be better able to successfully maintain well-functioning communities for the same (or less) money than it currently takes to subsidize them.

The case of Sandtown-Winchester illustrates that violence may concurrently serve as a catalyst for introspection, dialogue, mobilization, and resistance, both within the afflicted community, as well as within the public arena. This dialectical struggle for conscientization is a universal one, articulated with equal fluency throughout the United States and the developed and underdeveloped world. New definitions of "community" are emerging that re-conceptualize old, dichotomized models of self, "other" and zero-sum politics. The Community Building in Partnership initiative emphasizes the need for an integrated, consensual planning *process* that puts human concerns at the center of community building strategies, while recognizing that urban diseases and their symptoms are not mutually exclusive.

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[27] Guy Gugliotta. January 4, 1993. *Washington Post*.

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[34] The Baltimore City Department of Planning emphasized this point by contrasting the low incidence of crimes reported in middle income areas of Baltimore City to Sandtown-Winchester. *Community Building and Partnership*, A9.

[35] Telephone interview by Raquel Wexler with Michael Randolf, Project Coordinator for Public Safety, Community Building in Partnership, Inc. Baltimore, MD: May 3, 1994.

[36] Telephone interview by Raquel Wexler with Michael Randolf. May 3, 1994.

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REINTEGRATION AND COMMUNITY ORGANIZATION:

The Communities of Population in Resistance in the Ixcán Jungle of Guatemala

Guy Lawson

Guatemala has been involved in a civil war for over 33 years. During this war, and particularly between the years 1980-82, hundreds of thousands of civilians were forced to flee from their homes due to the Guatemalan army's scorched earth offensive. By some estimates, as many as two million of Guatemala's ten million people were displaced by war. These individuals, mostly indigenous subsistence farmers, were forced to abandon their homes and their land. Hundreds of thousands crossed the border into Mexico and became refugees. Thousands more fled to the urban centers of Guatemala (mainly Guatemala City) as internally displaced persons.

Some chose a different path. They remained hidden in areas outside of the military's control. Families and individuals began to come together in isolated pockets: in the remote highlands, and in the dense jungles of the Ixcán and the Peten. There they developed civilian communities hidden from the military and the rest of the world. The communities began to organize themselves for their protection and survival. The presence of guerrilla troops in the area is undeniable, but these new communities chose to maintain their distance from the guerrillas, opting to establish separate, civilian communities. They suffered constant persecution from a hostile Guatemalan army, but they chose to remain on their land, in their country. The name that they chose for themselves was the Communities of Population in Resistance (CPR).

This article focuses on the process of reintegration of displaced populations in the Ixcán jungle. Specifically, it will examine the CPR of the Ixcán jungle, analyzing their history and tumultuous evolution into self-governing, cooperative communities within a battle zone. Emphasis will be given to forms of collective work and community participation that provide the basis for decision making concerning the provision of services such as education and health care, the design of basic infrastructure, and needs assessment. Attention will also be given to the implications of the organizational experiences of the CPR in the broader context of the reintegration process currently taking place in Guatemala. First, however, it is important to understand what is meant by "reintegration."

Families and individuals began to come together in isolated pockets: in the remote highlands, and in the dense jungles of the Ixcán and the Peten. There they developed civilian communities hidden from the military and the rest of the world.

The Process of Reintegration

There are three possible outcomes to resolve the plight of displaced persons: 1) resettlement and integration into the place where they have sought refuge; 2) resettlement in a new area (from that in which they initially sought refuge), or 3) return to their place of origin. For many of the millions who are displaced, return to their places of origin is the most desirable (or the only) option. However, these places of origin have often been ravaged by warfare, or have become dilapidated due to abandonment and neglect. Physical infrastructure may be nonexistent or decayed beyond repair. National and local economies may be fragile, and social issues such as education or political representation for returning populations can be highly sensitive. Therefore, return is much more than a simple physical relocation of formerly displaced persons. Return implies a necessary process of reintegration to ensure a durable solution to the problem of the displaced populations.

The International Conference on Central Ameri-

can Refugees (CIREFCA) was an effort on behalf of the governments of Central America, the United Nations and numerous nongovernmental organizations (NGOs) to address the needs of displaced populations produced in the region by the violent conflicts of the 1980s, and to design a model for the reintegration process. The first meeting of CIREFCA in May 1989 established an Action Plan that recognized the need to incorporate policy towards displaced persons into overall development policy in order to achieve a durable solution to the crisis. The Plan acknowledged that growth and development are essential elements for the reintegration of displaced populations into society (Aguilar, 1991: 1 and 15).

CIREFCA's Action Plan identifies two distinct components that define the reintegration process: emergency relief and community development. Aguilar describes these phases as follows:

> *The emergency relief, described as "basic assistance," is intended to meet the immediate needs of refugees or people in the process of being repatriated. In order to avoid creating economic dependence among the recipients, such aid is to be terminated after a fairly short time and replaced by a new set of development projects, using external resources to provide displaced communities with the means necessary to achieve self-sufficiency by continually improving their communities' social and economic environment (Aguilar, 1991: 18).*

In short, the CIREFCA model was a recognition that a durable solution necessitates a long-term developmental approach that incorporates the economic, social, political and human needs of the displaced person. In addition, CIREFCA emphasized the importance of the participation of the affected population in the identification of needs and the planning and implementation of projects (Aguayo, 1991: 2).

CIREFCA is by no means the only attempt to define and model the reintegration process for displaced populations. Its Action Plan was modeled after a United Nations Development Program (UNDP) plan entitled "Special Plan of Economic Cooperation for Central America" (PEC). According to Gallagher, "PEC's stated purpose is to link economic and social conditions to the peace process in development programs" (Gallagher, 1990: 10). What has become common to most, if not all, of these schemes is the recognition that reintegration requires a long-term developmental approach. Programs must include not only immediate humanitarian assistance, but also projects to: 1) provide, improve or rebuild basic infrastructure; 2) stabilize and strengthen local economies; and 3) foster social, political and community development. Only through this comprehensive, systemic and participatory approach can displaced populations rebuild the physical, economic and social structures of their communities. With this in mind, we may begin to examine the case of the Communities of Population in Resistance, and the process of reintegration in the Ixcán region of Guatemala. This examination will begin with a brief historical overview of the region known as the Ixcán.

History of the Ixcán

Guatemala is divided into twenty-two departments, that are in turn divided into various municipalities (much like the U.S. state/county system). The Ixcán is the northern most municipality in the Department of Quiché. The area is approximately 1,574 square kilometers and is bordered to the west by the Ixcán River, to the east by the Chixoy River, to the north by the Mexican border, and to the south by the mountains of the Cuchumatanes range (See Map 1). The landscape is characterized by thickly vegetated, rolling hills that do not exceed 400 meters above sea level. The temperature remains between 26°C and 28°C and annual rainfall ranges between 1,500 and 4,000 millimeters (COINDE, 1993: 12).

Until the mid-1960s, the Ixcán was practically uninhabited. In the 1960s and 1970s, the area was colonized by landless peasants (mostly indigenous) from the Guatemalan highlands. Separate colonization efforts were supported by the Guatemalan government, the U.S. Agency for International Development (USAID) and the Catholic Church. Life was very difficult for the colonists in the beginning, but with time conditions began to improve.

The most progressive of these colonization projects was that of the Catholic Church. Maryknoll priests, using land owned by the Dioceses of Huehuetenango, formed the

Source: Adapted by the Author from: Rachel Garst. 1993. *Ixcán: Colonización, Desarraigo y Condiciones de Retorno.*

Map 1
Guatemala & the Ixcán Area

Ixcán Grande Cooperative, composed of five affiliated agricultural cooperatives. By the early 1980s, the urban centers in these cooperatives were equipped with dryers for cardamom, mills for corn and rice, schools, health clinics, airstrips with daily flights and active markets (AVANCSO, 1992: 36-40).

By the late 1970s, the guerrillas of the Guatemalan Army of the Poor (EGP) made their presence known in the Ixcán as did the Guatemalan army. (The EGP is one faction of the Guatemalan National Revolutionary Unity - URNG.) As the guerrilla movement grew ever stronger, not only in the Ixcán but throughout the country, the Guatemalan army used drastic measures to maintain its grip on power. To destroy the guerrillas, it adopted the philosophy of "draining the sea in which the fish swim." The fish in this case were the guerrillas and the sea was the civilian population which the army considered to be the guerrillas' base of support. Between 1980 and 1982, the Guatemalan army destroyed as many as 440 villages and killed between 50,000 and 75,000 people (mostly civilian) throughout the country (Falla, 1994: 8). In the Ixcán, nearly the entire population (approximately 45,000 people) was either displaced or massacred during this scorched earth offensive. Most of those who fled went to Mexico as refugees. Some remained under the control of the army and were resettled in "model villages." Others chose to remain in areas outside of the

military's control and formed what eventually came to be known as the Communities of Population in Resistance.

Formation of the Communities of Population in Resistance

The scorched earth offensive hit the Ixcán hardest during the first half of 1982. Initially, the population was widely dispersed throughout the jungle, but by late 1982 people began to reassemble themselves into small groups. The difficult decision to remain in Guatemala, resisting the repression of the army, was the seed from which elevated forms of working and living together would quickly begin to grow. Falla observes, "Many people fled to refuge [in Mexico] in October, but others stayed in resistance, creating a new kind of society...[that] would transform the entire life of the community" (Falla, 1994: 172).

This "new kind of society" was rooted in the need of the community to protect itself from the army. The army considered those who remained in hiding to be guerrillas, and therefore these new communities faced the constant threat of attack. If they were to survive, individuals would need to work together and provide constant surveillance to monitor the army's movements. The decision was made early on by groups near Xalbal to sow their fields collectively in order to provide safety in numbers and to allow some of the workers to conduct surveillance. This idea spread to other groups that were beginning to come together. Falla points out:

> *The first steps in the process of collective work had far-reaching consequences because it meant a change in the mode of production. The change did not stem from a desire to increase production or from a conviction of the excellence of working collectively, but from the need for the people to defend themselves from the army. Working together meant that they could take turns keeping watch and sending out the alert if the soldiers arrived (Falla, 1994: 137).*

In the beginning, production from the collective work was not intended to be shared. The men worked together to sow each others' fields, but the fields (and the harvest) were still seen as belonging to the individual. In other words, property and production were not collectively owned. In these early stages, individual families still had personal stores of food to provide for their needs, and the idea of collective production and sharing resources did not take hold. However, as these stores came to an end, and caring for individual plots became more dangerous and time consuming, the groups decided to store the new harvest in collective granaries for the use of the entire camp.

This decision strengthened the collective work model, and consolidated the small groups into cooperative communities. By the end of 1983 these communities—which were still in hiding and suffering from constant harassment and persecution from the army—established the Comité de Parcelarios del Ixcán (CPI), or the Small Landholders Committee of the Ixcán. The CPI, with elected representatives from each community, was to become the coordinating body for the new communities.

The formation of the CPI marked the beginning of what is now the Communities of Population in Resistance. One of the first tasks of the CPI was to solidify the new system of collective production and distribution. Collective work would be conducted from 7 a.m. to 3 p.m. , Monday through Saturday. Late afternoons and Sundays were left open so that people could maintain individual crops. The intention was to create a collective that did not impinge on individual/cultural tastes any more than was necessary. Falla points out:

> *...it is a human and flexible collective that does not intrude on the sense of home (meals are cooked in the family, not collectively). Nor does it discard personal and cultural likes and necessities (family plots of land are maintained) or destroy ethnic identities or the sense of people's places of origin. The collective merely makes them relative, including them in the community, where each person is assigned tasks in production or other activities during group meetings (Falla, 1994: 189).*

It is upon this system that the organizational structure of the CPR is based. Heavy emphasis is placed on the equitable distribution of the collective production. A Food Distribution Commission was established in each community to oversee this activity. Families would receive food rations (and later, other items such as soap, clothing, etc.) based on the number and age of their members. In this way, the CPR were able to provide for widows, orphans, and the elderly (Falla, 1994: 176).

Perhaps of greater importance is that collective production and distribution allows the CPR to provide for people involved in nonproductive tasks. Teachers, health promoters, scouts, community leaders in the Committees and persons assigned to the CPI also receive rations for the services that they provide to the community. This system, based on collective work, enabled the CPR to organize democratic, civilian communities capable of determining their own needs and providing for them with severely limited resources in the midst of a battle zone. To obtain a more complete understanding of what this means, it is essential to examine the CPR's organizational structure.

The Organizational Structure of the CPR

(This section is based entirely on field notes taken by the researcher while serving as a human rights observer in the CPR-Ixcán during the summer of 1994.)

The CPI is the central governing body of the seven communities that make up the CPR. Based in Santiaguito, the CPI coordinates the activities and oversees the management of the CPR's resources. There are nine representatives to the CPI who are elected on an annual basis. Aside from their normal duties, representatives take turns of one month each serving on the Capital Delegation. The delegation represents the concerns and demands of the CPR to the national and international community, and coordinates activities with various popular organizations and NGOs through their office in Guatemala City.

Within each individual community, the highest level of government is the Community Committee (CC). The CC is made up of three members who work on a rotating schedule as "officials of the day." Essentially, the CC is the administrative body charged with coordinating and managing all the various aspects of community life. A typical day might involve such diverse tasks as coordinating the week's production activity with the Production Commission, holding a meeting with the women's organization to discuss potential income-generating projects, maintaining community accounts and calling a special meeting to address such problems as pigs getting upstream of the water supply. The CC representatives are the community's "troubleshooters," and each day's problems are different from the previous one's.

Collective production has also allowed the CPR to provide a number of basic services. Each community in the CPR-Ixcán has school from kindergarten through fourth grade. The Popular Education Team trains its own teachers and develops its own curriculum. All children go to school and learn, among other things, reading, writing, math, geography, history and ecology.

Because communities develop their own curriculum, the material tends to reflect their own reality. For example, a typical spelling/grammar lesson in the first grade might include sentences such as, "In Guatemala the generals give the orders. They are the ones who ordered the massacres." Or, "In Quiche there are few forests left. The rich have destroyed them with their machines."

The communities work to train their own health promoters, and each community has a clinic. They receive training materials, medicine and equipment through donations from various solidarity organizations, but they insist on training their own community members to provide health services. Promoters treat a variety of illnesses combining natural remedies, western medicine and even acupuncture. In early August 1994, the health promoters were learning

how to make and fit dentures with the help of qualified trainers from the returned refugee communities.

Each community has a Hygiene Commission that is responsible for keeping the community clean and providing workshops on health and hygiene. The Vigilance Commission coordinates the intricate system of surveillance and assigns surveillance duties on a daily basis. There are also youth groups, a teacher association and an organization of catechists that provides religious services in each community.

In September of 1991, the CPR formed a women's association called the Organization of Women in Resistance (OMR). The goals of this group are to involve women more actively in the collective work, to foster greater participation of women in decision-making, to make known and defend the rights of women and to defend the culture and traditions of the communities (OMR, 1993: 4). The OMR is currently conducting adult literacy courses for women, and is directing a collective weaving project to generate income.

Over the years, the CPR realized the importance of organizing to protect human rights. Many national and international human rights organizations have worked with the CPR during their time in hiding, but, in early 1994 the CPR decided to develop their own human rights group. The group, made up entirely of community members, provides workshops to the communities on human rights and how to defend them. It also monitors the army's movements and periodically produces written protests and demands in response to human rights violations. These protests and demands are routinely published through paid advertisement in Guatemalan newspapers, and are circulated through other human rights organizations and over the Internet.

The most frequent form of public participation in the community is found in the weekly meetings. Every week, usually on Saturday evening, the Community Committee holds a general meeting. These meetings are meant to update the community on the events of the week, to receive reports from the various commissions and organizations, to discuss any problems or issues that have come up, and to vote on any decision that must be made. All are allowed to speak, ask questions, make comments or criticism, or introduce items for discussion. There are no time limits placed on speakers and, as a result, meetings can run on for hours and hours. Nevertheless, the meetings

play a critical role in disseminating information and maintaining the cohesion and unity of the community.

Once a year a General Assembly is held in which all of the communities meet together. The collective work is stopped so that everyone can participate. Over the course of two days, the work of elected leaders and the performance of the various services and organizations is reviewed and evaluated. Plans are set for the coming year and new leaders are elected. All community members are allowed and expected to participate in the Assembly. The right to vote on issues is given to everyone over the age of fifteen, both male and female. The majority vote wins, but more emphasis is placed on reaching consensus through open discussion and debate than on imposing decisions through majority rule.

The structure discussed above is the result of thirteen years of organizational evolution. The authorities, services, and sectors that have come into being embody the local perceptions of structure and order. Out of a crucial need to protect themselves from the Guatemalan army the CPR have developed a "new kind of society" that provides for the basic needs of the community; manages its resources; fosters the social, political and cultural development of its members; and, above all, is self-determinant.

In 1994, the organizational and managerial strength of the CPR would be put to the test. The seven remaining communities would come out of hiding and form five open, visible settlements (Santiaguito, San Luis, San Francisco, Los Altos and La Esperanza - see Map 2). Communities that had previously lived mainly under plastic tarps would construct houses, schools, clinics, etc. They would also open up trails connecting the settlements to each other and to the outside world. These new settlements would be planned, designed and constructed by the CPR themselves.

Coming out into the open was a calculated move to begin to reclaim their dignity, their land, and their rights as civilian populations.

Coming Into the Open

During the XIII General Assembly in August 1993, after very careful consideration by the entire community, the CPR decided to come out from under the shadows of the jungle and form open and visible communities. For the CPR, who are not recognized by the Guatemalan government or military as civilian populations, this was a dangerous proposition. Coming out into the open was a calculated move to begin to reclaim their dignity, their land, and their rights as civilian populations (CPR, 1993b: 3-6). One witness claims:

> *On one side, it was to say to the government and the army that "Here we are. You see if you kill us or not." That is, we expose ourselves to death. On the other side, if they were going to cause any harm to us we are going to have more strength to denounce them. Because now we're not hidden, we're publicly open in the settlements and if they come to assassinate us it is another thing all together now (Interview: December, 1994).*

Another states:

> *We had been in hiding for twelve years and we decided that it was no longer convenient to continue that way....The idea was to change the situation. We imposed ourselves against the government. They didn't want this, but we were able to do it (Interview: December, 1994).*

Several factors played into this decision. First, on January 20, 1993, the first collective and organized return of Guatemalan refugees from Mexico took place. Some 2,500 refugees returned to the Ixcán jungle and founded the community Victoria 20 de Enero (Ruiz, 1993: 15 and 19). With the refugees came a large international contingent renewing international attention to the area and reducing the likelihood that the army's actions would go unnoticed. More returns and a greater international presence were planned for 1993 and 1994.

A second factor influencing the decision to come out into the open was the installation of Ramiro de León Carpio as president of Guatemala. Carpio, the country's former Human Rights Ombudsman, was moved to the presidency following the failed auto-coup of former president Jorge Serrano Elías. As Guatemala's Human Rights Ombudsman, Carpio had visited the CPR in February 1991 where he witnessed firsthand that the CPR were civilian, non-combative populations. With his inauguration, there seemed to be hope that the CPR would receive official recognition as civilian populations.

Instead, Carpio has taken a much harder line with the CPR. He demanded that the CPR recognize the authority of the Guatemalan government and all of its institutions, including the army. The CPR responded by saying that they would recognize any legal authority that acts within the constraints of the Constitution of Guatemala, effectively denying recognition of the army and the Civil Defense Patrols (PAC) created by the army. Negotiations broke down there. Regardless, the plan to come out into the open continued, and the date was set for February 2, 1994. In order to facilitate the planning and construction of the new settlements, the CPI formed seven special commissions with the following duties:

Organizing Commission: selecting sites and laying out the physical designs for the new settlements; overseeing the activities of the other special commissions.

Commission of Security and Accompan-iment: arranging for the constant presence of national and international observers and accompaniers to act as a form of security/deterrence against possible military action.

Commission of Information, Propaganda and Spirit Raising: preparing

up-to-date news and information about the CPR to be distributed nationally and internationally; performing theater skits and writing songs about the CPR to involve the communities and raise spirits.

Resources Commission: determining what material and human resources would be necessary for the construction of the new settlements.

Infrastructure and Logistics Commission: acquiring and distributing tools and resources needed for the construction of the new settlements (i.e. corrugated metal, machetes, axes, rope, etc.).

Communication Commission: maintaining communication with returned refugee communities and with the other surrounding villages, and keeping them informed as to the progress and purpose of the CPR's actions.

Food Commission: ensuring that production and nutrition did not suffer as a result of the temporary shifting of labor to construction activities. (CPI, Nov. 30, 1993 and interview December, 1994).

Though all of these commissions were of great importance in the preparation of the new settlements, of particular interest to this study is the work of the Organizing Commission (CO). The CO was made up of five members appointed by the CPI. The director of the CO was a member of the CPR community of San Luis. The planning and design of the settlement of San Luis will serve to illustrate the role of this commission.

San Luis is a community of 54 families (approximately 300 people) that had remained hidden for twelve years in the northeast section of what was the Ixcán Grande Cooperative. When selecting a site for the new settlement it was decided to look in an area of the cooperative known as San Luis, hence the name of the community.

The CO considered several variables in selecting the appropriate site for the new settlement. Among the most important of these variables were access to water, soil type, topography, location of the military, and potential escape routes in the event of an army assault. One community member states his feelings, "What we wanted was that there not be mud, and that water be near. We didn't want to continue living in mud." Three potential sites were identified and surveyed, and a final site was agreed upon after consultation with the community.

The site selected is on the convergence of two small hills that separate two streams. There are no human settlements upstream, and therefore the risk of contamination of the water source is relatively low. (Streams run south to north.) The soil on the two hills is sandy, changing to clay at about two to three feet. These are desirable conditions as water runs off very quickly and does not collect. This means that the community will not turn into a muddy quagmire during the nine-month rainy season, and the risk of breeding malarial mosquitoes in stagnant pools is greatly reduced (Interview: June 1994). The site is approximately one kilometer south of the Mexican border, which would be the principal direction of escape should the Guatemalan army threaten or attack the settlement. (The Guatemalan army has been known to chase the CPR well into Mexican territory, but the Mexican army and the local landowners on the Mexican side have a history of being helpful and receptive to the CPR.) At the time, the closest military base was located at the former urban center of Cuarto Pueblo. This base was withdrawn in April 1994.

The Hygiene Commission and the health promoters have led a concentrated effort to advocate the importance of potable water. This had an obvious effect on the physical design decision reached by the CO. Family lots are laid out on the western slopes of the two hills with the soccer field and the administrative offices located on the high ground of the southern hill. Houses were not put on this high ground due to drainage patterns. Unlike the rest of the site, this area drains to the south and drainage enters the water source farther upstream. The CO determined that if houses were located in this area, runoff carrying contaminants from households would enter the stream south of the settlement. This would mean that the community would have to walk farther in order to collect its drinking water. Instead, all housing was located in the wide swale between the two hills that drains downstream of the designated water collection site.

Housing is laid out in a fairly concentrated grid pattern on individual lots of 25 X 50 meters. The lots are large enough to provide space for a house and a small garden. All of the families have planted gardens on their lots where they grow vegetables, chilies, pineapples, spices, etc. Lots are grouped in pairs and each pair is separated by pathways of approximately three meters in width. Lots were distributed by means of a lottery, but provisions were made such that extended families received adjacent lots. The houses themselves are constructed of hand-fashioned wooden slats. The slats are placed side by side vertically along support beams (i.e. solid tree trunks of approximately 6 inches in diameter) and tied together with vines or thin nylon rope. Each family was supplied with ten sheets of corrugated metal to use as roofing. The north and east walls of most houses are covered with plastic tarps that serve to keep out rain that blows through the gaps between slats. (Storms generally blow in from the northeast.)

The CO located all latrines on the eastern slope of the northern hill. This is due to the fact that drainage on this slope leads away from the community, and enters a separate basin than that from which the community draws its water. Each family has its own latrine and is responsible for its maintenance. Latrines are simple pit privies approximately 2 meters deep. Logs are laid across the pit and then covered with a layer of clay. Families are required to keep latrine seats covered at all times to reduce the risk of illnesses spread by airborne insects.

On January 15, all planning was completed and lots were assigned. For the next two weeks the collective work focused entirely on cleaning the sites and constructing the new communities (CO Construction Plan: 1994). All trees were felled from the sites, giving the area a somewhat barren appearance to the outside observer. However, there were two compelling reasons for this decision. First of all, the central purpose of this undertaking was to build "open and visible" settlements. The CPR had been hiding under the shadows of the trees for twelve years and the idea was to come out and be seen. Second, as the CPR learned through painful experience, trees greatly increase communities' vulnerability to the powerful storms that hit the area from June through January. Many large trees do not have deep root structures and are easily toppled by the high winds that accompany these storms. The risk of being crushed or losing homes due to falling trees is a risk that the CPR had to endure since they were forced into hiding. Once the land was cleared, construction began on housing, latrines, the school, and other public buildings.

February 2, 1994 was the day that the CPR officially "came into the open." This was the culmination of a long and laborious process. In the words of one community leader,

> *It took a lot because we had to form projects and present them [to the population and to international donors] in order to improve our lives. But, thanks to our General Assembly and the organization that we have developed which has helped us so much, we were able to do all of this and we are very pleased (Interview: December, 1994).*

This day is now recognized and celebrated annually in the CPR as Día de la Resistencia (Resistance Day).

Since that time there has been no major military action against the new settlements. The communities have settled into a relatively normal day-to-day life and attention is now being focused on the problem of reintegration in the larger sense with the returning refugees and the repopulation of the Ixcán Grande Cooperative. The experiences of the CPR over the past twelve years in collective work, organizing, and self-determination will have noticeable impacts on the reintegration process. Though it is extremely difficult to speculate as to how these experiences will manifest themselves in a reintegrated Ixcán, certain recent events and actions can be observed that may provide some clues.

Reintegration in the Ixcán

Several events in the past two years indicate the beginning of a new era in Guatemala. In 1993, despite the continuing war, Guatemalan refugees began to return from Mexico and reclaim the land that they had been forced to abandon. The first organized return of refugees in January, 1993, saw approximately 2,500 people return to the Ixcán jungle. Since that time, three more large-scale returns have come to the Ixcán, and thousands of refugees have returned to other parts of Guatemala. Shortly after, in February, 1994, the CPR came out of hiding and formed open, visible settlements. Finally, peace negotiations between the Guatemalan

government and the Guatemalan National Revolutionary Unity (URNG) have made considerable progress in 1994. Several preliminary accords have been signed, and the prospects for reaching a final peace agreement are better than they have ever been in the past 33 years. (That is not to say that the accords that have been signed are satisfactory, or that the chances for a "firm and lasting peace" are good, but the prospect for an end to the present armed conflict exists.) These three things together—the return of refugees, the coming out of the CPR, and the progress in the peace negotiations—signal the beginning of the reintegration process in Guatemala.

For the CPR and the returning refugees in the Ixcán, the central issues around which the reintegration process hangs are land and the reconstruction of the Ixcán Grande Cooperative. How land might be redistributed in the "reconstructed" Ixcán Grande Cooperative is a topic that could cover several volumes in itself. What is important for the purposes of this study is the impact that the CPR is having on the process of negotiations between the CPR, the returning refugees, the new residents brought in by the army during the late 1980s, the Catholic Church (which still holds overall title to the land), and the Guatemalan government.

The CPR has been at the forefront of these negotiations, taking strong stances and presenting innovative ideas. In August 1993, the CPR introduced a proposal "representing the collective thinking of all the CPR over the reconstruction" of the cooperative (CPI, August 1993). This document addressed all of the major themes that have since become the central topics for negotiation, such as restructuring the original bylaws of the cooperative that currently deny women the right to participate, and only allow property to be transferred from the original owner to his eldest male child. The proposal also insisted that the negotiations "create the opportunity for new and better forms of organization that will allow us to achieve broader development in all aspects of our lives...and that this reorganization be carried out in such a way as to preserve our form of communal life" (CPI, Aug. 1993). Through this, it is plain to see that the CPR do not intend to forget the lessons and experiences of their years in the jungle. One leader states,

> *We want the government to recognize us and accept our form of organization. As we are we can advance on our own, under our own leadership. We are going to live always with our system of organization, our way of living, our customs - like the CPR that we are (Interview: December, 1994).*

In June 1994, the CPR decided to form a special commission to deal specifically with the land negotiations and possible solutions. The Land Commission began work immediately, developing several options that would be considered acceptable to the CPR. They also began conducting public education workshops to keep the general population of the CPR informed about the negotiations and sensitive to the importance of remaining unified as communities. The other communities outside of the CPR took note of the Land Commission and have all subsequently formed their own versions. In late July, at the behest of the CPR's Land Commission, it was decided that all communities in the Ixcán would conduct a complete survey of all residents in order to gauge opinions on the land issue, and to identify with greater precision the populations that the negotiations were affecting.

The CPR are a leading force in the land negotiations and in shaping the reintegration process, despite the fact that the returned refugees and the new residents outnumber the CPR in population by three or four times. This is not to say that the other populations are less capable, or at all dependent on the CPR for leadership. The experiences of the different populations over the past thirteen years (CPR, refugees, those living under military control) affect the manner in which they participate in the process. The CPR have taken this lead role because of their experiences in organization and self-determination. The role was not thrust upon them; they assumed it naturally as an outgrowth of their organizational capacity. Furthermore, as evidenced in the case of the Land Commissions, the other communities of the Ixcán are affected by the actions of the CPR.

Conclusion

Under the best of conditions, reintegration is a long and arduous process. As was made clear in the CIREFCA model (and in others), reintegration implies much more than short-term provision of humanitarian assistance to help formerly displaced populations get back on their feet. Reintegration requires an approach that combines short-term relief with infrastructure projects, economic development measures and opportunities for social/community growth. This type of long-term effort is necessary to achieve a durable solution to the problems faced by displaced populations as they attempt to return to normalcy.

The organizational structure instituted by the CPR over the past thirteen years provides a possible model by which displaced populations in the Ixcán might "reintegrate." This structure enables the CPR to identify their needs, analyze alternatives, and manage their own limited resources in order to meet those needs. As is clearly evidenced by the formation of the open settlements, the system of self-government and self-determination in the CPR is capable of designing and managing fully functioning communities. This system can also provide the framework from which all of the components of the reintegration process (short-term relief, basic infrastructure, economic development, and social/community development) can be designed so that they perform in a way that is most suitable to the population.

It is too early to draw conclusions concerning the course of the reintegration process in the Ixcán. The process has begun, but until questions concerning the redistribution of land are answered, it is difficult to speculate on the direction the process might take. What can be observed is that the CPR are emerging as a leading force in determining the future of the Ixcán. This can be seen through their role in the land negotiations. Their experiences in organizing, managing their own scarce resources, and designing their own communities will undoubtedly play a part in the elaboration of any future reintegration efforts in which they are involved.

ABOUT THE AUTHOR

Guy Lawson received his M.S. in Community and Regional Planning from The University of Texas at Austin in May, 1995. In the November, 1994 issue of the Texas Observer, he discussed his experiences as a human rights observer in the Guatemalan jungle during the summer of 1994. His thesis deals with the wider issue of displaced persons in Guatemala.

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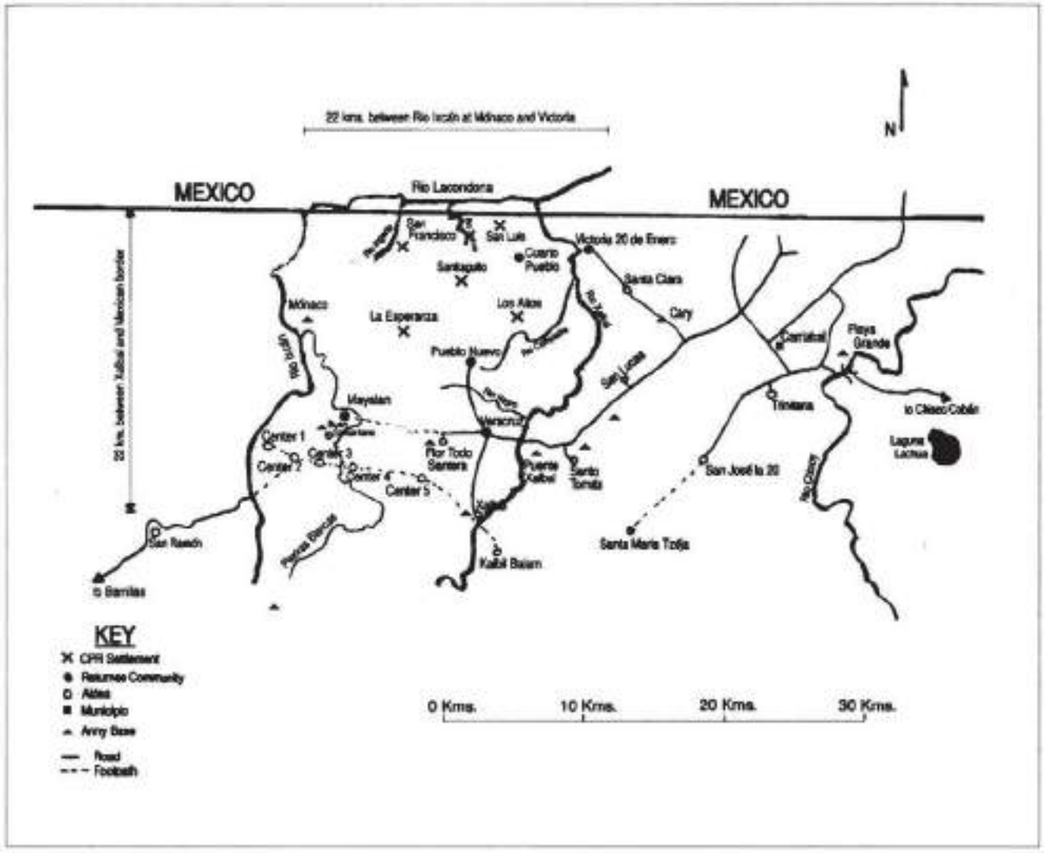

Map 2
Ixcán Area Map

Source: Adapted by the author from CPI information.

COLONIA SETTLEMENTS:

Working-Class Refuge Stations along the Texas-Mexico Border

Christopher S. Davies

Colonias are unincorporated, quasi-rural settlements on the U.S. side of the U.S.-Mexico border and are characterized by substandard housing and the absence of running water, wastewater facilities, garbage collection, and paved roads. Besides the lack of water and wastewater systems, frequent complaints of colonia residents are the absence of flood drainage systems; absence of fire, police, and emergency services; and the inability to access these city services due to the lack of bus and telephone links. The colonias' dirt roads are quagmires after a winter rain and in summer are filled with iron-furrowed ruts. Some 60 percent of all residences constructed in this region are now related to informal colonia development, making colonia creation the most common method of residential land occupation in this border area (Davies and Holz, 1992).

There is one overriding difference between Third World squatter settlements and U.S. colonias–land and homes in colonias generally are purchased by legal contract, whereas illegal means of land appropriation, such as "squatting," or renting, largely dominate the process of urban expansion in developing nations (Hardoy and Satterwaithe, 1986; Ghosh, 1985).

So why do people live in colonias? The answer is simple. South Texans had an annual 1990 household income of $6,748, and colonia plots are affordable because they lack basic services and because they lie outside the city's tax domain. If the costs of such services as running water, sewers, paved streets, fire and police protection were added to the colonias' plot prices, they would be unaffordable to low-income families.

In the United States, colonias originate where poverty is most desperate. They are a spontaneous, creative response to the critical housing needs of an impoverished class who have found that they cannot afford conventional housing prices and methods of financing, because of inequalities of wealth and well-being (Gilbert and Ward, 1985).

> Colonia proliferation is...a rational reaction to an inadequate housing supply.

Study Area

Although colonias are scattered all along the U.S. side of the U.S.-Mexico border, they are primarily a Texas phenomenon with few counterparts in New Mexico, Arizona or California. In Texas some 1,171 colonias now house an estimated 200, 000 residents (see Map 1–all grapics follow the article).

This study of habitat creation originates from a series of field studies conducted in the tri-county area of Hidalgo, Cameron, and Willacy counties in the Lower Rio Grande Valley of Texas where a particularly heavy concentration of colonias is found (Map 2). The 435 colonias identified in this study area are derived from 77 colonias in Cameron County, 354 in Hidalgo County, and 3 in Willacy County. The 435 colonias contain around 14,643 houses and approximately 71,478 people (Table 1). This predominantly young colonia population is projected to increase to 151,000 people by the year 2010. Another major concentration of colonias is found around El Paso, Texas, in the Upper Rio Grande Valley, sociologically the United States' largest Third World city, where some 68,395 people are found in some 537 colonias.

Forces of Demand

There are several indispensable conditions behind the growth of colonias in the Lower Rio Grande Valley of Texas. The first is the rising housing demand of this region's 1990 Mexican-American population of 1.5 million–a full third of Texas' Mexican-American citizenry of 4.1 million–whose rates of fertility and family formation are forecast to double by the year 2000. With a housing vacancy rate in this area of less than 1 percent, housing demand cannot be

accommodated through the normal housing market. The supply of public housing is so scant, and the waiting list so long, that administrators no longer record the number of applications. Colonia proliferation is, therefore, simply a rational reaction to an inadequate housing supply.

The second condition behind the growth of colonias is the European idea of inheritable tenure, the desire for home ownership, patrimony for one's children, and the avoidance of renting from landlords who in harsh economic times will evict them. The desire to live the "American dream" and to "own" a piece of America, whether accompanied by utilities or not, is a powerful factor in colonia creation. This desire has many historical antecedents, because a great proportion of American "frontier" housing in the nineteenth century was similarly developed (Bailyn, 1988; Blake, 1979; Bridenbaugh, 1938; Wright,1981). But unlike nineteenth-century settlements, colonias are not tied to an agrarian economy but to an urban-manufacturing one. Neither do they absorb large plots of fertile agricultural land like earlier nineteenth-century settlements. Although perceived and classified as rural, they are not.

Another condition conducive to the formation and preservation of colonias is isolation. Distinguished by its harsh climate and trackless wastes where, until the Border Industrialization Program and NAFTA, distance was the enemy of development, this once back door to both nations is dependent on and subordinate to the United States and Mexico, and until recently was virtually ignored by both governments (Davies, 1986).

Another stimulant to colonia formation is poverty. Why poverty is so desperate in these financially stricken agricultural border counties relates in part to the foreigness of a Hispanic culture. This foreigness has been used in a repressive manner to rationalize and direct a form of economic imperialism and European patrician patronage toward this corridor of deprivation. Borderland cities record only a 65 percent share of U.S. per capita income, and register unemployment rates that rank among the highest in the nation. For example, Maverick County (Eagle Pass-Piedras Negras), Texas' second poorest county, registered a 1991 per capita income of $7,129, and a 30 percent unemployment rate. This rate has increased with the devaluation of the peso and the loss of Mexican trade.

Poverty, along with the high birth rate of this young, poorly educated Hispanic population, combined with the influx of illegal alien migration from Mexico, has put intense pressure on housing and job availability in this region (Table 1). Although illegal migrants are overwhelmingly Mexican, continuing strife in Central American countries has forced an increasing number of Guatemalans, Hondurans, and Salvadorans to seek refuge in this area. For example, from October 1, 1989 to December 31, 1989, out of 15,136 illegal aliens apprehended by the U.S. Border Patrol in the McAllen region of South Texas, 2,833 or 19 percent were 'Other Than Mexican'–45 percent of these were Salvadoran, and 35 percent were Nicaraguan.

Geographic Distribution

The geographic permutations of climate and terrain make this landscape one of the harshest on the continent. The Lower Rio Grande Valley is a flat landscape of low elevation, flanked by Mexico and the Gulf of Mexico. With the ground water table a mere 3-4 feet from the surface of sandy clay loams, heavy rains frequently inflict extensive flooding (US Soil Conservation Service, 1981). Since colonias are devoid of drainage systems, stagnant, effluent- filled pools are ubiquitous (Illustration 1; Holz and Davies, 1989).

Colonias tend to group along secondary highways or near urbanized areas because of the access to jobs and services. As these colonias grow and coalesce, they form new urban agglomerations and are explicit of the adaptation of the land from an agricultural to a residential use.

Since colonias are viewed by local city government as a county problem, essential services are not provided to them. Speculators who develop colonias are aware of colonia service deficiencies and accordingly purchase cheap, well-leached agricultural land in the intendencies or outskirts of cities to sell to prospective residents. Colonia distribution is therefore an exurban rather than a rural phenomenon and is a reflection of the spatial requirements of the capitalist mode of production, in which cities are the loci of manufacturing and accumulation. Colonias work to the economic advantage of the city since they contain an army of labor that stands ready to serve. Like nineteenth-century Irish and Chinese laborers who on respective coastlines awaited the call to build the U.S. railroad system, colonia residents similarly await the intermittent call of local rural-urban markets. Colonia residents are a functional and not dysfunctional population.

Another influence on colonia siting appears to be

the desire of this predominantly Hispanic population to reside in the cultural hearth land forged by their ancestors. As vanguards of settlement, these colonias play an influential role in ending the existence of frontier characteristics that still linger in this region. By impressing the urban-secular experience on this isolated, economic backwater, even humble colonias now act as the conduits of change and the distributors of ideas. Like the begats of the Book of Genesis, they merge and multiply into large agglomerations, of formless urban exudation, more ru-burbia than exurbia. This is not a new phenomenon, as nineteenth-century residents of outlying urban areas were more likely to be poor than affluent. In fact suburbia in the early nineteenth century was viewed as a place of "vice and squalor" (Jackson, 1985).

Social and Structural Characteristics

Nearly all homes in these colonias are single-family, Hispanic owner-occupied dwellings. These homes contain an average of 4.8 persons, compared to a national figure of 2.8 persons per household (Table 1). Unemployment in colonias hovers around 30-40 percent. The most frequently cited occupations are field work, construction, and factory work.

Over one-third of all colonia residents cannot speak English, and a massive 86 percent of the family heads failed to finish high school. This inability to read English, or to comprehend abstruse terminology, has allowed developers to engage in deceptive trade practices such as promising but failing to deliver essential services and development projects (Table 1).

Colonias vary in structural appearance, with the younger colonias having the poorest housing. For instance, the relatively young colonia of Del Mar Heights near San Benito reflects a chaotic shamble of structures, whereas the older, more established Cameron Park colonia near Brownsville has homes that are so comfortable, it is almost possible to forget that they have no running water. Colonias contain a wide array of architectural designs ranging from ramshackle shacks of differing sizes and materials to mobile homes, discarded buses, and houses of frame construction and of brick (Illustrations 2, 3).

The average area of a colonia is 25 acres, and the number of single family houses within each colonia ranges from a few to several hundred (Holz and Davies, 1992). Very few multiple structures are visible in colonias, which is indicative of the ready availability of single- family plots and an aversion to rental living. House construction, from stake out to final completion, is almost immediate. The house is generally built by the household head with the assistance of family and friends. Children and women make cement blocks, dig, and transport building materials such as plywood, used lumber, and scavenged pipe and wire. Mobile vehicles often serve as instantaneous habitats, alongside which a more permanent dwelling is gradually constructed (Illustration 4).

Average colonia housing density is 2.2 units per acre, and average lot size is between 6,000 and 8,000 square feet, more than double that found in the illegal subdivisions of Mexico. This low density makes infrastructure improvements by local governments almost prohibitive. Low density is the crux of the problem of reconstructing colonias. Colonia populations reach several thousand, with an average of 260 persons per colonia. Whereas almost every contractor-built, post-WWII home contained central heating, indoor plumbing, telephones, and so forth, these 1995 colonias have none of these amenities (Forsyth, 1994).

Environmental and Health Concerns

Sick people cannot work. Where sand and clay is everywhere, but potable water is an illusion, colonia residents purchase tank-hauled water at $22 per 1,000 gallons and store it in 55 gallon drums or in other miscellaneous containers found in the U.S. or Mexico (Illustrations 5, 6). The same 1,000 gallons of water piped in from a nearby city would cost about $1.50. These contaminated drums are suspected of contributing to the rashes and gastrointestinal illnesses that plague colonias (Russell, 1988). Millions of tons of raw sewage flow into open canals, called aquas negras, that run intermittently along the 1,000 mile border between Texas and Mexico; this, and the unlicensed dumping of hazardous wastes, are the vectors that help transmit infectious diseases to Texas colonias. Near-Third-World rates of shigella, salmonella, dysentery, hepatitis A, and other endemic diseases occur in these colonias. In one El Paso colonia, 35 percent of all children of eight or older have had hepatitis A, and by the age of 35, up to 90 percent of all colonia residents have contracted it. A disease more associated with history in the United States than reality, cholera, now threatens this area. In the third quarter of 1991 Mexico recorded 1,600 cholera cases. The disease poses a special

threat to the international twin border cities such as Nuevo Laredo-Laredo and Ciudad Juárez-El Paso. Situated on brown patches of treeless fields and girded by agricultural activities, colonias also experience the dust discomforts that emanate from agricultural activities, and the dangers of chemical insecticide spraying. Few realize the magnitude of this urban pathology, or understand the potential for its expansion (Council on Scientific Affairs, 1990; Russel et al., 1990).

Although ground water is contaminated and not potable because of its high mineral, saline, waste, and chemical content, poorer colonia residents use water from shallow wells and from the myriad of irrigation ditches contaminated by insecticides, fertilizers, and fecal deposits that riddle this agricultural landscape. There is no indoor plumbing in these houses. An outdoor pit-latrine serves as the privy, and butane gas cylinders provide the heat for cooking (Lawrence, 1989). Electric power lines strung along poles are now a common landscape feature in colonias .

The Del Mar Heights colonia, situated on Lomalta clay and Sejita clay loams, extends along Highway 100, 3 miles from the City of Los Fresnos. Here frequently flooded soils severely limit septic tank drainage fields. Drainage problems, the impermeability of the soils, and storm surges from the Gulf of Mexico, along with a 10-20 year floodplain further exacerbates this problem. Table 2 lists the wastewater conditions of 74 households surveyed in this colonia in May 1994. The first apparent fact is the number of households that share facilities. The pattern of septic tanks, latrines, and cesspools common to this colonia is repeated throughout all colonias in this region (Table 2).

As in most Third World slums, piles of trash and dismembered automobiles lie scattered throughout the colonias. The jumble of automobiles awaiting repair, serving as sleeping quarters, or sprawling in various stages of cannibalization litters the area, along with piles of rotting tires. Building materials are strewn everywhere; colonia homes appear to be in a continuous stage of evolution. Lack of garbage collection creates the smell of putrefaction that pervades colonias, and when the garbage is burned, a cloud of smoke engulfs the residents. Here the house is a place to get out of. Colonia residents are forced outside as there is no air conditioning, and with few windows, ventilation is nonexistent. The relentless, overpowering heat found in this area serves to exacerbate their discomfort.

Internal Morphology

Colonias differ from U.S. cities in the way their residents disperse themselves geographically within the settlement. In most U.S. cities, the urban ecology or arrangement of a community's social space is clearly defined by economic status, family cycle, and ethnicity. Unlike U.S. cities, colonias appear to be defined only by ethnicity because colonias are composed of people of only one ethnic status–the Hispanic poor (Table 1). Whereas one's position in the family cycle often determines residence selection in U.S. cities, this condition does not apply in colonias. Here the extended family is prevalent and the only choice of habitat is a single-family home.

Within colonias wealth does not clearly define or differentiate the internal social geography. Unlike other U.S. cities where the wealthier distance themselves from their poorer neighbors by collecting in affluent enclaves where real estate values or restrictive covenants preclude entry by others, this distancing does not occur in colonias (Harvey, 1973). A large, well-constructed house, equipped with television antenna and a complement of new cars, can be found juxtaposed with a shack (Illustration 2). Following plot purchase, the colonia resident improves the site and the dwelling on it, regardless of surrounding conditions. Zoning ordinances, normally a device to keep poor people at bay, do not exist in colonias.

Colonias have a minimal commitment to the more conservative influences of pre-existing urban form. Whereas utility networks shape and modify the direction and spread of the modern American city, the "growth follows the pipe" dictum of traditional planning theory is irrelevant in colonias—there is no pipe. Colonias are homogenous. The only internal heterogeneity lies in the housing stock's structural variations.

Colonia Evolution

Texas colonias have proliferated without constraint, largely because of the absence of effective land-use controls in these rural, unincorporated areas. In an environment of ineffective county government, critical land use decisions are often left to the whim of developers, who sometimes themselves control the county government.

Developers of doubtful probity find it easy to acquire unproductive agricultural land or wasteland from

landowners in the Valley. This cheaply acquired land is then subdivided into 50' by 120' cookie-cutter lots, or some minor variation thereof, as shown in the partial plat map of the Del Mar Heights colonia near Los Fresnos, Cameron County (Map 3). These plots are then sold to individuals with the promise that services will be forthcoming.

The case of the Del Mar Heights colonia is instructive. The 300-acre parcel of land on which this colonia sits was formerly used for agriculture and was purchased for $50 per acre. In addition to this purchase price, the developers incurred small ancillary costs, including surveying, platting, and advertising. No water, sewer, gas, or electricity lines were provided by the developers, although such services were vaguely suggested to be forthcoming. After subtracting 2.0 million square feet for roads and easements from this 13.1 million square feet and dividing by the individual plot size of 6,000 square feet (50' by 120'), some 1,800 housing plots are realized from these 300 acres.

When all plots in the Del Mar Heights colonia are sold at prices ranging from $1,000 to $2,500 per plot, the 1,800 plots in the Del Mar Heights colonia realized between 1.8 and 4. 5 million dollars for the seller, a handsome profit for such a small investment in what appraisers described as "useless agricultural land."

Contract of Sale: Sweat Equity

The 1,800 lots shown in Map 3 are sold by developers in a contract process known in this area as "sweat equity," whereby the developer retains ownership of the plot until the last payment is made. This term is not to be confused with the traditional notion of "sweat equity" which is the equity, or self-help, that "do-it-yourself" builders bring to the housing production process. In South Texas colonias, over the ten-year contract period the buyer has no true ownership rights to the property and "sweats out" the payments. The entire investment can be lost even if a single payment is missed. The house will resort back to the seller, with loss of all equity for the buyer. Plot purchase requires a $100-down payment, or none at all, with the balance spread over 10 years at an interest rate of 10 percent, and payments varying from $10 to $80 per month. These terms make the plots affordable to the working poor, who can then build a simple dwelling on the lot over time. Thus, as the term "sweat equity" implies, these home buyers literally "sweat out" house payments. Payment default realizes a total loss of investment.

Land and property ownership is of key importance to these Hispanic families, and it is this sense of pride in ownership that is the most powerful motivational factor behind colonia creation (Illustration 7). It has been found that even during the harshest of economic times or while away working the nation's various harvests, money is first set aside for the monthly house payment and requisite taxes. While there are cases of mortgage obligation failure in which the house and plot resort back to the developer, such failures are not commonplace or voluntary, and relate mainly to the instability of area employment, the seasonal nature of agricultural work, or the vagaries of life.

The owner addresses listed for a random selection of colonia plot purchases in county tax records in Brownsville (Cameron County) and McAllen (Hidalgo County) revealed both local and out of state mailing addresses. Listed are tax billing addresses in major cities of Texas, Florida, California and the Upper Midwest states of Illinois, Minnesota and Michigan. Almost all the buyers had Spanish surnames. These absentee owners intend to return to the Valley upon retirement or as soon as sufficient resources have been accumulated to develop the lot. They learned of the availability of colonia lands through information provided by local kin or attractive advertisements placed by developers in newspapers across the nation. Such advertisements tout the Valley's amenities and pleasant year-round climate. To a person reading this advertisement on a cold winter's day in the Mid-West, such amenities, coupled with an affordable plot price, make the purchase of a colonia tract an appealing proposition.

Benign Government Neglect: Confusion of Responsibilities

Colonias exist only by means of benign government neglect and the dreams and hypocrisies of human behavior–need, greed, exploitation, societal indifference, and isolation. The dense proliferation of colonias shown in Maps 1 and 2 dispells the notion that colonias are a momentary aberration. Texas' recent Governor Ann Richards states: "Colonias are not going away. If anything, the problems of colonias are going to increase" (McGee and Fuentos-Romero, 1990).

The lack of basic services in colonias is symptomatic of the confusion over local planning responsibilities,

and the reluctance of local government units to assume this responsibility. City officials see colonia conditions as a county responsibility, and rule against extending utilities to colonias that lie outside their city limits, such as those outside the city limits of El Paso. Under present Texas law, however, cities can extend their extraterritorial jurisdiction (ETJ) to contiguous, unincorporated areas. The ETJ ranges between one-half mile beyond the city limits for cities under 5,000 population, to five miles for cities over 100,000. Cities can extend their subdivision controls into the ETJ. If a city chooses to annex a colonia, it must then extend full city services to it. Cities such as El Paso, Laredo, and McAllen have steadfastly refused to annex colonias since use fee and property tax returns gained on the appraised value of the colonia's substandard housing never remotely covers the cost of extending full services to the annexed colonia. Initially those in city government had hoped that this would deter the formation of colonias, but colonias arose out of need regardless of whether or not utilities were provided.

Compared to general law or home rule cities Texas' county subdivision legislation is seriously deficient in the extent of regulatory authority (Texas Research League, 1968). County zoning and subdivision regulation powers are almost nonexistent with counties having no legal basis for practicing zoning (Texas Research League, 1973). No counties are allowed to require any standards of enforcement for the provision of utilities, minimum lot size, setbacks or building lines, or recreational space. There is no penalty for the developer who completely evades the requirements to file a map or plat. Only voluntary compliance by conscientious developers is required. However, 'conscientious developers' of colonias is an oxymoronic proposition. Of late, however, deceptive developers are being punished for not fulfilling their promises to provide utilities. For example, Texas' Attorney General reached a settlement in February of 1995 with developers of 13 Starr County colonias, forcing them to relinquish colonia assets to a nonprofit organization intent on providing utilities to the colonias for $21.6 million. County officials argue that since Texas is one of the few states in the nation with no county zoning requirements, they are severely restricted in their power to regulate colonia subdivision development, or to raise funds for infrastructural improvements.

Local water districts cannot supply water to settlements that fail to comply with local government regulations, and since there is no true government in colonias, and no compliance with building regulations, colonia residents cannot receive water from these districts. Neither can colonia residents get water from the Rio Grande River because water rights are reserved for agricultural irrigation, or assigned to municipalities. According to Texas law, the ownership of water is determined by the 'container' where it is present; groundwater and diffuse surface water are private property, whereas natural surface water (lakes, rivers, etc.) is considered the property of the State of Texas. Texas' Water Commission requires permits to water rights since water rights are allocated on a 'first in time, first in right' basis. The problem in the Rio Grande Valley is that, essentially, of the 4 million acre-feet of unused dependable surface water supply, almost all is committed through contracts to municipal areas over the next 30 years. As colonias are 'harijan' settlements–that is, assumed by law at least to be nonexistent–and are not part of any governmental unit, they therefore lack the jurisdiction to entertain legal complaint. Being in a sense nonexistent, they cannot avail themselves of the benefits of local taxes, or federal or state funds such as those allocated to incorporated towns and cities (Skillern, 1988). The tax base in colonias cannot amortize the costs of improvements without assistance from the public sector. In this confusion of responsibilities colonias continue to proliferate, but their residents remain marginalized, both physically and socially, from the rest of society (compare Illustrations 5, 6).

Political Advocacy Organizations

From time immemorial people have encroached on private land or settled on waste land, as any visit across the border into Mexico (or other developing countries) will attest. These developing nations, rather than eradicating "squatments," now provide them with infrastructure assistance. This aid to grassroots housing efforts is also a sensible way of accommodating the housing needs of thousands of low-income families on the U.S. side of the United States-Mexico border.

Until recently, the United States' planning rigidities and the perception of colonias as unlawful habitats precluded the offer of even rudimentary assistance–communal showers, washing and drinking facilities–to colonia residents. The colonias were seen as a canker on the landscape, "harijan" settlements that were an embarrassment to visitors' sensibilities. To many, colonias are viewed as enclaves of illegal aliens and drug cartels.

Colonia conditions would have endured without respite had it not been for local political advocacy organizations such as Valley Interfaith and its sister organizations in San Antonio and El Paso (Illustration 8). These activists used colonia water grievances to embarrass the nation into the realization that Third World living conditions exist within the United States. Rather than traditional planning orthodoxies, it took a grassroots state and national lobbying effort by church and community groups to draw attention to the severity of the colonia dilemma. Colonia residents who live both metaphorically and realistically on the edge of their respective nations, as well as on the edge of life, were considered deserving of at least the basic right of water.

During the U.S. presidential and the Texas gubernatorial race in 1990, advocacy groups used the voting threat of newly-registered colonia residents to cull promises from politicians for colonia improvements. As the surrogate voice of a previously silent people, these protagonists became an influential political force that disfavored those politicians who ignored colonia conditions. They mobilized the previously dormant social forces of this Hispanic working class population to the realization that such conditions were not their inevitable fate (compare Illustrations 7, 8). Until the electoral clout of the colonia voter became apparent to elected officials, the colonia issue had received rhetorical but not financial support .

Although the Federal government now recognizes Texas' colonia issue, little has been done so far by this government to aid colonias. Given the present negative political climate toward welfare assistance, and with the ubiquitous condition of homelessness prevalent in all major United States cities, the problem of colonias is seen as yet another of the demands on the government's diminishing resources. As a consequence, colonia developers continue to proliferate with colonia residents trying their best to assemble a resemblance of needed services.

The few federal programs that do assist impoverished colonias, such as the National Affordable Housing Act of 1990 and ancillary Federal Farm Bills, do so with limited funding. For example, in 1993, $25 million in rural development grants was targeted specifically for water treatment grants for colonias in both Texas and New Mexico (Agriculture, 1993). Although laudable, and welcomed by the estimated 200,000 colonia residents in Texas alone who are presently entrenched in colonias, this offering is of little note. The federal government's lack of enthusiasm for conventional public housing suggests this outlay will do little to allay the affordable housing crisis in this region. Expediting access to formal housing and financial channels that traditionally benefit the middle and upper classes is also unfeasible given present lending restrictions, high interest rates, and the recessionary nature of the United States economy.

State Intervention

At considerable public expense, these colonias are now being rescued after years of inadvertent societal and governmental neglect by the State of Texas (Table 3). The costly burden of repair is necessary because those in authority were not vigilant enough, or did not have the authority, to prevent developers from orchestrating substandard projects. Support at the state level is reflected in the passage of a $500 million Texas voter-ratified water bond bill on November 7, 1989. Some $100 million of this appropriation and ancillary appropriations is earmarked for providing water and wastewater facilities to colonias (Davies and Holz, 1992).

For example, the Texas Water Development Board's (TWDB) 'Economically Distressed Areas Program,' as of January 19, 1995, had construction grants and loans committed to 17 projects totaling $134 million and affecting 78,877 colonia residents. For example, within this allocation the Cameron Park colonia, City of Brownsville, received $6.65 million (83 percent grant, 17 percent loan) to provide water and wastewater services to 4,398 colonia residents. The commitment date was December 11, 1991, and the groundbreaking date January 4, 1993. The TWDB estimates construction costs of $171.4 million for approved projects that will affect 120,600 residents. For example, under this allocation the Roma colonia in Starr County received a $22,500 planning grant for wastewater and water services for 4,740 colonia residents. The estimated construction cost to introduce such services there is $3.2 million (Texas Water Development Board, 1995).

The colonia allocation falls gravely short of full service provision, which is estimated by Texas Senator Montford's bills SR 1193, and SJR 34, to be $1 billion (Table

3). With the need to provide services to all colonia residents, the severity of the monetary short-fall is apparent from Table 3. An example of the costs of providing water to each housing unit in the colonia of Olmito through the year 2010, for instance, is instructive. The per unit cost for Olmito's 1,055 residents in 255 habitations includes: 1) the main delivery line, 2) sub-lines in the colonia, 3) residence connection, and 4) plant costs, and is estimated at $2,436. In other words, a total of $571,310 is needed for the Olmito colonia only.

Problems of Implementation

There are many problems associated with the implementation of the colonia remedial program. First, public infrastructure is only required for land that is platted. Second, some parties argue that the connection or tap-fee should be paid for by the resident, not the state. This fee amounts to around $350 in the Olmito area, and around $750 per household for colonias near El Paso. These advocates also argue that residents should be charged a user fee of $25 to $30 per month in order to help retire the water bond bill. Although these sums may appear inconsequential, they are considered beyond the financial capabilities of most Olmito residents. What then is the sponsoring entity's position should a colonia default on these responsibilities? Some suggest that a refusal to connect, or a refusal to pay the user fee once connected, should subject the property in question to a tax-type lien and the possibility of foreclosure.

More problematic is that the absence of indoor plumbing facilities in colonia homes makes the distribution of water and waste water systems irrelevant. What is the purpose of laying down a water and wastewater system that no one can afford to connect to? Tap fee and indoor plumbing costs are estimated to range between $1,000 to $2,000 per residence, an amount well beyond the finances of most colonia families. The federal government has provided some indoor plumbing and hookup subsidies, but hardly enough to address this issue. Further subsidies in the form of relief funds will have to be forthcoming.

Many cities and water districts express a reluctance to finance a water and wastewater system for colonias because they fear that the loan will not be repaid. They fear an insufficient number of houses will hook up to the system, often because land owners are absent or transient, or will not hook up rapidly enough. Without the assurance of adequate participation, many cities have expressed reluctance to undertake these projects. But beyond these issues, cities only have the power to compel households to connect to available sewer service within, but not outside their jurisdictional boundaries. Since sewer connection outside a city is voluntary, problems will likely arise over absentee and transient owners, or those who simply cannot raise the contributory costs.

County government and wastewater districts are also reluctant to accept the responsibility for potable water delivery. They have no experience in delivering or charging for the service, nor do they want the obligation. Municipalities which normally provide these services can more easily extend their existing utilities, and by law, they have the power to enforce residential sewer hookup.

On the opposite scale, water supply corporations currently providing potable water to colonias have no experience in managing sewer services and are reluctant to acquire such responsibilities. Water is becoming scarce in this land of unrelenting sun, and such scarcity has intensified competition for the water supply. If present population projections are sustained, the water table feeding these areas will be exhausted by 2050.

Circumvention of Intent

There is a huge gap between the law and the reality of enforcing it (Austin American-Statesman, 1994). Even though county government must now ensure that all future rural subdivisions meet requisite infrastructure standards, colonias continue to proliferate. Lax county zoning ordinances that allowed service-deficient colonias to exist in the first place have been eradicated. Paved streets, drainage, and utilities must now accompany all new rural subdivisions. Lot size must be a minimum of 7,000 square feet (70' by 100'). Law enforcement agents purportedly stand ready to vigorously prosecute developers who fail to supply the requisite infrastructure in their developments. Yet colonias continue to proliferate, even with these new regulations, because the regulations are inadequate and are not always enforced. For example, a one-acre septic tank ordinance was enacted throughout Cameron County in 1987. To circumvent this ordinance, a developer sold a small plot to buyers without clear title and suggested to the buyers that the purchase not be registered with the county tax appraiser. Since the county tax appraiser was not aware of the

sales transaction, no action was taken, and a new colonia appeared. Although it may appear ludicrous that a person would build on a plot whose size is in clear violation of a septic tank ordinance, and for which there is no clear title, the Hispanic population's demand for shelter, accompanied by utilities or not, is so intense that the chance is taken.

The fact that some local governments show a great tolerance of colonia habitats is perhaps reflective of the bribery and collusion that permeates this border zone. This is a region of patrician patronage, where the "mordida" or bribe is ubiquitous. Tax appraisers in Cameron and Hidalgo counties suggest developers and local officials have come to some agreement on the existence of colonias. Since colonias help to ease a housing demand that local government can do little to fulfill, and since a large part of their electorate would voice their displeasure if this opportunity were curtailed, government officials find it to their advantage to allow colonias to develop. Further, enforcement would require filing law suits against some of the area's most powerful people.

Government absurdities and personal improprieties are rampant. The Farmer's Home Administration approved bathroom costs to homes without even rudimentary water services and then excused themselves on the grounds that no one had ever experienced anything like the colonia maladaptation. Newspaper assertions proclaim that one Mayor Pro-Tem of a colonia deflected the drainage contributions of the colonia's residents into her own bank account.

Transborder Cooperation

This conglomeration of rural-urban, substandard settlements with its elevated rates of urban pathologies suggests a regional or border zone problem rather than one specific to either Mexico or the United States. The difference in the living conditions on either side of the frontier is a question of degree, not a difference in kind. The solution to this critical housing need requires a bi-national approach.

The key difference between Texas and Mexico is that in Mexico cities recognize the inevitability, as well as the desirability, of physically integrating the colonias into the city, whereas in Texas everything is stacked to prevent this from happening. Low densities exacerbate the problem. In both the United States and in Mexico, zoning is largely irrelevant, but at least in Mexico the influence of planning is increasing. Municipalities in Mexico, on paper at least, have greater autonomy, but in practice are heavily dependent upon state and federal appropriations.

The differing traditions and economic circumstances of these two dissimilar societies makes any bilateral planning approach precarious. Planning in the United States is highly decentralized with a local authority, such as a city, possessing considerable planning independence. In Mexico, the reverse is true. Here cities lack planning autonomy and must rely on state and national guidance. Nonintegrated solutions cannot solve the macro problems afflicting colonias in the border zone. The growing industrialization and urbanization of the border under NAFTA–Mexico is the United States' third largest trading partner, with Texas itself, exporting 30% of its exports to Mexico–requires cooperation orchestrated under the auspices of, say, a U.S.-Mexico Border Commission, which has the power of both deliberation and implementation.

Despite the dialogue and the regulations promulgated by the respective Presidents Reagan, Bush, Clinton, Salinas and Zedillo, the critical housing and shelter problems of the area have to date eluded an effective solution, and seemingly, even defy one. The border zone must receive more than rhetoric and illusionary promises from both nations if it is to receive the requisite resource allocations, especially given the North American Development Bank's cost estimate of between $6.4 to $8.0 billion for the eradication of environmental problems that plague the U.S.-Mexico border region.

Conclusion

In summary, colonias are clusters of substandard houses constructed on small plots of poor agricultural land. They are occupied exclusively by Hispanic Americans. While sometimes replicating the look of Third World slums, they differ in one important aspect: the house and the lot are owned by the occupant. There is little or no rental property within colonias and almost no 'squatters.'

A colonia is an adaptive system, a product that embraces both the cultural and physical expressions of the Texas-Mexico border zone. The development of platted areas in many small stages gradually creates complex and vastly improbable colonias like that of Cameron Park near Brownsville, and those around El Paso. Colonias experience continuous growth with little stasis because of prevailing high Hispanic fertility rates and the lack of low-cost housing.

Since affordable housing is not supplied through formal housing and financial channels, these needs are partially satisfied by developers who subdivide small units of land into affordable tracts, with the false promise that water, waste-water, and other amenities will be forthcoming. This deception and the indifference or collusion of local governments have allowed hundreds of rural settlements, deficient in the most basic services, to appear. Thus, deception, the affordability of a simple structure, the availability of cheap land, and deficient county subdivision authority, initiate the colonia phenomenon.

The necessary repair of these maladaptations is both costly and time consuming. The colonia presence is possible evidence of the government's need to reform its approach to affordable housing supply . The cheapest and most sensible way to accommodate this enveloping housing demand is for the government to provide affordable building land equipped with essential services near main centers of employment for these people (Hasnath, 1977).

All over the underdeveloped world, spontaneous settlements or critical refuge stations fill the need for affordable housing. High rates of population growth, continual rural-urban migration, and political and environmental stress create this need. This settlement creation, however, is not just an undeveloped nation's problem but that of the world's most affluent nation. Here colonias provide an outlet for the Mexican-American's increasing need for affordable houses, and also shelters the raft of disaffected people from Latin America, who rightly or wrongly do flock to this region (Streeten et al., 1984; Lloyd, 1979; Lobo, 1981). For those who view from afar, a colonia is an immemorial landscape, for residents it is a shibboleth of common human aspirations.

The cheap border land is thus playing a role analogous to that of the American West in frontier days. The result is the emergence of a new class of community, a class that exhibits characteristics reminiscent of 19th-century frontier settlements–new towns spirited by individual initiative.

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Table 1
General Characteristics of Colonias

	Cameron, Hidalgo and Willacy Counties	El Paso County	Combined
Number of people	71,478	68,395	139,873
Number of households	14,643	12,045	26,688
Number of colonias	435	537	972
Number of colonias with 15 or more households	277	162	439
Average age of residents	18.5	26.3	21.8
Average number in households	4.8	4.3	4.5
Average annual household income	$6,784	$11,497	$9,137
Proportion Hispanic (%)	99	96	97
Proportion Anglo (%)	1	3	2
Proportion Black (%)	0	1	3
Residents born in US (%)	61	68	64
Residents born in Mexico (%)	39	32	35
Primary Language Spanish (%)	83	89	87
Household heads not proficient in English (%)	71	49	60
Residents with no health insurance (%)	72	57	65
Family heads not completing high school (%)	86	62	75
Unemployment rates, 16 or over (%)	47	33	41
Work for Minimum wage or less (%)	48	25	38
Colonia home ownership (%)	87	84	85
No treated water in house (%)	21	26	24
Outhouse or cesspool (%)	20	66	44

Source: Texas Department of Human Services, 1995.

Table 2
Wastewater Treatment and Disposal
Colonia Del Mar Heights

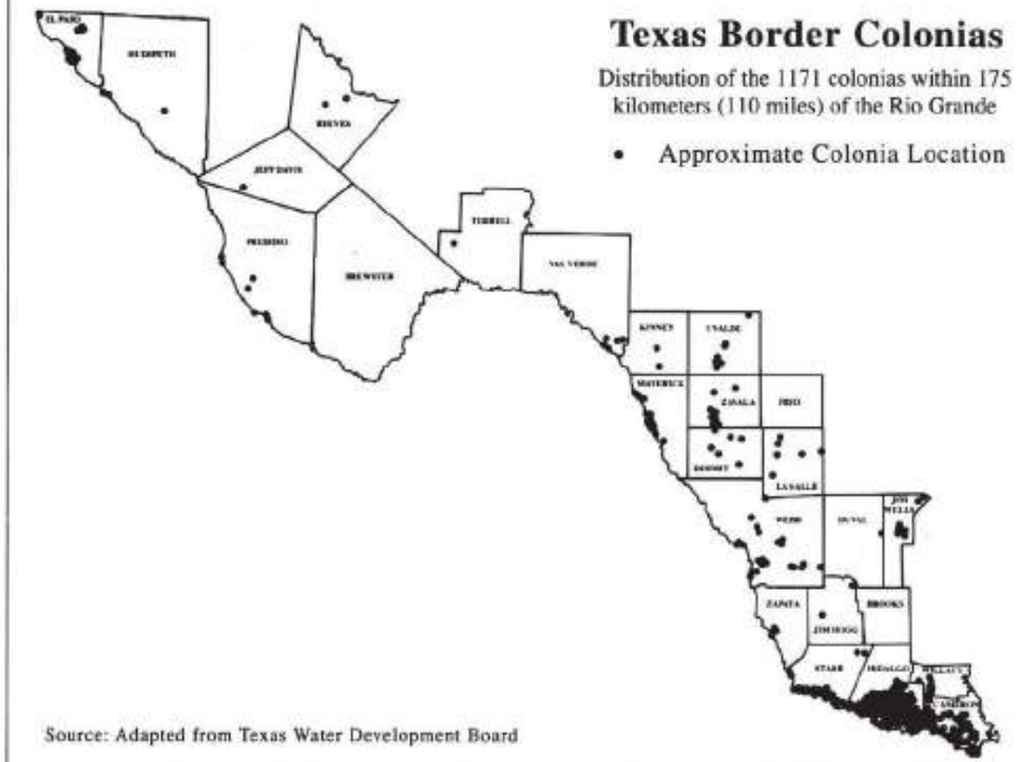
Wastewater disposal type	# of cases	If using neighbor's facilities
Septic tank and soil absorption	14	8
Septic tank without drain field	8	2
Latrine	25	7
Cesspool	9	0
Other	1	0

Source: Texas Water Development Board. *Colonia Del Mar Heights. Baseline Information.* February 14, 1995. Austin, TX.

Table 3
Estimated Cost to Meet County Water and Wastewater Needs

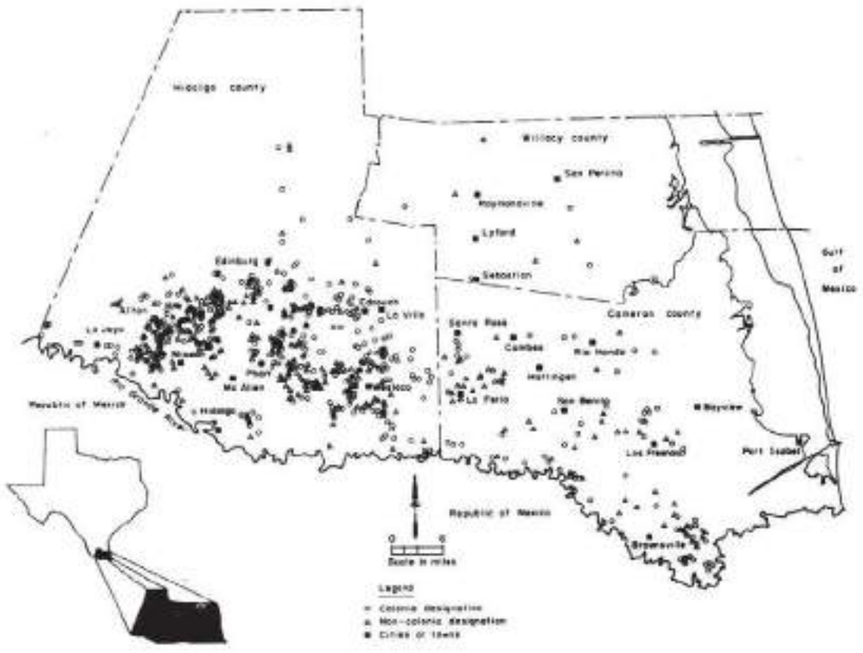
Texas County	Water (in $Millions)	Wastewater (in $Millions)
Brewster	0.0	0.0
Cameron	2.8	46.9
Dimmit	19.0	5.4
Duval	0.2	0.4
Edwards	1.3	0.8
El Paso	70.3	84.9
Hidalgo	5.0	157.8
Hudspeth	0.0	1.6
Jeff Davis	0.0	1.4
Jim Hogg	0.2	0.2
Jim Wells	1.7	8.7
Kinney	0.2	0.9
La Salle	8.8	9.3
Maverick	0.7	25.2
Newton	1.6	6.0
Pecos	0.6	5.4
Presidio	2.7	4.7
Red River	0.5	2.6
Reeves	0.0	0.7
Sabine	0.6	0.5
Starr	1.2	26.5
Terrell	0.0	1.9
Uvalde	0.1	6.3
Val Verde	7.2	11.5
Webb	14.5	25.5
Willacy	0.6	3.7
Zapata	0.0	3.9
Zavala	2.5	5.6
Total	142.3	448.3

Source: Texas Water Development Board, Economically Distressed Areas Program.



County	No. of Colonias	Colonia Population
El Paso	122	47,827
Hudspeth	3	1,018
Reeves	2	540
Jeff Davis	1	217
Presidio	7	725
Terrell	1	1,350
Val Verde	6	2,190
Kinney	2	331
Maverick	48	13,826
Uvalde	9	1,413
Zavala	14	4,510
Dimmit	6	3,542
Webb	41	22,726
La Salle	7	1,465
Duval	1	100
Jim Wells	7	4,110
Zapata	3	2,284
Jim Hogg	2	100
Starr	90	28,628
Hidalgo	715	109,337
Willacy	7	3,464
Cameron	76	24,187

Map 1
Distribution of Texas Colonias

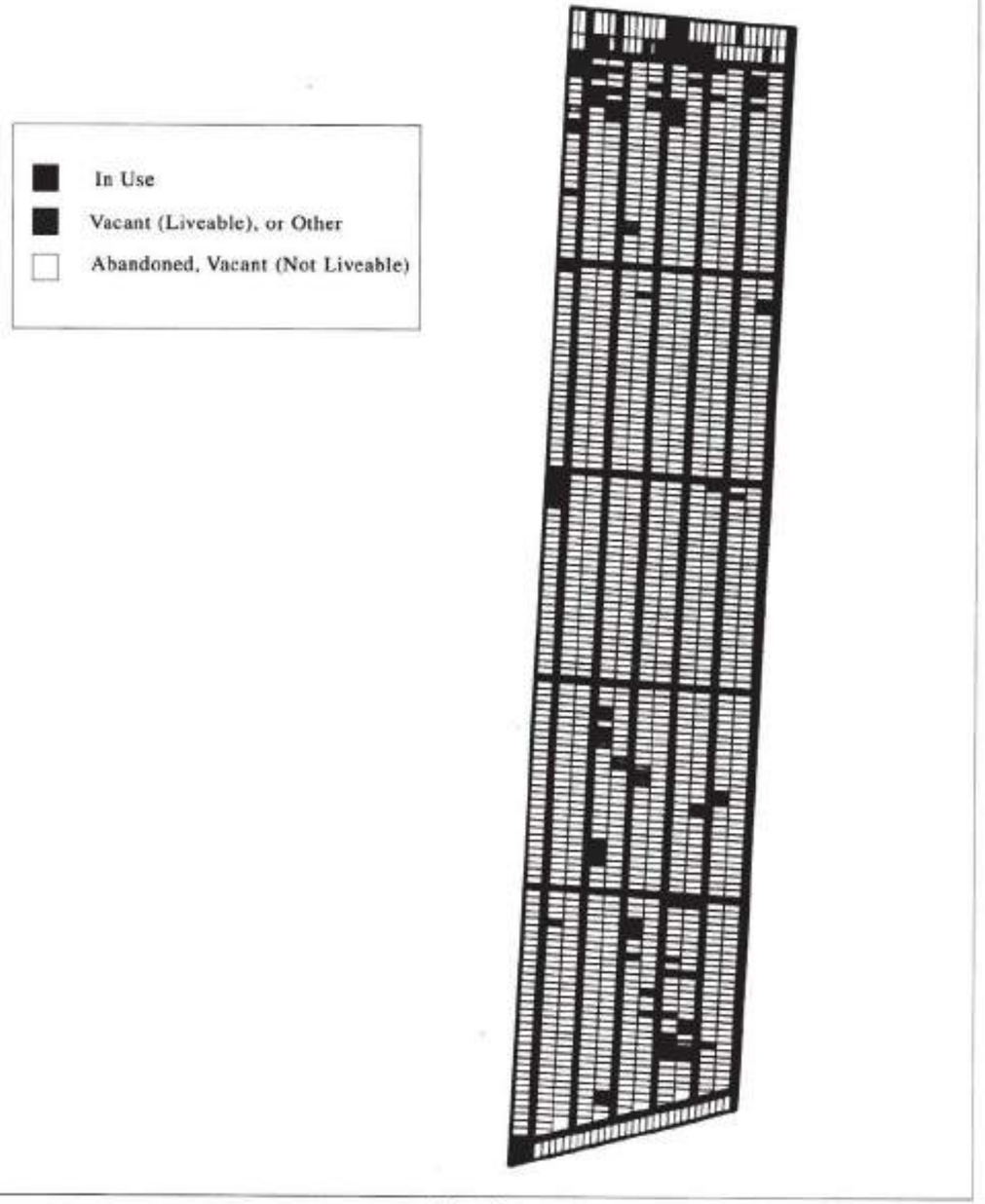


Map 2

Colonias of Hidalgo, Willacy, and Cameron Counties

Source: Graphic supplied by author.

DEL MAR HEIGHTS COLONIA
Residential Land Use



Map 3
Del Mar Heights Colonia

Illustration 1
Colonia Conditions, El Paso County, Texas
Courtesy of the author

Illustration 2
Substantial homes are juxtaposed with shacks in Cameron Park colonia, Cameron County, Texas
Courtesy of the author

Illustration 3
Homes, Cameron Park colonia, Cameron County, Texas
Courtesy of the author

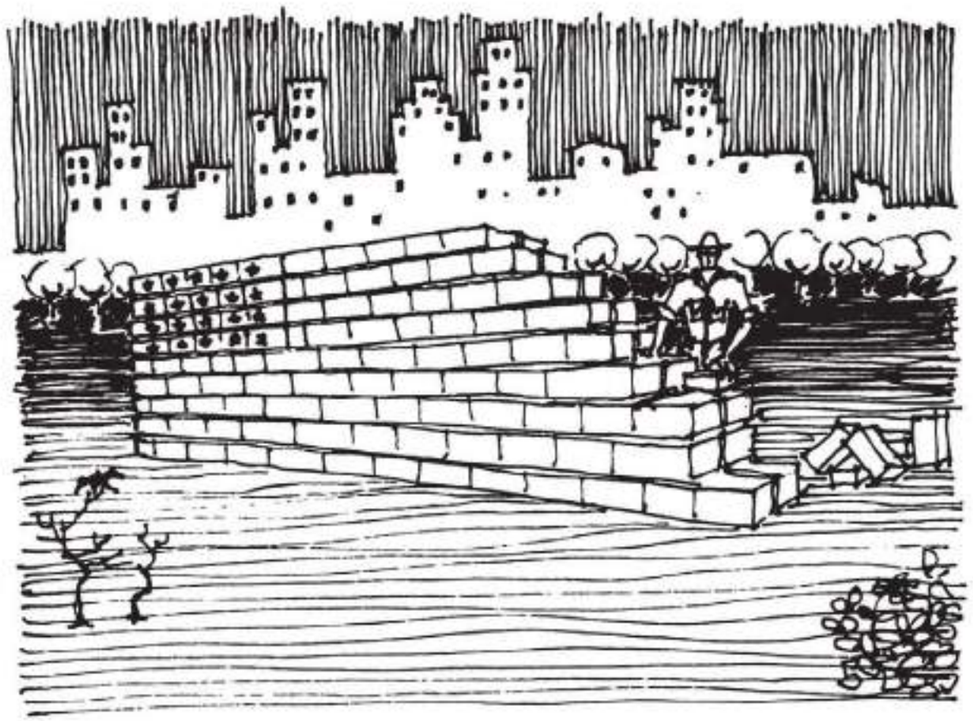
Illustration 4
Trailer as temporary housing during construction
Colonia, Starr County, Texas
Courtesy of the author

Illustration 5
Drinking water source, El Paso County, Texas
Courtesy of the author

Illustration 6
Water deficiencies, colonia, Starr County, Texas
Courtesy of the author

Illustration 7
Colonia family near Pharr, Texas
Courtesy of the author

Illustration 8
Demonstrators for colonia improvements
Courtesy of the author



REBUILDING THE AMERICAN CITY:

Bonds of Friendship as Bricks and Mortar

John T. Marshall

Between 1954 and 1974, the federal government's urban renewal and federal highway programs radically changed the appearance and residential character of American cities. From the core of cities sprang wide ribbons of multi-lane expressways and areas of concentrated public development, including hotels, office buildings, university campuses, and civic centers. In just twenty years, freeways and building projects reshaped cityscapes that had evolved slowly over the course of the nineteenth and the first half of the twentieth century.

The urban renewal and federal highway programs were designed to increase the domestic security of the nation by creating jobs, increasing commerce, rebuilding old or decaying structures, and establishing a fast and efficient means of intercity travel. The formulation and implementation of these initiatives resulted in a comprehensive response to specific economic problems, but the effect that these revitalization programs would have on the overall stability of the political community escaped attention during the legislative process.

Two legislative programs—The Federal-Aid Highway Act of 1956 and the urban renewal title of the Housing Act of 1954—were intended to bolster the economic resources of urban communities, but actually destabilized the social and political character of the communities they were intended to protect. The concerns addressed by these initiatives show that lawmakers were most attuned to the relationship between a city's tax base and its ability to provide services for businesses and residents. An analysis of the federal highway and urban renewal programs reveals that legislators did not understand the role that urban residential communities play in promoting the vitality and safety of the inner city. Legislators failed to appreciate that urban communities nurture friendship bonds and social networks which are the foundation of a political community, and that these interpersonal ties are of value to the state. In their haste to lay the physical foundations for more attractive and productive cities, they did not consider the psychological effect that their actions would have on the people who lived in the inner city. Legislators failed to see that friendships are the bricks and mortar of the political community.

Had the federal legislators of the 1950s and 1960s shared the views expressed in Aristotle's writings, the renewal and highway programs might have taken a different course. Aristotle wrote for legislators, and in so doing, stressed that laws should transcend particular needs and promote the public welfare. Richard Bodeus asserts:

> *[T]he entirety of Aristotle's reflections on human things (the study of ethical matters and of matters relating to the organization of cities) is addressed to legislators, who he regards as responsible for education and thus as artisans of human happiness.* [1]

Aristotle believed that lawmakers had a twofold responsibility: first, to address matters of common concern; and second, to ensure the well-being of the regime. These two commitments are particularly pertinent to an examination of the federal government's urban revitalization programs. Aristotle reminds lawmakers that, as "experts in politics" or physicians of the body politic, they are charged with treating the particular ailments of the political community in a way that respects the special needs and constitution of the state. Legislators must have an idea of which remedies will "create, support, preserve, or destroy [regimes]."[2] The remedies applied by federal lawmakers, and by the planners and policy makers who implemented the federal highway and urban renewal programs achieved the immediate objectives of slum clearance and an improved transportation infrastructure connecting all cities of more

than 50,000 people. The objectives of these laws make clear that legislators perceived the welfare of the political community as being engendered by measures that would promote commercial activity and economic growth. To the contrary, the government's goals of faster transportation, national security, and commerce at worst subverted and, at best, ignored the welfare of the members of the political community.

Of the many factors that contribute to the welfare of the political community, Aristotle suggests that friendship is among the most important. Friendship, of course, does not receive explicit attention in the founding documents of the United States as a vital element of the constitutional order. Aristotle's formulation of friendship, however, has tacit significance for any regime, for friends, like family, are the essential associations that compose the larger association of the political community. The State is realized as a partnership of partnerships.

As new initiatives such as the Clinton administration's Urban Empowerment Zones or the National Urban League's call for a domestic Marshall Plan are considered and implemented, it will be helpful to stake out a new vantage point from which the scope and content of programs may be evaluated. The time is ripe to examine urban programs not only with thought to how they propose to solve urban problems, but more importantly how they will protect the interest of the entire political community. This article focuses on the importance of friendship to the political community and the necessity of its consideration in the formulation of laws that direct urban initiatives.

The Federal Highway and Urban Renewal Programs: Fragmented Communities

The end of the Second World War both invited and demanded development in the United States. The return of millions of military personnel to civilian life and the need to secure the economic prosperity lost in the Great Depression led federal lawmakers to initiate several major projects that would put Government Issues (GIs) back to work and stir economic productivity. Legislators worked to formulate programs that would address the most acute areas of concern, including the need for fast and safe means of transportation between urban centers and the challenge of creating cultural attractions and jobs in the midst of a decaying urban core.

The federal highway system stands out as the most extensive and visible product of the post-World War II projects. Signed into law as the Federal-Aid Highway Act of 1956, and later expanded under the Federal-Aid Highway Act of 1958, the nation's network of interstate highways grew to include 43,000 miles of multi-lane highways by 1974.[3] The interstate network may be credited with at least three important accomplishments: it facilitated the unification of the continental United States through a network of direct and safe freeways; it bolstered national security; and, it triggered a period of major economic expansion.

The federal highway system immediately changed the lives of many Americans. The expressways opened the possibility of traveling quickly and safely to and from work and to every corner of the country. Chicago's Dan Ryan Expressway, Boston's Southeast Expressway, and Washington's Beltway gave families who could afford the price of a home in suburban towns an incentive to move out of the city to safer neighborhoods with better schools and more stable property values. The new highways also made intercity travel quick and feasible. By connecting major cities, the federal highways encouraged travel to every state and region of the country. Indeed, one of the federal government's major accomplishments in constructing the highway system was drawing the country together so as to encourage the free flow of people and ideas.

The interstate highway network also succeeded in boosting economic and military security. Over a period of twenty years, a significant portion of the government's $76 billion in expenditures flowed into highway construction jobs.[4] "Interstates" also led to direct national transportation routes which sparked increases in tourism and the transportation of commercial goods. In addition, the highway network established a quick and reliable means of transporting military supplies and personnel in a time of crisis, as federal highways tied together airports, cities, seaports, and other strategic locations.

Many Americans perceive only the positive and not the negative effects of these programs. Indeed, the negative effects are not easy to identify if you live outside the city, but for those who live in the city, those whose communities were divided or leveled to make way for the interstates, the construction of highways left an ugly imprint. The federal highways divided cities by erecting insurmountable physical barriers.

Lawmakers drafted the federal highway legislation

with the goal of making the city more accessible to outlying areas. Little thought was given to the effect this might have on the lives of 'the insiders,' or urban residents. The effort to open the city to travelers from all directions—north, south, east, and west—often required that it be carved into quarters or lesser segments. Convenience and expedience drove the design decisions of politicians and, later, engineers. The welfare of the residential communities that occupied the urban core was not a primary concern in the lawmakers' deliberations. For this reason, it is not surprising that legislators observed little restraint in leveling inner-city neighborhoods. As Leland Roth claims, they could not "resist cutting broad new thoroughfares through whole sections of the urban core deemed 'deteriorated.'"[5]

Concurrent with the federal highway program, the urban renewal program established under Title III of The Housing Act of 1954, attempted to infuse new life into the nation's downtowns and depressed neighborhoods. In order to draw businesses, tourists, and families back into the city, the new law encouraged removing urban eyesores, such as deteriorated housing and storefronts, and replacing them with civic centers, office buildings, parks, and hotels. To this end, lawmakers crafted the renewal legislation to "encourage public agencies to experiment with new methods and techniques of preventing and eliminating slums and urban blight."[6] The government believed that by providing the initial stimulus it could encourage the private sector to redevelop inner city neighborhoods. Its motivation stemmed from the belief that the physical poverty of the city could be eradicated through the construction of new buildings and attractions. Politicians, developers, and planners in Pittsburgh, for example, worked to transform a downtown area that was dominated by unused train yards and "run-down" housing into a thriving urban environment by creating "The Igloo," a major sports arena, public office buildings, and a large park at the confluence of the Allegheny and Monongahela Rivers. Many similar parks and sports arenas are part of the positive legacy of the urban renewal movement.

While the urban renewal movement may have enriched or transformed the physical environment of the city, these advances came at the expense of poor inner-city communities. Although the urban renewal movement may be credited with cosmetic changes, any advances are counterbalanced by the fact that, in many cases, "renewal" compromised the character and communities of the city. For example, the urban renewal movement fell short on its commitment to inner-city communities by failing to meet pre-set targets for affordable housing. Developers did not find a way to replace the low-cost housing units that were typical of inner-city residential communities. Even the downwardly adjusted projections for the Housing Act of 1954 fell short of the goal of 35,000 to 40,000 units.[7] The reason for this shortfall is that affordable housing was not profitable to build. As Martin Anderson explains, old inner-city housing units were not replaced because "private developers have decided that rents obtainable from new construction in certain areas of cities would not be sufficient to recover their total investment."[8]

The urban renewal movement was formulated to modernize and reshape the physical character of the city. The welfare of urban neighborhoods and their residents was seen as a function of whether people had access to new community centers or schools. As a result, the government emphasized reconstructing the physical or built environment of cities rather than preserving the ethnic or family character of neighborhoods.

One of the chief results of the massive physical restructuring of cities was the displacement of more than one million poor families and thousands of small neighborhood businesses.[9] Though the government made efforts to compensate and relocate both families and businesses, the urban renewal movement ultimately resulted in fewer opportunities for poor families, destabilizing them and yielding only inadequate living conditions. Martin Anderson comments in his 1964 study of the federal urban renewal projects,

> *...privately sponsored studies [on the displacement of families] generally indicate that the people displaced by urban renewal tend to move into housing of approximately the same quality as the housing they move from; in addition, they pay higher monthly rents. In most cases their predicament is compounded not alleviated.* [10]

The fate of small businesses is even more disturbing. Again, Anderson notes that "the 'death rate' experience of 21 urban renewal projects in 14 cities covered by this study reveals that 756 of the 2,946 firms involved either went out of business or disappeared."[11]

These inner city neighborhoods had thrived on a tight network of friendships that supported personal and commercial endeavors. When banks would not extend credit to recent immigrants for home improvements or business start-up costs, it was common for friends and local merchants to underwrite their neighbor's expenses. The political value of such friendships is discussed by Aristotle in *Ethics* and *Politics*.

Friendships and the Welfare of the State

The challenge of addressing specific policy problems and pursuing the overarching goal of maintaining the values of the political community is not new to lawmakers. Solving specific public problems while remaining mindful of the core values of the political community is one of Aristotle's principle concerns. Carnes Lord maintains that Aristotle's *Politics* may have been written to rebuke the sophists "whose approach to legislation was characterized by an over-concentration on the laws as such—laws abstracted from the context of the regime."[12] Among the main concerns expressed by Aristotle in the Politics is that legislative "experts" or rulers should know how to maintain the existing regime order. In other words, the people crafting laws must inform themselves of both the central principles of government and the goods which are necessary to make the nation function effectively.

It is Aristotle's observation that a particular, yet universal, requirement for a state's continued welfare is the strength of the friendships that bind each household and the city together. For Aristotle, friendships represent the "basic necessity of conjunction of persons who cannot exist without one another."[13] Friendships encourage people to pursue the good, and in so doing are necessary to the formation of a healthy political community. Indeed, friendships are primary relationships by which individuals pursue the good, and the city represents an association of these primary associations. Aristotle's opinion of friendship is based on what he considers to be the two important contributions of friendship to the city or political community. First, friendships maintain cohesive communities and second, friendships, along with households, are among the fundamental associations which form the building blocks of the political community.

Aristotle considers friendships to be central to the welfare of the city because they nurture and sustain every stage of human development. Early in life, friendships between family members or teachers and children establish important moral principles, and as Aristotle notes, "help the young avoid error."[14] As children grow into adults, friendships offer a sense of security by expanding the sphere of people on whom individuals can rely for help. The elderly are sustained and brought into the affairs of the community by their neighbors and other longtime friends who keep their company and are concerned for their emotional and physical welfare. And for those often marginalized in the city—the poor, the destitute, and the elderly—Aristotle notes that friendships offer hope, sustenance, and a connection to the larger community. Friendships check despair and isolation, for as Aristotle reasons, "in poverty and all other kinds of misfortune men believe that the only refuge consists in their friends."[15] Friendships offer many benefits to the state and, for this reason, Aristotle observes that "[f]riendship . . . seems to hold states together, and lawgivers apparently devote more attention to it than to justice."[16]

Aristotle's consideration of prevailing or common opinions about friendship at the beginning of Book Eight of the *Ethics* reveals that life's pursuits are nearly impossible without friends. His discussion of the connection between friendship and individual welfare is doubly revealing; it shows a clear connection between friendship and the common good. Aristotle's account of how friendships provide for the care of the young, the old, and the disadvantaged members of the community points to the key function that friendships play in sustaining the health and welfare of the community. In so doing, Aristotle demonstrates how friendships serve as building blocks of the city.

In the *Politics*, Aristotle poses the fundamental question "what constitutes a political community?" He explores whether the state is founded on "geographical contiguity, a set of common laws, trade, or the social division of labor." Ultimately, as George McCarthy notes, "Aristotle argues that the state is founded on friendship."[17] The strongest friendships within a city or neighborhood recognize a common understanding of the fundamental principles of right action. Friends share a view of what is just. Friendships represent agreement on "goods," or shared values, for friendships crystallize a notion of what individuals believe to be "goods." These shared "goods," which include integrity, justice, responsibility, and caring, shape the individual's public pursuits and, in turn, the character of the public sphere or political

community.

Thus, Aristotle recognizes that friendship embodies the best aims of the state, for "when people are friends they have no need of justice . . . ."[18] Aristotle appreciates that friendship is the union of ethics, the study of the pursuit of the individual good, and politics, the study of the pursuit of the good of the entire city. Politics is a broad science which governs the collective pursuit of the good, and ethics is a constituent science of politics instructing people on the individual activities of living well, living a life of right action. For Aristotle, friendship occupies the point at which a person's individual pursuit of the good overlaps with the political community's goal of living well, or politics.

Aristotle's discourse on the nature of friendship and its role in shaping urban communities underscores the profound implications that the destruction of urban communities may have on the welfare of the city. Subverting the welfare of communities solely to the goals of economic revitalization squanders the ties of friendship. This decision making results not only in personal and emotional loss, but also in fragmentation of the public sphere. When people are forced to move because the local streets, public square, shops, and park have been destroyed, the friendships that motivated and animated their public actions are dissolved. The network of people whose assurances and kind gestures gave shape to a supportive community loses its constituent members and ceases to function.

Friendships do not occur spontaneously. A common neighborhood or business affiliation provides a fundamental experience resulting in a group of individuals sharing a world view. Frequent contact over long periods of time and a common interest in the affairs of a neighborhood or business kindle friendships. These friendships are squandered when individuals are displaced from their place of work or residence. A bond established by riding the same bus to work or joining together to petition the city because of poor trash collection services dissolves. An activity that engendered a developing interest in the life of another individual is no longer shared.

When neighborhoods that support friendship networks dissolve, the cost is not merely emotional or personal. It is profoundly political. The collapse of friendships destabilizes an individual's life, and also removes some of the predictability and security which allow neighborhoods, and therefore cities, to function more smoothly and efficiently. There are three ways in which friendship networks help neighborhoods and cities function more efficiently as political communities: friendship frees people from the rigid calculations of "partial justice" connected with public and private transactions; friendship associations form a social safety net for the disadvantaged members of the community; and, friendship networks give people incentives to enter into relationships in which they would not otherwise receive due recognition or remuneration for their kind and generous actions.

First, the trust and good will which pervade the community help to supplant the formal obligations of justice, making friendship networks valuable to the political community. In particular, Aristotle maintains that friendship takes the place of the sphere of "partial justice" which concerns reciprocal exchange in the transaction of material goods.[19] The "motive" for this type of justice is "the pleasure that comes from profit."[20] Friends, however, are not ordinarily interested in securing profit through exchanges with one another. They are more interested in securing their mutual advantage than their individual advantage. The local baker, for instance, may not demand prior payment for the delivery of cakes and pastries to a nearby merchant or a local wedding because neighborhood clients are friends. Consequently, the baker is more concerned with making a sumptuous wedding cake than winning business because he sells fine desserts. At the same time, the local merchant's close relationship with the baker makes the merchant especially eager to support the baker's endeavors by paying for goods promptly and in full. And, in the case of the wedding, not only might the baker be invited, but the bride and groom might honor the chef with timely payment in light of the particularly beautiful cake that he crafted for their wedding.

So, what is there to gain from sharing a view of justice with one's neighbors? The advantage is a community tied together by a shared notion of right and wrong. These beliefs, when held in common by a group of people, serve to promote stability and order in urban life. Such friendships foster the trust that leads to thriving commerce without the undue burden of legal restrictions. In a community that supports a strong network of friendships, Aristotle claims that transactions do not need to be mediated by the threat of law or police powers. The best

friendships are based on a mutual interest in the welfare of the other. Although neither party in a strong friendship would entertain the thought of undercompensating a friend, each would trust the other to fulfill any outstanding obligation that might have been incurred. The special capacity of friendship to transcend the formal dynamics and compensation of business transactions means that individuals and merchants can focus their energies on efforts that enhance the productivity and stability of a community.

The second way in which networks of friends have an explicit political value is the way in which friendships weave a mesh of relationships that ensure the economic, emotional, and moral welfare of a community. Aristotle's account of the attendant goods and benefits of friendship reveals that they are the silent movers and unifiers of neighborhoods and cities.

The concept of friendship networks and their value to the political community might best be described in similar terms to Adam Smith's "invisible hand." In *The Wealth of Nations*, Smith uses the concept of "the invisible hand" to describe how the actions and interests of eager (labor-hungry) capitalists actually help meet the needs of the people who have fallen through the cracks in the capitalist system of production. The efforts of individuals to form friendships could be said to establish the same sort of safety net for those who are less fortunate. The members of the community who have the time, and the necessary social and financial resources, are able to cultivate a broad network of friends. A network that makes up a neighborhood may, through the ethnic, professional, or religious bonds that form the basis of relationships, create a spirit of good will. This spirit of good will engenders a common notion of justice, familiarity with and affection for one's neighbors, and a shared sense of place, creating a sense of belonging, caring, and stability that motivates individuals to perpetuate the welfare of the community. These building blocks of community vary in their form and function. Some friendships serve to nurture the young, others to provide companionship to the old. The invisible hand of friendship establishes a support network for the most vulnerable members of the community. Friendships bolster the moral development of the young, provide for the needs of the elderly, and supply relief from misfortune.

The third way in which friendship networks contribute to the welfare of the political community is by promoting noble and selfless actions. Friendship networks enable cities and neighborhoods to operate more efficiently and compassionately by encouraging individuals to engage in supportive relationships that they otherwise would have avoided. Business owners and individuals enter into relationships with people who may not be able to return their kindness or monetary contributions because they expect to receive recognition from their friends.

As a practical matter, Aristotle realizes that not all friendships arise out of mutual interest in the good of another person. Many friendships are motivated wholly by the benefits that one expects to receive from relationships. In particular, Aristotle recognizes that some relationships are based on the honor which a person expects to receive should he give more than that for which he can be compensated. Aristotle notes that these friendships are imperfect but he acknowledges that such charitable exchanges will not go unacknowledged in the context of a community of friends. Praise from a peer group, acknowledging a person's generosity or magnanimity, is a significant benefit of committing to a relationship from which one cannot expect to receive fair compensation. Friendships between unequals — rich and poor, learned and unschooled — are often stimulated by the realization that an individual will receive public recognition. Aristotle states:

> *A person who contributes nothing good to the common interest is not held in honor. For what belongs to the community is given to him who works for the common good, and this common possession is honor . . . . Therefore if a man sustains a financial loss, honor is his reward . . . . For a return proportionate to merit restores equality and preserves the friendship.*[21]

By supplying approval and honor to deserving individuals, Aristotle notes that the network of friends which composes the political community encourages ties between people who would otherwise not come in contact with one another. The urban community serves as a catalyst for friendships that benefit those who are disadvantaged or marginalized. Friendships establish a foundation that supports the concerns of a broad range of people—old and young, rich and poor, merchant and artisan, strong and weak.

Aristotle's thoughts on the importance of friendship to the social order or regime remain valid in contemporary urban communities. Many of Aristotle's observations find explicit validation in analyses of post-World War II urban revitalization programs.

The Case of Boston's West End: Studies of Friendship and the Urban Environment

It has been observed that friendships and neighborhood relationships were among the most destabilizing casualties of the federal government's urban renewal programs. Those who have reviewed the federal government's urban efforts of the 1950s and 1960s bring the issue of the destruction of friendships and social networks to the fore of their analyses. They make no estimation, however, of the political implications of the loss of friendships. Little thought has been devoted to understanding how sweeping changes wrought by the federal highway and urban renewal programs might have compromised the ability of cities to function as communities where people could "live well." Studies produced by a broad range of sociologists, political scientists, physicians, and urban analysts indicate that the complete or partial destruction of city neighborhoods resulted in the loss of communities that had previously fostered social interaction and sustained poor, sick, or aging members.

Two prominent researchers, Herbert Gans and Edward Ryan, lived and/or worked in Boston's West End. They both constructed convincing cases that neighborhood relationships are building blocks on which the stability of a community is based. Their assessments of the impact of urban revitalization programs contain empirical observations that confirm Aristotle's account of the interplay between friendship and the urban environment. However, Gans and Ryan could have offered more penetrating analyses of the implications of friendship for the political community. Both Gans and Ryan emphasize that the residents of the West End placed a high value on the friendship bonds that united their community. They observe that the urban renewal program destroyed communities and, consequently, friendships. But, they do not appreciate that by destroying these friendships, the federal laws failed to maintain, and in fact eliminated, the political community.

Although their respective studies yield observations that have special significance for the welfare of the political community, Gans and Ryan do not attempt to evaluate the political implications of the West End's redevelopment. Their research shows how friendship bonds animated and united this urban community. They point out that when the West End ceased to exist, so too did the support networks, the sense of self, and the sense of community distilled by West Enders over the course of their lives in that neighborhood.

In the case of the West End, friendships served to give individuals who lived in a poor urban community a sense of importance and belonging. Ryan notes that the friendships among West Enders:

> *...[were] effective in providing the individual with an alternative structure upon which his sense of personal worth and certainty of identity could be maintained, even though challenged. Wealth, education, high status occupations, and social power, as it were, could be given their due recognition; but at the same time it was possible to affirm implicitly, and at times overtly, the superiority of West End morality.*[22]

As is the case for many working class communities, an address in Boston's West End signified more than just a geographic location. Limits on financial resources and mobility meant that the majority of West Enders considered their neighborhood the full extent of their social community. As Ryan's research reflects, the West End neighborhood did not function like a suburban bedroom community. Residence in a West End neighborhood denoted membership in the West End social network. When Ryan asked West Enders what made the surrounding streets and buildings a neighborhood,

> *Forty-three percent mentioned only their feeling of attachment to people there, 17 percent referred to the general atmosphere of friendliness without indicating specific ties and another 20 percent mentioned close personal ties and friendly people. In total, 80 percent of West Enders made reference to friendship as a central value and central characteristic of neighborhoods.*

And when Ryan inquired,

> *which they would prefer to be, an auto mechanic who had many friends and who was contented, or a general manager who was to become a leading businessman, but who had little time for friends, 64 percent chose the auto mechanic.*[23]

The importance that West Enders accorded to friendship echoes Aristotle's own dictum that "no person would choose to live without friends." Belonging to a close-knit network of friends was so crucial to residents that an overwhelming majority would forego significant prestige and wealth to retain their places in the community among friends.

Though friendships were considered by West End residents to be important personal assets, friendships were most valued because they established an environment of common concern. Ryan notes that when West Enders referred to the spirit of the West End community, they characterized relationships as being about "helping others." More specifically, when Ryan asked residents "what they would expect of friends that they would not expect of someone else," his research revealed that "giving or receiving assistance [was] either the only response or a prominent theme in 60 percent of the replies."[24]

The demolition of the West End separated neighbors, isolated the old, dissolved church organizations, and rendered business associations meaningless. For tenants, owners, and businessmen, the destruction of the neighborhood exacted social and psychological losses. The clearance destroyed not only buildings, but also a functioning social system. The scattering of family units and friends was especially harmful to the many older people.[25]

As Gans asserts, the destruction of Boston's West End left the residents of this neighborhood without the support networks that gave them a sense of identity and security. However, the severed bonds of friendship represent a loss whose importance transcends the practical and emotional value of neighborhood relationships. As fundamental political associatios, friendships undergird the stability of an entire city, not just a single neighborhood.

Learning from Aristotle: Cities Built on Friendship

Herbert Gans and Edward Ryan echo Aristotle's basic observations about the connection between the welfare of the urban community and the presence of neighborhood friendships. Their research shows that when the West End and other urban communities like it are demolished, neighborhood residents lose both their sense of identity and their support networks. Instead of revitalization, the urban environment undergoes a sort of spiritual death. Corner store chats among parents, card games among the elderly, and stickball and street hockey games between teams of neighborhood children are silenced under the foundations of new office and apartment buildings.

Sociologists, political scientists, psychologists, and other students of the urban environment recognize that friendships have emotional value, and they mourn their loss for that reason. What they do not see is that friendship binds the political community together in the ways described. The massive restructuring of the cities through urban revitalization and the federal highway program did not merely destroy friendship networks, but according to Aristotle's teachings, these programs destroyed the fiber of the political community. Although Gans, Ryan, and others note the obvious costs of efforts to revitalize the city—the separation of immigrant families and the struggle of elderly city dwellers who have no immediate neighbors to look after them—they fail to see the full political significance of the loss of friendships. They do not appreciate that every torn friendship is another broken bond in the political association. Gans and Ryan document that when the bulldozers arrived, people were forcibly isolated and separated. Aristotle understood that breaking these bonds of friendship destroys the life of the political community.

Recognition of the profound destruction wrought by urban renewal on the political community is facilitated by an Aristotelian understanding of the city. "Every city is some sort of partnership," Aristotle states, "and every partnership is constituted for the sake of some good."[26] The subversion of friendship—one of the most basic partnerships in the city—leads to the subversion of the political community. The dissolution of the bonds that unite friends, families, and neighborhoods atomizes the city. Cities continue to grow in population, but without neighborhood environments where friendships are nurtured. The result is an undeveloped political community. The city becomes an

increasingly private place to live. A lack of connection with neighbors means more strangers and increased suspicion, in turn encouraging the proliferation of laws, security guards, fences, and neglect of those in need. The city is more rigid, less trusting, and less efficient.

The ancient thinker Aristotle offers a new perspective to the planners and legislators whose desks and drafting boards are piled high with proposals for urban initiatives. He emphasizes that, unlike cities, political communities are not built vertically–from the ground up–but instead horizontally–through the interconnection of individuals.

ABOUT THE AUTHOR

In 1990, John Marshall received his Bachelor of Arts degree in the program of Liberal Studies from the University of North Dakota. After working for Congressman Henry Waxman for two years in Washington DC, Mr. Marshall returned to school to receive his Master of Arts in Government from the University of Texas at Austin. Currently, Mr. Marshall is pursuing a Juris Doctor degree at the University of Florida. *He would like to thank Professor J. Budziszewski, Professor Robert Mugerauer, and Anne Collins for their guidance and assistance on this article.*

ENDNOTES

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[2] Aristotle. 1984 ed. *Politics*. Introduction by Carnes Lord. Chicago: University of Chicago Press, 21. Lord uses the term 'regime' to connote Aristotle's use of the Greek word politeia. This term may be defined as constitution, government, social order, or state.

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[18] Aristotle, *Nicomachean Ethics*, (215) 1155a22-25.

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POINT/COUNTERPOINT:

Property Rights Debate

Compiled and Edited By:
Leilah Powell
Jennifer Oetzel
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Planning Forum sent a two-question survey to over 30 individuals active in the field of property rights. The replies of the six respondents are presented below in a debate format.

James B. Blackburn, Jr. is a principal in the law firm of Blackburn & Carter, P.C. and teaches environmental law and policy at Rice University in Houston, Texas.

Kay Bailey Hutchinson is a Republican Senator from Texas.

Corwin W. Johnson is a professor at the University of Texas at Austin School of Law.

Rick Perry is the Commissioner of the Texas Department of Agriculture.

David Socolow is the Director of the American Resources Information Network in Washington, D.C.

Johanna Wald is an attorney with the Natural Resources Defense Council in Washington, D.C.

WHY DID THE "PROPERTY RIGHTS" MOVEMENT START IN THE UNITED STATES?

Hutchinson: Faced with the unchecked growth of increasingly onerous and burdensome federal restrictions and a regulatory environment marked by the routine administrative usurpation of property rights without compensation, citizens have demanded protection of their property rights. It is a true grassroots movement. Concern about property rights began at the neighbor-to-neighbor level, grew into ad hoc groups in Texas and other states, and now has advanced to the top of Congress' agenda.

At the core of the property rights movement is the determination to sustain citizens' rights under the Fifth Amendment, which clearly stipulates that private property shall not be taken for public use without just compensation. The movement is not anti-environment, nor does the movement seek to deny government the ability to act reasonably in the public interest.

The United States exists today in part because our founding fathers would not tolerate arbitrary control by a distant authority over our lives and our property. The Fifth Amendment served as a bulwark against such capricious intrusions on individuals' rights for much of our history, but the last several decades have produced an explosion of environmental regulations that harm private landowners. Given Congress' and Washington rulemakers' reluctance to enforce Fifth Amendment protection of private property rights, property rights advocates believe the only recourse available is to demand that Congress pass legislation making property rights protection the law of land.

Though the right to property ownership had once been inviolable, now it exists not by Constitu-

tional right but by bureaucratic permission. The property rights movement endeavors to reaffirm this Constitutional protection.

Socolow: Over the last ten years, a growing coalition of right-wing activists, industry-funded anti-environmental groups, and disaffected voters has successfully organized around a cluster of issues that comprise the "wise use" agenda. This agenda calls for the rollback of environmental regulations, expanded resource development, and the passage of "takings" legislation.

Although the Wise-Use movement portrays itself as a grassroots movement that protects the little guy, its money comes from mining companies, logging companies, oil companies, large commercial and residential real estate developers, and an assortment of other corporate interests. The Wise-Use movement was funded by companies such as these because environmental regulations curbed their ability to exploit the country's natural and nonrenewable resources, and to squeeze the last dollar out of their property regardless of the impact on the health and safety of their neighbors.

As a political minority, the Wise-Use movement turned to "takings" legislation as a vehicle for its agenda, because they felt that the strong bipartisan support for health and safety protections would frustrate a frontal attack on these laws. Rather than attempt to repeal the specific pieces of legislation that have led to takings claims (especially environmental regulations), the Wise-Use movement uses a back-door approach.

Perry: Ironically, the private property rights movement began in Western states where much of the land is owned by the federal government. Private citizens lease the land for grazing, forestry or mining. As enforcement of the Endangered Species Act was administratively expanded by the U.S. Fish and Wildlife Service, private individuals faced more regulations, many of which hampered their ability to make a living.

In Texas, 95 percent of property is privately owned, yet landowners still face growing restrictions on what they can do on their property. The economic impact of those restrictions has been felt across Texas by both urban and rural residents. During the summer of 1994, the debate reached a new level, fueled by the U.S. Fish and Wildlife Service's attempt to designate parts of 33 central Texas counties as critical habitat an endangered species. Since the habitat was already protected, many saw this attempted designation as unnecessary regulation and as a move by the government to grab more control of land and individual rights. That's when private property owners united and said, "Enough!" That protest generated much discussion on private property rights in Texas and spurred bills in the Texas Legislature and the U.S. Congress.

Wald: Despite its rhetoric, the "property rights" movement is not a spontaneous popular upsurge. Attacks on certain kinds of government programs—wetlands protection and federal ownership and control of public lands in the west, for example—are long-standing. The current movement, however, is the product of a deliberate decision to use the concept of property rights as a lever to achieve a specific ideological goal: to limit government regulation of business and property. This specific point is made clearly by Charles Fried, Solicitor General in the Reagan Administration, in his book *Order In Law*, in which he refers to a project that was developed to use the takings clause of the Fifth Amendment as a severe brake on federal and state regulation of both business and property.

Johnson: One can only speculate as to why this movement began. Possible explanations are: (1) It is an aspect of a growing general dissatisfaction with perceived excessive regulation by government of many things, not only land; (2) It is a reaction to the perceived unreasonableness of federal regulations of land for the protection of wetlands and endangered species; (3) It is a reaction to perceived excessive delays and costs in obtaining approvals of land development proposals; and/or (4) It is based on a belief that constitutional protections of property do not provide adequate protection.

Blackburn: The easy answer to this question is that the so-called property rights movement has been growing ever since Fred Bosselman and David Callies co-authored *The Quiet Revolution in Land Use Planning* in the 1970s. Federal environmental laws, particularly the Clean Water Act and the Endangered Species Act, were part of the genesis of interest in property rights. In particular, two sections of these laws caused the vocal national response of property rights advocates: 1) the adoption of the 404(b)(1) guidelines by the U.S. Environmental Protection Agency and their subsequent incorporation into the 404 permit process of the U.S. Army Corps of Engineers via a 1984 settlement agreement with the National Wildlife Federation and sixteen other environmental groups; and 2) the expansion by the courts of the "taking" concept of Section 9 of the Endangered Species Act, making this section applicable to the clearing or modification of habitat on private property. Much of the interest in the property rights movement can be traced to these two occurrences and their subsequent implementation nationwide.

The so-called "property rights" movement is extremely unbalanced. All of the vocalizing and interest so far has been by those who feel that their ability to "develop" their property has been limited by government regulation. The property rights movement has not yet recognized the voice of those who are concerned about keeping their neighbor's activities from interfering with their own use and enjoyment of their property.

Property rights have historically been balanced by the responsibility expected of the property owner. This responsibility is not only legal, as in nuisance concepts, but also spiritual, as in the concept of stewardship. The current "property rights" movement neglects these important concepts of responsibility and in the process may actually undermine the property rights of everyone in both the short and long term. With respect to the balance of rights and responsibility, the property rights movement has not yet begun.

WHAT IS THE APPROPRIATE POLICY RESPONSE TO THE "PROPERTY RIGHTS" MOVEMENT?

Blackburn: There are certainly examples of hardships documented by the advocates of the property rights movement which are legitimate. On the other hand, the property rights movement has articulated only a part of the full balance of the property rights issue. The appropriate policy response would be to understand the full implications of the property rights issue rather than acting hastily with only part of the property rights picture in focus.

A full discussion of the property rights issue would consider not only property owner rights, but also property owner responsibilities. It is the responsibility side of the equation that needs to be injected into the debate. For example, the personal use and development of property should be distinguished from the right to purchase land, subdivide the land and sell it, thereby changing the property's characteristics and its impacts on others. The right of property owners to develop their land is worthy of protection, but also worthy of protection is the right of neighboring property owners to be free of unwanted externalities such as increased noise, increased flooding and lowered water quality. It is this balance that is the critical policy issue.

It is clear that some relief valve should be afforded property owners that can demonstrate substantial financial harm from various statutes and I would support "relief valves" for both the 404(b)(1) guidelines and the Section 9 takings, among other requirements. However, it is important that these relief valves be administered with a view toward reasonable investment-backed expectations. It is not the role of the government to protect every investor from financial loss because he/she purchased a piece of property that simply could not be put to a particular use because of the impacts of such use. Property rights in the United States have never been construed in this way and should not be so construed.

From a policy perspective, the theoretical, less material, concept of stewardship seems a reasonable starting point from which to seek agreement. Many of the proponents of the property rights movement find

support in religious institutions. A reexamination of the concept of property holdings in light of the concept of stewardship is in order, emphasizing both rights and responsibilities.

The biggest threat to landowner rights may come from the so-called "property rights" movement. As currently articulated, this movement could easily cause a substantial erosion of the adjacent property owners' rights with regard to their neighbors' actions even as relief from government regulation is being pursued ostensibly to strengthen property rights. Unless the imbalance between rights and responsibilities is corrected by cogent policy, I fear that the overall status of landowners' rights will be worsened by this so-called property rights movement. The absence of balance must be the focal point for property rights policy making.

Hutchinson: The Fifth Amendment explicitly states that "private property [cannot] be taken for public use without just compensation." We must make certain those words have meaning. No government official, no matter how well-meaning, should be able to usurp or encumber private property.

If a government agency determines it is in the public interest to construct a school or military base, build an airport or highway, or create a wildlife refuge, the government must compensate the affected property owners for that taking. When the federal government determines to protect a unique natural resource or to build a new facility, it must pay fair market price to the owner for any land involved. This may not be fashionable in some circles where the concept of private property is considered outmoded, but it is the law.

I am a cosponsor of three Senate bills that affirm the Constitutional rights of private property owners. These bills are aimed at requiring the federal government to compensate landowners for losses in the event of a federal takings. Parallel legislation has already been approved by the U.S. House of Representatives, and I am hopeful the Senate will also approve such a measure and send it to the President for signature.

The framers of our Constitution wouldn't believe how the federal government usurps private property today. For them, protection of private property rights was a bedrock principle. They understood our nation could not grow and prosper unless individuals, businesses, and communities control the land and its water resources. Today, Americans are confronted with a regulatory culture that routinely tramples underfoot individual property welfare of mankind to the protection of animal and plant species. We would be wise to remember freedom and human welfare are always foremost in the public interest.

Johnson: Any response to this movement should embrace the following recommendations: (1) Do not enact any of the currently pending bills seeking to provide compensation in excess of constitutional entitlement. Enacting these bills would not be an appropriate policy response. The legislation currently proposed lacks a rational basis and may produce unforeseen harm. Let the Supreme Court continue its process of determining what constitutes "just compensation." (2) Address criticisms of the Acts protecting endangered species and wetlands directly, rather than indirectly, to correct excesses. (3) Simplify land use regulation procedures. (4) Educate the public about the values at stake in endangered species and wetlands regulation.

Perry: I believe the Endangered Species Act has been interpreted and administered far beyond what the original legislation intended or allowed. We can protect endangered species without putting people out of business or out of their homes. It does not have to be an "us-or-them" situation.

First, we must use sound science when listing a species and when coming up with recovery plans for species. The U.S. Fish and Wildlife Service needs to provide property owners with specific information about the population of the species, what its habitat is, and what the restrictions will entail. Almost none of this information is currently available before or even after a species is added to the list and restrictions are imposed.

Second, we need to incorporate cost-benefit analysis into the regulations so that regulators will have to ask, "Will imposing regulations that have an economic impact really save the species?"

Third, we should offer incentives rather than punishment. Right now, the way the Act is enforced, it is a liability to have an endangered species on your land. We must remove that punishment.

Finally, when restrictions are deemed necessary by sound science and those restrictions reduce the value of land or inhibit one's ability to make a living off the land, the owner should be compensated. If endangered species are public property and benefit the public, the public should help pay the cost, just as it does for parks, roads and schools. Private property owners should not be made to carry the burden for the public of saving endangered species. A good dose of common sense injected into the debate and the regulation-making would go a long way toward solving the problem.

Socolow: All Americans have the right to own and enjoy their property. The Fifth Amendment to the Constitution provides for this protection, and 200 years of case law have reaffirmed it. No one denies the importance of this fundamental civil right. But the "takings" dispute is not about protecting private property rights. It is about defining "regulatory takings." The Supreme Court has recognized that in some cases, insensitive and over-reaching bureaucratic actions with no public purpose may totally deprive a property owner of reasonable economic use of his or her property.

This problem can be addressed while preserving Constitutional standards. One sensible solution would address the concerns of property owners who do not have the resources to sustain lengthy legal challenges to onerous regulations, without establishing a right to receive taxpayer money when government enforces sensible safeguards. This approach avoids creating a new federal entitlement program that would give rise to rampant speculation, impose new costs on the federal government, and create additional bureaucracy and litigation.

Sound legislation in this vein would provide: (1) A requirement that federal agencies consider ways to minimize the impact on small landowners and to develop administrative processes for individuals to challenge agency decisions, so that small property owners do not have to go to court to air their grievances; (2) A requirement that agencies that have programs which the Office of Management and Budget determines impose limits on the use of real property establish outreach and education programs to assist landowners in complying with and receiving information about federal regulations; (3) Reform of existing programs to minimize the regulatory burdens imposed on landowners; and (4) Improved access to just compensation by raising the threshold for claims that can be brought to district court.

Wald: The appropriate response is not to reject approximately 150 years of judicial experience interpreting the Fifth Amendment. It is not to radically redefine property and the circumstances under which taxpayers must pay for its taking. It is not to create a massive new entitlement program that will require huge sums of tax dollars to cover its direct payoffs, transaction costs and the costs of unintended consequences. If there are problems with specific pieces of legislation, those problems should be identified and remedied through the authorizing process in Congress, rather than through an approach that takes a meat ax to the ability of government to engage in the regulatory functions that Americans depend on to protect their homes, neighborhoods, workplaces, and the environment.

The editors would like to thank the contributors to this section for sharing their views.

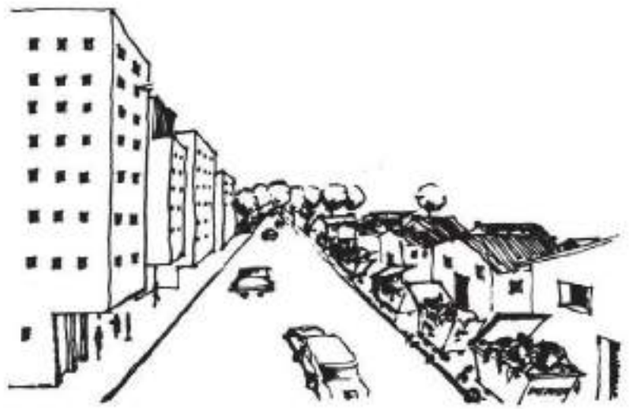
A DIFFERENT PERSPECTIVE ON ENVIRONMENTAL RACISM

Frank B. Cross

The relative over-exposure of poor and minority populations to toxic hazards has come to be known as "environmental racism." Researchers have found that hazardous waste sites are disproportionately found in minority and disadvantaged communities (Bullard, 1994; Bullard, 1990; U.S. General Accounting Office, 1983). A similar colocation exists for forms of air and water pollution (Bullard, 1994; Wernette & Nieves, 1992). The Environmental Protection Agency (EPA) itself has recognized the problem and embarked upon self-examination (U.S. Environmental Protection Agency, 1992). Some people question whether these facts are attributable to racism or classism. In any event, it seems clear that many members of poor and minority groups confront greater environmental risk than does the average suburbanite. Such a situation cries out for responsive action. Unfortunately, the sources of the environmental racism problem generally have been misdiagnosed and the solutions consequently misprescribed.

The villain of the tale of environmental racism typically is private industry. While this perspective overlooks government as a substantial source of pollution in minority communities, one can accept the focus on private enterprise as a working hypothesis. Why would a company choose to locate polluting facilities in poor minority neighborhoods? Racism itself is a conceivable explanation but it seems likely that the more characteristic explanation is simple profit maximization. Hazardous facilities are likely to flow to places where land is cheap and lawsuits less likely. Thus, capitalism itself conduces to the placement of pollution sources in disadvantaged areas.

If free enterprise has this tendency, it is reasonable to call upon government to restrain the risk. Appealing to business ethics may have some success but hardly seems sufficient to countervail the strong financial incentives to site location. Pollution is an externality, and government is better suited to correct this sort of market failure. Unfortunately, current government structures have their own innate tendencies that actually further environmental racism, rather than correct it.



> Capitalism itself conduces to the placement of pollution sources in disadvantaged areas.

Examples of discriminatory government action are relatively easy to come by. EPA acted vigorously to address problems that later proved to be overstated at largely white communities at Love Canal (New York) and Times Beach (Missouri) but overlooked risks from disposal facilities in predominantly black Warren County (North Carolina) and predominantly Latino Kettleman City (California). Over and above anecdotal information, statistical evidence bolsters the claim of government's role in environmental racism. Consider some of the documentation provided in a *National Law Journal* study (Lavelle & Coyle, 1992).

- Penalties for environmental law violations are fifty to five hundred percent higher in white communities than in African American communities;

- EPA takes 12-42% longer to initiate cleanup action at hazardous waste sites in minority areas and takes even longer to complete cleanup;

- EPA often chooses better, more expensive, and more permanent remedies at sites in white areas as opposed to minority areas.

In addition, government-operated municipal landfills and incinerators are likely to be located in minority areas (Bullard, 1994). The government, which should be correcting problems of environmental racism, obviously fails to do so.

In practice, government action actually exacerbates the maldistribution of risk. Beyond their direct effects, government enforcement patterns increase the preexisting incentives for business to locate in disadvantaged areas, where the financial consequences of environmental violations will be less severe. Thus, environmental racism may be attributed to government failure as well as market failure. The government failure is borne largely of its own tendencies to respond to influential pressure groups.

Indeed, government failure may explain more environmental racism than does market failure. Hamilton (1993) conducted an extensive study of commercial hazardous waste capacity expansion among counties. He also correlated this expansion with a variety of variables, including income and race. The most significant determinant of waste disposal capacity expansion was found to be voter turnout, which he used as a proxy for the degree of collective political involvement of residents. Waste disposal decisions are thus based not so much on traditional economics as on the feared effects of political opposition. Been (1993) likewise suggests that waste disposal decisions are driven to choose sites in "neighborhoods that are least likely to protest effectively." Thus, it is government itself that skews the distribution of disposal capacity. Godsil (1991) claims that the "major obstacle facing states attempting to distribute fairly the burden of hazardous waste facilities is the strength of public opposition." There are structural reasons why government environmental action may have racist consequences, and public participation is largely to blame.

In the abstract, government environmental policy is presumably based on the correction of risks to health. In practice, government policy is actually based on perceived risks to health. The EPA's own self-evaluation found that their priorities were based more on public perceptions of harm and bore little relationship to their measures of actual harm (U.S. Environmental Protection Agency, 1987). Other sources confirm this fact for EPA and other agencies (Cross, 1994).

> ....environmental racism may be attributed to government failure as well as market failure. The government failure is borne largely of its own tendencies to respond to influential pressure groups.

Two distinct facts seem well-established. First, environmental hazards are maldistributed at the expense of minorities and the poor. Second, environmental action is based largely upon public fears and demands, rather than scientific estimates. While both facts may be generally recognized, they are seldom synthesized. Perhaps public environmental pressure is a leading cause of environmental racism.

Research demonstrates that public risk perception is indeed biased against minorities and the poor or, at best, unconcerned with such groups (Cross, 1994). The middle class has a considerable perceived fear of minorities themselves. Moreover, most Americans tend to focus their concern on their own problems in their own neighborhoods. When government responds to these concerns, it either ignores environmental problems in minority communities or affirmatively shifts problems into those communities.

The effect is most obvious in the case of the NIMBY ("not-in-my-backyard") movement. Whites protesting the location of hazardous waste disposal sites in their neighborhoods have been reasonably successful. A well-organized protest, including on-site picketing and letters to representatives, can make siting efforts expensive and perhaps impossible. To avoid these protests, facilities are sited in minority communities. Thus, NIMBY can readily become PIBBY ("place-in-blacks-backyards") (Bullard, 1990). The resulting racism may sometimes be intentional. Lazarus (1993) notes that environmental claims have been suspiciously raised in support of racially exclusionary zoning practices. Giving protesters the benefit of the doubt–that the racist effects are unintentional or unforeseen–is of little benefit to the minority communities who nonetheless bear the burdens of pollution. Bullard (1990) observes that "NIMBY, like white racism, creates and perpetuates privileges for whites at the expense of people of color."

While NIMBY provides the most obvious case of public perception's transfer of risk to minorities, it is not alone. Indeed, virtually all of environmental law is oriented toward addressing the problems of advantaged populations. Minorities are largely unrepresented within national environmental groups, who have often placed a higher priority on objectives such as wildlife protection. Bullard and Wright (1986) find that the mainstream environmental movement pursues "white middle and upper-middle class" agendas that leave black communities in a "powerless position." In addition, EPA is among the least integrated of all federal agencies.

One author found that national environmental policies "distribute the costs in a regressive pattern while providing disproportionate benefits for the educated and wealthy" (Stewart, 1977). Another reported that "several empirical studies have suggested that the distribution of benefits from a reduction in pollution is neutral or even regressive" (Lazarus, 1993). These studies do not demonstrate that environmental action must inevitably hurt the poor, only that prevailing policies and structures have this effect. Perhaps the problem lies in how environmental policy currently is formed.

> ...in any battle of participation and political power, minority interests will lose out.

Consider another manifestation of environmental racism—pesticide risks to farmworkers. These occupational pesticide risks remain remarkably high, causing hundreds of deaths and thousands of illnesses per year. In contrast to the vast majority of identified environmental pollution problems, which have improved with regulation, farmworker acute toxicity pesticide deaths have increased. A central reason for the increase is the change in pesticides permitted for use. EPA responded to pressure from environmentalists and banned highly persistent pesticides, such as DDT, and permitted replacement with less persistent but more immediately toxic products (Austin & Schill, 1991). Pesticide policy has consistently shown more concern for extremely low levels of exposure from food residues (affecting the general population) and far less concern for much higher exposure levels faced by farmworkers (who are poor and often minorities). EPA acted within weeks when "60 Minutes" fomented a bogus scare of Alar residues on apples but required five years to do anything about the very real consequences of parathion poisoning of farmworkers. In other areas, environmental regulations have shifted risk from the general population to discrete groups of workers (Cross, 1994).

In attempting to reform environmental policymaking, a common cry of environmental justice activists is for a grassroots movement of environmental participation by minorities to remedy the maldistribution of risk or "empowering the people" (Austin & Schill, 1991). Robert Bullard, the leading researcher and author in the area, makes such a case for minority empowerment (Bullard, 1994). This approach appears to respond directly to government failure as well as market failure but overlooks

the manner in which public participation has caused environmental racism. While advocates of empowerment can cite isolated examples of success, adopting greater participation as a master plan is doomed to failure for several reasons.

First, in any battle of participation and political power, minority interests will lose out. Greater minority participation might help balance the scale a little, but the scale will remain severely tilted. To effectively conduct their own NIMBY campaign, minorities require "vast amounts of time, money, political influence, and access to a variety of resources, including meeting places, publications, public and private records, funding for technical assistance," and other resources (Colquette & Robertson, 1991). Minorities can make it more difficult to transfer pollution to their neighborhoods, but it will still be easier than locating in well-off communities. Waste products and other environmental problems will continue to exist. So long as their burden is distributed according to political influence and power, minorities will lose out.

Second, there is a reason why minorities have not traditionally been active participants in environmental advocacy. African Americans and other disadvantaged groups have not been shy about involving themselves in protest movements over civil rights, housing, and other concerns. Their lack of involvement in environmental protest does not mean they are unconcerned about the environment, simply that they have even greater concerns (e.g., housing, crime) not equally shared by more privileged groups (Cross, 1992). Calling for more minority participation in environmental action must divert attention from more salient political issues or from the not always simple task of working, raising a family, and getting ahead in life. A better answer would not require minority interests to devote large amounts of their own very scarce resources to fighting environmental racism.

Calling for greater minority participation to fend off environmental hazards sounds good and offends no one. The approach suits American democratic traditions and offers an attractive sort of self help. It satisfies environmentalists because it seems to fight the industrial interests aligned against environmentalists. It doesn't disturb wealthier communities because it doesn't appear to affect them directly. Minority participation may appear contrary to private industry, but industry is not seriously threatened. Wastes have to go somewhere, after all, and industry has ample political power to protect its central interests. Minority empowerment can offer up a procedure without any promise of substance. Greater participation offers little more than symbolic action that may provide the occasional success but does not attack the fundamental causes of environmental racism. Public participation is itself a root of the problem.

While there is no simple panacea for environmental racism, greater reliance on science offers considerable opportunity for improvement. The scientific method is dedicated to a single end—the identification of truth. Science does not recognize self interest or prejudice. If environmental decisions were more firmly grounded in science, minorities should benefit. If it is true that minorities face the greatest environmental risks, prioritization based upon relative risk would primarily benefit minorities. While scientific studies may themselves sometimes be biased, at least the scientific method serves as a corrective to identify such biases.

Science does not recognize self interest or prejudice.

The virtues of science were more officially recognized in the Environmental Justice Act of 1992. This bill, introduced by Representative John Lewis and then-Senator Al Gore was intended to help remedy environmental racism. It would do so by requiring the Department of Health and Human Services to scientifically identify environmental high-impact areas, according to determinable adverse health impacts from pollution. Such areas would be protected from future environmental insults until such time as the health effects were moderated. These advocates of environmental justice appreciated that basing environmental policy on scientific evidence of public health harm offered an effective response to the maldistribution of risk.

Perhaps the best evidence of the potential beneficial effects of a science-based paradigm are found in the EPA's experience in lead regulation. Environmental lead was once the most severe environmental health problem in the United

States. Lead exposure caused serious brain impairment among children, and these risks were highly concentrated in the inner city. Nichols (1994) observes that these risks from lead received little attention from either mainstream environmental groups or political bodies. EPA initiated administrative action in response to scientific evidence rather than political pressure. The evidence was so strong that the agency took prompt action, and ambient lead levels now have been reduced more than ninety percent. The primary beneficiaries of this action were minorities, and the reduction was centrally attributable to a science-based system of prioritization, a system not typically used in other areas of environmental policy.

Relying on the concept of science is not a complete or certain answer to environmental racism. Scientific answers are provided only through the conduits of scientists and funding, both of which may be influenced politically on behalf of advantaged groups. No one should object if a given minority community embraces empowerment and seeks to combat prevailing government failure. Exhortations to such empowerment will not be effective on a broad scale, however, because of persisting disparities of resources. Returning policymaking to a scientific foundation should make a greater contribution to correcting maldistributed environmental risks, much as it dramatically reduced the inner city problems of lead pollution. Regulation grounded in science offers the opportunity to restrain the discriminatory effects of both markets and public environmental participation. Even if a given use of science is biased, the scientific method is self-correcting and the truth ultimately will be found.

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MANAGEMENT OF HUMAN-INDUCED ENVIRONMENTAL CRISES:

An Executive Overview

Victor L. Arnold
Rex A. Sebastian

There are many examples of human-induced environmental crises, including Amoco Cadix, Chernobyl, Exxon Valdez, Love Canal, San Juan, Ixhautepec, Sandoz, Three Mile Island, and Union Carbide Bhopal. With the exceptions of sabotage or terrorism, no human-induced environmental crisis has been intentional. Each event has had a low probability of occurrence but high environmental consequences. Any environmental crisis has the potential to threaten the existence of the organization responsible for the situation and to cause long-term environmental damage. The challenge for executive management of the affected organization is to effectively and efficiently respond to the crisis.

The Management Challenge

A crisis has unique characteristics not found in the normal day-to-day operations of an organization. When an environmental crisis occurs, time collapses. Action must be taken and information on which to base decisions is never sufficient. The normal decision process is short-circuited as it takes too long to provide decisions that are needed as the environmental crisis unfolds.

Another characteristic is that the options for response may be few. Decision-makers often do not have the luxury to peruse numerous options and choose the one best suited for response. Logistics, government regulation, public perception, and available technology may constrain the response decision set. A third characteristic is that the span of control over the event is uncertain. During an environmental crisis, organizations are usually jockeying with one another for position, which tends to inhibit proactive and effective response. The issues of who is responsible for what and who has overall authority for responding to the environmental crisis are often not resolved. A fourth characteristic is that the dimensions of potential short-run and long-run consequences are unknown. No matter how good the science, each environmental crisis has its unique attributes. The magnitude and longevity of the ecological damage in each situation, if it is possible to ascertain, are unknown until well after the fact.

It is within the context of these characteristics that the environmental crisis managers in the organization responsible for the situation must respond. They must coordinate the cleanup, direct the responses, expend large sums of money, and coordinate the interactions and relationships with the media and public regulatory bodies.

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Environmental Crisis Management Strategies

A common response strategy recommended for environmental crisis management is a contingency plan. While useful for understanding complexity, worst case scenarios and response options, a contingency plan is only as good as the assumptions upon which it is based. When an environmental crisis occurs, even the best made contingency plans are rarely executed effectively. Unexpected events occur almost immediately and continuously during the response phase of the crisis.

While physical damage to the environment and, in some instances, the loss of human life, are critically important, a principal concern during the crisis itself is the management of public perception. In the societal environment (the environment external to any organization) beliefs, values, attitudes, opinions, and lifestyles are supportive of quality of life issues. A clean and safe physical environ-

ment is now widely considered to be a quality-of-life right. An environmental crisis is a direct threat to that right. The immediate response of the public is to perceive that the quality-of-life right has been violated. Public interest in the risks and consequences of an environmental crisis event is intense. Even though such an event has low probability, when one does occur there is usually an accompanying public outcry that the activity associated with the event should not be allowed in the future no matter how low the risk. Therefore, managing perceptions is of strategic concern to the organization responsible for the crisis event.

Strategic management, tempered with experience by organizations who have successfully confronted human-induced environmental crises, offers insight on what to do in an environmental crisis situation to manage public perception during the response phase.[1] The concept of multiple stakeholders is useful. Each stakeholder will have a different frame of reference toward the crisis event.[2] Governmental regulatory bodies will focus on social, political and compliance issues. Victims will have ecological, economic, and medical concerns. The frame of reference for the organization responsible for the event will be technical, legal, and financial. In addition, strategic management also offers the prerequisite involvement by top management, concern for the affected organization as a whole, and the concept of strategy as an emergent process. Together, they offer an operational response framework for environmental crisis management. What is needed now is to translate that framework into practical steps that a manager in the organization that precipitated the event can take when an environmental crisis occurs.[3] These steps include:

- Top management quickly takes charge.
- Pinpoint the problem perception.
- Reconstruct the events leading to and immediately following the crisis into a coherent pattern.
- Get another opinion on the situation.
- Establish your priorities.
- Don't overreact to legal concerns. Public perceptions are lost by the overprotection of legal perceptions.
- Identify and empower a spokesperson to communicate with all constituencies.
- Communicate openly and honestly.
- Accommodate the media. Public perceptions are driven by media coverage.[4]
- Tell your story.
- Fix the situation through cleanup, remediation, and rapid settlement of claims for damages.
- Review internal decision and organizational structures so as to minimize the likelihood of another environmental crisis situation.

While these practical steps are straightforward and may appear to be just common sense, it is surprising how frequently these steps are ignored. The result is usually a public perception that the organization responsible for the environmental crisis is not organized, not in control of the situation, not interested in accepting responsibility for the crisis, and not interested in the human and ecological impacts.[5] Protracted cleanup, litigation, and the settlement of damage claims is the end result. This is an unfortunate outcome that could have been avoided.

There are examples where the public perception was managed well in an environmental crisis and the cleanup and disposition of damage claims was accomplished in a timely, efficient and effective manner. One such example is the 1988 diesel fuel spill in Pennsylvania.

Crisis Management: An Example

Late in the afternoon of Saturday, January 2, 1988, a four million gallon storage tank owned by Ashland Oil, Inc, at the Floreffe terminal near Pittsburgh, Pennsylvania, ruptured during the filling process and released 3.9 million gallons of diesel fuel.[6] The spill, contained to some extent by the containment barrier, flowed to adjacent properties. Early reports by terminal personnel indicated that none of the diesel fuel escaped into the Monongahela River. It was soon discovered, however, that more than 700 thousand gallons had in fact spilled into the river.

Within two hours of the spill the appropriate federal authorities including the National Response Center, EPA, and the Coast Guard were informed. Cleanup on the river began within four hours of the spill but was halted before midnight due to rapid river currents. After midnight it was discovered that a gasoline pipeline was leaking as a result of damage from the diesel spill and 1,200 people in the adjacent area were evacuated.

John Hall, CEO and Chairman of the Board of Ashland Oil, was informed of the diesel incident early Sunday morning. He immediately was in touch with on-site personnel to gather information, deploy personnel, and authorize expenditure for cleanup activities. He soon discovered that downstream water supplies were threatened and that water shortages could result. He authorized the building of a temporary pipeline to deliver water from the nearby Allegheny River to the affected sites downstream. He also called the Governor of Pennsylvania and West Virginia to apologize for the diesel spill.

By Monday morning the national media had expanded its coverage from the diesel spill and impending water shortages to the tank construction, quality, and testing. The media was interested in the age of the tank, whether it had been tested before filling, and whether proper permits had been obtained before construction of the tank had occurred. Ashland Oil initially provided inaccurate information to these questions. The tank had in fact been constructed in 1986 with 40 year-old steel. It had not been hydrostatically tested according to the American Petroleum Institute Standard 650 and no record of construction permit was on file. The media was turning the diesel fuel spill into an inquiry of the company's veracity and operating practices. Knowing that litigation was a certainty, Ashland's legal counsel advised caution in responding to questions from the press.

Ashland needed to seize control of the situation. After seeking an independent assessment of the situation from another CEO, John Hall seized control. In a Pittsburgh press conference on Tuesday, January 5th, he publicly thanked everyone working on the cleanup for their tireless efforts and apologized for the inconvenience to affected parties as a result of the spill. He also stated that Ashland would pay the costs of the cleanup and reimburse government agencies for reasonable expenses that they incurred. He went on to say that Battelle Institute had been retained to provide an independent assessment of the cause of the tank rupture and that as soon as the results were obtained they would be disseminated. Hall provided the facts about the tank itself and related that the investigation of the construction permits was not completed. He closed by stating that Ashland had 64 years of business with high safety standards, this was the first major oil pollution incident for the company and that the company would stick with the cleanup until the job was finished.

The cleanup proceeded on schedule and by the end of May, 29 percent of the diesel fuel spilled into the river had been recovered. In that process Ashland utilized the services of a hazardous waste group and an environmental consulting firm and provided assistance to water companies in meeting their customers' water needs.

The media were accommodated with a team of company spokespersons who gave more than 1,000 interviews during the first three weeks of the cleanup activity. In addition, nearly every public official with an interest in the crisis was visited, including officials in Pennsylvania, West Virginia, Ohio, and Washington DC. Ashland was open in sharing what it knew about the spill and cleanup activities.

Within two weeks of the spill Ashland opened a Pittsburgh office to process insurance claims. The company wanted everyone who believed he or she had a claim to file one. By November, 1988, they had received more than 5,700 third party claims and had paid 77 percent of them.

On January 20, 1988, Ashland made a $250,000 grant to the University of Pittsburgh's Center for Hazardous Materials Research to provide an independent analysis of the long-term ecological effects of the spill.

Epilogue

In February, 1989, Ashland pleaded no contest to criminal misdemeanor charges filed under the Refuse Act of 1899 and the Clean Water Act and paid a $2.25 million fine. Although this plea was a conviction, judges only infrequently permit a no contest plea. In this instance the judge ruled to accept the plea because of the open and accommodating behavior of the company throughout the environmental crisis.

The company was praised by the media for its straightforwardness. By managing the public perception of the environmental crisis, the cleanup and resolution of damage claims and legal actions were handled with minimal disruption to the company, the environment, and the parties affected by the spill.

Ashland subsequently reviewed its internal organization and decision-making processes and made substantive changes. A study of each terminal in the corporation was reviewed and problems identified. Quick solutions were implemented to address the most simple problems and processes were changed to address the more complicated ones. A Compliance Review Department was

also established to conduct audits of compliance for all operations.

Conclusions

Strategic management combined with practical steps to manage the public perception of an environmental crisis can help minimize the disruption associated with the cleanup. In addition, these techniques can assist in reducing the time, money, and resources devoted to resolution of the consequences in the aftermath of an environmental crisis. Executives charged with managing environmental crises who study unsuccessful and successful instances of environmental crisis management would do well to spend time studying the Ashland example. While each environmental crisis has its own unique dimensions, there are management techniques that can be helpful when managing under these stressful conditions.

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SENDING AN S.O.S:

Managing Water Quality in Austin, Texas

Scott Pasternak

For several weeks in the Fall of 1994, the City of Austin's stringent water quality regulation, the Save Our Springs (SOS) Ordinance, was the focal point of a Hays County lawsuit filed by land owners against the City.[1] These land owners, including Gary Bradley, the developer of the 4,000 acre Circle C Planned Unit Development (PUD), claimed that the Ordinance was "unreasonable, arbitrary and inefficient in its attempt to control water quality." On November 19, 1994, the jury returned a decisive verdict that will have a significant effect on Austin's SOS Ordinance. The jury overwhelmingly rejected the Ordinance's restrictions on impervious cover limitations and its ban on variances. The jury also concluded that the Ordinance was not consistent with the city-wide water pollution control program, and that it improperly regulated property use and building size. Finally, the jury decided that commercial development at Circle C should be regulated by the ordinance in effect at the time of preliminary subdivision approval.

Attorneys for the land owners and the City of Austin realized that the decision rendered would apply not only to the litigants involved, but also to the Ordinance in general. Although the Ordinance is still in effect, the possibility exists that Judge John Forbis, who presided over the trial, will invalidate the SOS Ordinance. Even if Judge Forbis does not overturn the Ordinance, there is a chance that it will be overturned in other pending lawsuits or during the 1995 session of the Texas State Legislature. New development would then be subject to the previous regulation for the area, the 1991 Composite Ordinance. Depending on the judge's decision, officials at the City of Austin need to consider their options. The City of Austin has three choices in this matter: (1) appeal the verdict in an effort to keep the SOS Ordinance; (2) accept the verdict and revert to the Composite Ordinance; or (3) adopt a new water quality ordinance.

This article examines the options that the City of Austin could pursue to protect water quality. The paper first explores Austin's concern for water quality and the history of its water quality ordinances. The history section emphasizes why Austin enacted the SOS Ordinance. An analysis of the SOS and Composite Ordinances follows, focusing on the merits and criticisms of each ordinance. Recommendations are made regarding whether the City of Austin should retain, or try to retain, either ordinance. The final section presents ideas for a water quality ordinance that could be a viable alternative to the SOS and Composite Ordinances.

The Concern for Water Quality in Austin

Few cities in the United States can boast the combination of cultural activities and career opportunities available to Austin residents. Austin, nestled on the eastern edge of the beautiful Hill Country, is the capital of Texas. The City bills itself as the "Live Music Capital of the World," and is home to the University of Texas. Furthermore, as a medium-sized city, Austin does not have the magnitude of traffic or crime problems associated with larger U.S. cities. Austinites have access to employment with the state gov-

ernment, the University of Texas, and the growing high-tech industry. In the middle of the City sits the treasure that many Austinites cherish most of all: Barton Springs, a natural swimming pool that provides unequalled recreational enjoyment.

During the late 1970s and early 1980s, Austin participated in the economic growth that was occurring throughout Texas. The entire state was "booming." Along with this growth came increases in the urban population in and around Austin. The small town of Austin was quickly transformed into a modern city. Austin now faces the struggle of balancing the preservation of its natural environment and unique character, and the problems associated with eminent urban expansion. Barton Springs has become the focal point of this struggle between development and the environment.

The Edwards Aquifer and Barton Springs

The Edwards Aquifer is an unique underground water resource in central Texas that extends along the Balcones Fault from west of San Antonio to north of Austin. In southern Hays County, there is a groundwater flow divide that marks the separation of the Austin and San Antonio regions of the aquifer. Surface water flowing into, and ground water flowing through, the Austin region of the aquifer represents an important source of water to Austin and surrounding communities.

The aquifer is composed of karst limestone with many large caverns, faults and fractures. Total land mass that drains to the Austin region of the aquifer is 365 square miles: 101 square miles are located in the recharge zone and 254 square miles are located in the contributing zone.[2] These lands consist of six watersheds in Hays and Travis Counties including Barton, Williamson, Slaughter, Bear, Little Bear and Onion creeks.[3] While Barton Creek has the most immediate impact on the water quality flowing into Barton Springs, each creek in the recharge zone does affect water quality. These creeks provide as much as 85 percent of the recharge to the aquifer through faults and fractures in the creek beds. The remaining 15 percent of aquifer recharge occurs through sink holes and caves. As much as 94 percent of the aquifer discharge occurs at Barton Springs. The remaining discharge occurs to water wells and to other springs.

Barton Springs receives more than 32 million gallons of flow per day from the aquifer. Flow from Barton Springs drains into Town Lake, which is a principal water source for the City of Austin. During the winter months, when water is being stored above Town Lake for release to downstream rice farmers in the spring and summer, flow from Barton Springs can account for 80 percent of total flow into Town Lake.

Water from Barton Springs is used for drinking water, swimming, and aquatic habitat.[4] Austinites regard Barton Springs, located in the city's Zilker Park, as a pristine environment where people from the community can enjoy the recreational and aesthetic qualities of clear, clean, spring-fed water. Approximately 200,000 people visit the springs each year to swim in the 70 degree, 1,000-foot long and 125-foot wide Barton swimming pool.

As much as people enjoy swimming at Barton Springs, they also regard the pool as an Austin institution. The history of the springs predates the City of Austin. Coronado is said to have camped on the banks of the pool during his exploration of Texas in the 16th century. The area around the springs was also home to Commanche Indians for hundreds of years. Before serving as Confederate General, Robert E. Lee slept on the shore of the springs. In 1837, William Barton homesteaded the springs and subsequently passed the area on to Colonel Andrew Zilker. At the beginning of the twentieth century, Colonel Zilker deeded the area to the City of Austin. Since that time, millions of Austinites and visitors have enjoyed Barton Springs in Zilker Park. Barton Springs truly provides a unique natural environment in an urban recreational area.

Water Quality

The Edwards Aquifer is sensitive to the effects of urban expansion in previously undeveloped areas, particularly with regard to the quality and quantity of stormwater runoff. Historically, water quality in the aquifer has been excellent because of the undeveloped state of the upstream contributing and recharge areas. Water primarily enters the aquifer through cracks and faults in creek beds. Because the aquifer itself is a series of "water bearing layers of cavernous, fractured and honeycombed layers of limestone" (Butler, 1983), it is very porous. This porosity provides little opportunity to filter the stormwater runoff once it reaches the creek beds.

In undeveloped areas, natural conditions can regulate the quantity and quality of stormwater runoff that drains into aquifers through the hydrologic cycle. Urbanization, however, limits options for effective control of runoff as the natural conditions that regulate runoff are replaced by impervious surfaces. Development increases the number of lawns that are fertilized, automobiles that leak oil, and the intensity of impervious cover.[5] This combination of increased development and impervious cover creates a significant nonpoint source pollution problem. Runoff from urban streets, construction sites, and other areas of intensive use "often contain nutrients, suspended solids, petroleum residues, toxic metals, pesticides and other deleterious substances" (Butler, 1983). When rain falls, water bonds with and flushes pollution into a region's watershed which then flows into receiving water bodies. Urbanization increases the volume and intensity of stormwater runoff and decreases its quality.

History of Water Quality Ordinances

Initial Ordinances

In 1980 the Austin City Council recognized many of the water quality issues associated with the rapid growth occurring in the area, and passed Austin's first land development ordinance. This was followed in subsequent years by additional measures to regulate the type and nature of urban growth in Austin. During the early 1980s, the Austin City Council created two special task forces to review information, analyze policy options, and make recommendations regarding appropriate measures to protect water quality. These task forces were composed of city staff from the Planning Commission and the Environmental Board, members of the Save Barton Creek Association, and representatives of the development industry. Technical support came from city staff, consultants, and University of Texas professors. The ordinances varied in their specific guidelines, but each subscribed to the concept of employing both structural and nonstructural controls to manage nonpoint source pollution. The strictest of these ordinances, the Barton Creek Watershed Subdivision Ordinance, allowed up to 35 percent impervious cover for housing and up to 45 percent for commercial development.

However, these ordinances did not adequately protect water quality. By the mid-1980s, the water in the Barton Springs recharge zone was becoming contaminated with bacteria and wastes associated with septic systems and storm water runoff produced by upstream development. The City of Austin began closing Barton Springs to the public after any rainfall of one inch or more. The public began to understand the effects of development on water quality in Austin. In a 1986 effort to mitigate water quality degradation, the Austin City Council passed the first Comprehensive Watershed Ordinance (CWO).

The CWO was a combination of the water quality ordinances adopted by the City in the early 1980s, and it applied to all watersheds within the jurisdiction of the City of Austin, except for watersheds in Austin's urban core. The CWO sought to maintain water quality levels through structural and nonstructural controls. Structural controls included temporary structures to be used during construction to mitigate erosion. The CWO also provided permanent controls to mitigate erosion and water quality basins to filter stormwater runoff. The nonstructural controls included limiting the intensity of impervious cover and restricting the manner and location of construction activities. At the time of its adoption, the CWO was considered to be one of the

most stringent efforts to control nonpoint source pollution in the country.

Development of the SOS Ordinance

In May 1990, Freeport-McMoran, a multibillion dollar corporation that focuses on natural resource development, exploration, and extraction, announced that its subsidiary, Barton Creek Properties, planned to develop 4,000 acres of environmentally sensitive Hill Country property along Barton Creek. Recognizing Freeport-McMoran's chronic history of causing water pollution, environmentalists vehemently opposed the development plan. They argued that the development would significantly affect water quality at the Barton Springs pool downstream. The environmentalists doubted that Barton Creek Properties was sincere in its promise to "categorically not pollute Barton Creek" (*AAS*, 6/8/1990). Because of the tremendous outcry–more than 800 citizens who spoke at the City Council hearing on the development–the City Council rejected the development plan.

This was the beginning of an extensive process to consider not only the specific development in question, but also to decide whether the CWO provided suitable standards for protecting water quality. Citizen action motivated the City Council to order the City's environmental staff to begin developing a new ordinance which would outline development guidelines for the Barton Creek watershed. This ordinance would not allow any water quality degradation to take place. Over the next two years, the City of Austin would adopt three different water quality ordinances, the final one being the SOS Ordinance. The first ordinance, The Interim Ordinance, was only a temporary regulation that remained in effect until the City could pass a permanent measure.

While city staff were in the process of drafting the Interim Ordinance, they made an important decision: the ordinance would apply to both the recharge and contributing zones of the Edwards Aquifer. This was significant because it expanded the geographic area covered by the regulation. Instead of applying only to development in the Barton Creek watershed, it would apply to development in all areas of the recharge and contributing zones. Developments like Circle C would have to comply with an ordinance adopted under these parameters. At this point, developers realized that the ordinance would affect more than Barton Creek Properties and began to coordinate their opposition to it. Environmentalists and developers understood that the proposed water quality ordinance would regulate the west and southwest sections of the Austin community.

The process of developing an ordinance intensified as representatives from the development and environmental communities, politicians, and city staff participated in drafting the ordinance. Over a period of many months, representatives from the involved parties wrote several ordinances; drafts were generated by the Mayor's appointed task force, the Planning Commission, and an environmental group, the Save Our Springs (SOS) Coalition. Realizing that there was still a great deal of disagreement over these options, the City's Environmental and Conservation Services Department (ECSD) analyzed the three proposals and created a "Composite Ordinance." Roger Duncan of ECSD said that the Composite Ordinance would "achieve non-degradation through a hybrid approach of limiting discharge to Barton Creek, controlling the concentration of pollution and limiting impervious cover" (*AAS*, 10/8/1991). Although the SOS Coalition opposed the Composite Ordinance, the City Council approved the measure by a six to one vote.

The Composite Ordinance required developers to construct water quality structures to capture, filter, and slowly release runoff for the largest rainfall event that would occur an average of once every two years. Developers perceived the Ordinance as a performance standard, because it required that projects exceeding 20 percent impervious cover to capture the first 1/2 inch of stormwater runoff in water quality control structures. In addition, for each additional 10 percent of impervious cover, up to a limit of 70 percent, the developer needed to increase the captured amount of runoff by 1/10 of an inch. Developers favored this ordinance as it provided the opportunity to maintain water quality levels with structural controls. The Ordinance furthered the concept of the performance standard by requiring owners of commercial or multifamily projects to obtain an annual operating permit and to conduct monitoring and maintenance of the water quality controls.

On November 5, 1991 the SOS Coalition began a petition drive to collect signatures to force the City to place the SOS proposal on a city-wide referendum. They were able to do this since the City Charter allows citizens to:

> *... propose any ordinance, not in conflict with this Charter, the state Constitution, or the state laws except any ordinance appropriating money or authorizing the levy of taxes. Any initiated ordinance may be submitted to the council by a petition signed by qualified voters of the city equal in number to at least ten percent of the qualified voters of the city.*

After several months of collecting signatures, the SOS Coalition had enough names to place the proposal on the ballot. The citizens of Austin would now have a vote in deciding whether to adopt a stringent water quality standard that would severely limit impervious cover to between 15 and 25 percent, require monitoring for 13 pollutants, require extensive on-site pollution control structures, and allow no exemptions.

The SOS proposal was based on studies that showed a direct correlation between increased impervious cover levels and increased pollutant levels. Lauren Ross, an environmental engineer working for the SOS Coalition, said that the impervious cover limits were "based on monitoring what we've got right now and are an estimate of the maximum intensity we can implement without degrading the springs" (*AAS*, 11/5/1991). The SOS Coalition used local monitoring data that the City and United States Geological Survey (USGS) had been gathering for several years. The data showed that when development exceeded the 15 percent range, dramatic increases in pollutant loads began to occur.

> The plaintiffs in *Quick v. City of Austin*, owners of property in watersheds that contribute to the Edwards Aquifer, asserted in their petition that the SOS Ordinance severely limited the use of their property.

Again, this was one of the most significant differences in opinion between the environmentalists and the developers during the adoption process. Developers maintained that the 15 percent impervious cover limit would only restrict growth and would have no effect on water quality. They asserted that structural controls would allow projects to exceed these arbitrary impervious cover levels while still maintaining water quality levels at pre-development standards.

After a long political campaign, Austin voters approved the SOS Ordinance by 64 percent to 36 percent, an overwhelming 2 to 1 margin. It was now up to the City's ECSD staff to draft technical guidelines for the Ordinance. This, however, was not the end of the conflict over the SOS Ordinance as land owners began to file lawsuits such as *Quick v. City of Austin*.

SOS Ordinance Leads to Lawsuits

The plaintiffs in *Quick v. City of Austin*, owners of property in watersheds that contribute to the Edwards Aquifer, asserted in their petition that the SOS Ordinance severely limited the use of their property.[6] The petition made the claim that, "the real purpose of the ordinance [was] to impose land use restrictions" limiting the amount of impervious cover and not to protect water quality (*Quick*, 1994). Furthermore, the petition claimed that the land use restrictions failed to "substantially advance a legitimate state interest," a requirement under state and federal constitutions (*Quick*, 1994). The plaintiffs claimed that the ordinance failed to advance a legitimate state interest for the following reasons:

1. It limits impervious cover to 25 percent regardless of the effects of the development on water quality;
2. It completely exempts certain residences and commercial buildings less than 8,000 square feet regardless of the effect on water quality;
3. It adds land use restrictions to water quality limitations and prohibits development which achieves perfect water quality control if the development exceeds arbitrary impervious cover limitations; and
4. It specifically prohibits exemptions, exceptions, and waivers. This prohibits development which would achieve the water quality standards mandated by the Ordinance, but fails to comply with the arbitrary land use restrictions.

Another pending lawsuit involving the SOS Ordinance, *FM Properties v. City of Austin,* [7] was filed by the owners of Barton Creek Properties. In their complaint they purport that the Ordinance represents an unconstitutional taking of their vested property rights. FM Properties essentially makes the same claims against the City of Austin as were made by the plaintiffs in *Quick, Jerry, et al. v. City of Austin.* [8]

Analysis of the SOS Ordinance

While the SOS Ordinance has remained controversial, providing extensive opportunity for evaluation and criticism, the following analysis focuses only on the water quality aspects of the Ordinance.

Technical Description of the SOS Ordinance

Writers of the SOS Ordinance drafted the proposal as a nondegradation regulation. SOS supporters wanted to ensure that pollutant levels following development would not exceed pollutant levels under existing conditions. The Ordinance sought to accomplish this goal by restricting impervious cover to 15 percent in areas within the Edwards Aquifer Recharge Zone and to 25 percent in areas in the Edwards Aquifer Contributing Zone. SOS also required property owners to construct engineered structures that would filter runoff in order to meet pre-development pollutant levels for 13 pollutants regarded as the best indicators of urban nonpoint source pollution.

Rationale for the SOS Ordinance

Researchers of the SOS Ordinance, including professionals in the fields of water quality management, hydrology, and environmental law, decided to limit impervious cover levels to 15 and 25 percent based on the results of local studies conducted by the City of Austin and the United States Geological Survey. These studies show that once impervious cover exceeds the 15 to 20 percent range, dramatic increases in pollutant levels do occur. These results closely correlate with those of analyses conducted in other areas of the country. Further modeling conducted by Lauren Ross concluded that an increase in impervious cover in the Barton Creek recharge zone would increase the volume of storm flow and decrease the volume of base flow. This would decrease total recharge to the Edwards Aquifer and would also decrease water quality levels since there would be higher concentrations of total suspended solids, fecal coliform, and nutrients (Ross, 1994). Ross' findings were similar to other scientific studies that continue to indicate that the intensity of land development is positively and proportionally related to the rate and volume of runoff (Butler, 1983).

Researchers of the SOS Ordinance also realized the need to restrict impervious cover based on the limitations of the pollutant removal efficiency rates of control structures. Researchers realized that the best management practices (BMPs), based on removal efficiency rates recommended by Thomas Schueler, would not be able to remove pollutants to the levels needed to assure nondegradation once impervious cover levels exceeded the 15 to 20 percent range. It would not be possible to design a control structure or system of control structures that would mitigate the effects of development once impervious cover exceeded 20 percent.

Proponents of the SOS Ordinance also understood the limitations in the actual performance of control structures. Although the structures may be capable of removing a certain level of pollutants, they often fail to function with the required effectiveness. While each case of poor performance or failure of a control structure is unique, some generalizations apply. The most common problems result from the construction and maintenance of the structures. At this time, the City of Austin does not have an effective means of forcing property owners to maintain their structures. This problem is not restricted to Austin: the lack of maintenance at sites is a significant reason for poor performance or failure in many control structures across the U.S. (Schueler, 1994).

SOS: A Nondegradation Ordinance?

The SOS Ordinance was written as a nondegradation ordinance: it requires that post-development conditions mirror pre-development conditions. This has proven quite controversial. Pro-development representatives have asserted that the Ordinance exceeds the standards required for nondegradation as some pollutant levels are much lower than the levels needed for drinking water. The example often cited is the standard for nitrogen. The SOS Ordinance requires that nitrogen must not exceed 2 mg/l even though drinking water limits are 10 mg/l.

The major flaw with this argument is that this standard of nondegradation only applies to drinking water, which

is but one of many the important uses for water from Barton Springs. Nondegradation should also apply to aquatic habitat. Research has indicated that

> *...the impacts of urbanization on the physical and chemical characteristics of streams may result in dramatic alterations to stream biota. Fish, aquatic invertebrates and plant and algae population respond in complex and varying fashion to the nutrient enrichment, toxic contamination, changes in flow patterns, and increased sedimentation rates which have historically accompanied intense development (Johns, 1991).*

It is extremely difficult to quantify the impact of changes in pollutant levels on the aquatic environment. There could be a certain amount of assimilative capacity in the environment, but the precise degree of assimilation is unknown. Because scientists have not been able to accurately determine how deleterious varying pollutant levels would be, the SOS Ordinance minimizes the potential pollutant risk. The SOS Ordinance presumes that any increase in pollutant levels will degrade the aquatic habitat. Advocates claim that it would be safer to remain cautious rather than to risk possibly irreversible damage to water quality.

This still does not provide an answer to whether the appropriate action has been taken with regard to nondegradation of the aquatic habitat. Given the current level of understanding of the ecosystem, scientists are not certain to what degree, if any, the aquatic habitat could adapt to impacts from urbanization. Further biological studies are required to assess the assimilative character of the aquatic habitat. To determine whether the SOS Ordinance went too far in its nondegradation standard will require further study. This research would give policy makers a better understanding of how to define nondegradation.

No Opportunity for Compromise or Innovation

Since the SOS Ordinance was adopted as a referendum approved by city voters, there was no opportunity to amend the Ordinance. Once the SOS Coalition began collecting signatures for the proposal, its content could not be changed. The Ordinance had to be accepted or rejected as written. This situation had the effect of reducing an extremely complex water quality issue into a simple yes or no decision.

The problem of the inability to amend the Ordinance was compounded by the strict impervious cover limits. Regardless of the pollutant removal effectiveness that a property owner could attain through nonpoint source pollution controls, impervious cover could not exceed 15 and 25 percent. The writers of the SOS Ordinance defined this limit based on the predetermined pre-development pollutant levels, historical post-development pollutant levels, and performance levels of structural controls, or best management practices (BMPs). Although the Ordinance would allow a property owner the opportunity to prove to the city that the pre- or post-development pollutant levels were different on their property or that the effectiveness of a BMP could be improved, the maximum impervious cover limits were unchangeable.

Impervious Cover Limits: Arbitrary Land Use Restrictions

According to opponents of SOS, the SOS impervious cover limits are not correlated with water quality and are only arbitrary numbers that will stifle development opportunities. According to Barry Allison of Barton Creek Properties, the SOS effort had nothing to do with water quality and was designed only to limit growth. Developers who say that they are committed to protecting the environment claim that they can exceed the impervious cover limits set forth in the SOS Ordinance, without degrading water quality, through the implementation of BMPs. However, the SOS Ordinance, "prohibits development which achieves perfect water quality control if it exceeds arbitrary impervious cover limitations" (*Quick*, 1994). While developers say they are committed to protecting the environment, the SOS Ordinance does not provide them with the flexibility to do so.

The SOS Ordinance does not allow property owners to solve water quality problems through technological innovation. Over the past 20 years, BMPs have been developed and refined to mitigate adverse effects associated with development (Schueler, 1987). Today, engineers and planners have a fairly accurate understanding of the effectiveness of BMPs. They know that when designed, constructed, and maintained properly, BMP structural controls can be used

to mitigate pollutant levels. The most ardent advocates of BMPs assert that the technology exists to build BMP structural controls that can provide pre-development water quality levels regardless of development intensity.

Recommendation for the SOS Ordinance

While the SOS Ordinance sets the guidelines to ensure that water quality will not be degraded, it is not the only means of solving water quality problems. Furthermore, the Ordinance may not be the best method to manage water quality. The Ordinance is too restrictive–it does not allow for the use of alternative management plans that could potentially maintain water quality effectively.

The City of Austin must decide whether to continue defending the Ordinance by appealing the *Quick et al. v. City of Austin* verdict. Attorneys for the City are currently deciding whether to pursue an appeal. Because they have not made a decision, the basis for an appeal remains unclear. It is important to realize that the appeal would be primarily limited to procedural errors that occurred during the trial.[9] City attorneys would not be able to introduce new or substantive arguments in an appeal. While supporters of SOS may have good reasons to defend the merits of the Ordinance, their arguments may not be appropriate in an appeal situation.

The City of Austin has already spent $560,000 of an appropriated $996,000 in defense of the SOS Ordinance. Further defense will require additional expenditures and the City is not assured of a successful outcome. Even if the City is successful in appealing the case, it will need to continue to defend the Ordinance in other pending cases and at the state legislature. There is a strong possibility that the Ordinance would not withstand this scrutiny.

The SOS Ordinance presents too many problems and not enough options in its attempt to maintain water quality. Continued defense of the Ordinance will not only be expensive, but it also will inhibit the opportunity to create a water quality ordinance that will correct the problems associated with the SOS Ordinance. At this time, supporters and critics of the SOS Ordinance have an opportunity to look for solutions that will address the needs of environmentalists and developers. Both groups share a desire to protect water quality; the differences of opinion have occurred over the manner in which water quality should be protected. Now is the time for environmentalists and developers to establish common ground and serve the best interests of the community.

Is the Composite Ordinance the Answer?

If the City of Austin or another legal entity declares the SOS Ordinance invalid, it will be replaced by the Composite Ordinance, which was in effect when SOS was adopted. The City adopted the Composite Ordinance while Austin was debating what type of ordinance was needed to protect water quality. At the time, Austin was considering proposals from the Mayor's task force, the Planning Commission and the SOS Coalition. The ECSD, authors of the Composite Ordinance, created it from the recommendations contained in the three proposals. Policy makers in Austin wanted to resolve this controversial matter, and they regarded the Composite Ordinance as a well-founded compromise that would appease developers and environmentalists. At the time of its adoption, the environmentalists decried this ordinance while the development community reluctantly accepted it.

The Composite Ordinance called for the same impervious cover limits as the 1986 CWO, but also required developed pollutant levels not to exceed pre-development pollutant levels for four indicator pollutants: phosphorus, nitrogen, total suspended solids, and total organic carbon. The Ordinance also required developers to install temporary sedimentation ponds prior to land-disturbing activity to prevent construction-related sediment from entering streams.

Environmentalists were primarily concerned with two factors of the Composite Ordinance: (1) types of exemptions allowed; and (2) potential failure of control structures. The Composite Ordinance would allow the types of exemptions contained in the CWO to continue. One estimate showed that 87 percent of projects developed under the CWO had received an exemption (*AAS*, 5/3/1991). The Ordinance would also allow Circle C to be exempt from the Ordinance since it was a PUD (Shea, 1994).

The second concern, the potential failure of control structures, was significant since the Ordinance would rely extensively on engineered solutions to water quality problems. This concern was important because structures commonly fail to function properly or be maintained adequately. These concerns are very similar to the concerns expressed earlier regarding actual performance levels of

BMPs. The Composite Ordinance did not provide any means to effectively require the parties responsible for BMPs to maintain them properly. Although the Composite Ordinance provides greater flexibility for developers, it still does not provide an effective approach to manage water quality.

Ideas for a New Ordinance

Neither the SOS Ordinance nor the Composite Ordinance provides the solution to water quality regulation in the City of Austin. The City of Austin should develop a new ordinance, based upon past experience. While this paper will not detail an exact ordinance that the City could present to the City Council, it will discuss several important issues that need to be addressed for a new ordinance to function effectively. The ordinance should allow for nondegradation at a level where all water quality standards would be addressed. It should allow developers to use either pre-set standards for impervious cover limits and BMP efficiencies, or prove to the City that they have different but accurate numbers. Finally, the ordinance should assure that BMPs are properly maintained.

Nondegradation

The City of Austin needs to determine whether the ordinance should provide for nondegradation. The concept of nondegradation will be difficult to apply to an environment like Barton Springs. So much is unknown about the aquatic habitat, and it is difficult to gain an exact understanding of how urbanization will affect aquatic life. For a nondegradation ordinance to be effective, it needs to include a precise definition of nondegradation.

While traditional methods of analyzing water quality through chemical samples can provide a snapshot of water quality, they may not provide the entire picture concerning water quality. Instead, monitoring biota through bioassessment techniques, "may reflect long-term chemical water quality conditions, habitat degradation and sub-lethal impacts on pollutants" (Johns, 1991). A recent publication by the U.S. Environmental Protection Agency (USEPA) entitled "Rapid Bioassessment Protocols for Use in Streams and Rivers" standardizes biological monitoring techniques. These USEPA guidelines should provide the opportunity for "cost effective approaches to integrate biological information into strategies for planning and managing watershed development" (Johns, 1991).

The City of Austin is currently in the process of using biological assessments to evaluate the impact on water quality of nonpoint source pollution from development.[10] The City has completed the first year of a three-year study. City staff are monitoring nine sites in the Barton Creek watershed. Eight of the sites are located downstream of development with varying intensities of impervious cover, and one site is located in a relatively undeveloped area. At the end of the three year study, the City will provide the results to the Texas Natural Resource Conservation Commission (TNRCC). This information will allow TNRCC to change the criteria for evaluating water quality standards for the Barton Creek watershed from a chemical to a biological measurement.[11] Bioassessment will provide the opportunity for the City to better understand the needs of aquatic habitat. Such monitoring data should be the basis for determining the criteria to set standards that better protect aquatic habitat from degradation.

Provide Developers With Options In Complying With Water Quality Standards

Under the SOS Ordinance, developers must comply with the impervious cover limits set forth in the Ordinance regardless of the potential effectiveness of water quality control structures. Proponents of the SOS Ordinance have been reluctant to rely on structural controls instead of impervious cover limits because of the problems associated with BMP effectiveness. Developers have asserted that they can maintain required water quality levels with the use of BMPs while exceeding the pre-set impervious cover limits. Under the SOS Ordinance, developers have no opportunity to propose such an alternative to the City.

The City should provide developers with two options. With either option, the City would require that the developer meet the same level of water quality, but would allow the developer to decide how to achieve that level. Under the first option, developers would comply exactly with the City Ordinance. This would be a straightforward option as the developer would have the guidelines from the City regarding how the development must be designed and built. Guidelines for this option would be similar to past ordinances that provided pre- and post-development pollutant levels and BMP efficiency removal rates.

The second option would provide developers with the alternative to design a plan that would vary from the

standards set forth in the first scenario. This would occur in situations where a developer would want to exceed the preset impervious cover limits or where BMPs would function differently than the standards established by the City. The developer would need to demonstrate that this plan would function as stated. The plans could be reviewed by designated City staff or by an independent board of professionals from industry or academia. The review board would only approve the plans if they met the City's water quality standards. The City could charge the developer for reviewing the plans.

With either option, the City could achieve the same level of water quality, but developers would have the option of utilizing higher levels of impervious cover if they could ensure that no further water quality degradation would result. If the City of Austin is truly interested in protecting water quality, rather than using a water quality ordinance to limit growth, developers must have the option of proposing control systems that do not degrade water quality.

Maintenance

Stormwater professionals throughout the Nation consistently regard maintenance as a primary concern, but many neglect to take responsibility for it when implementing a stormwater management program. Maintenance is intended to ensure that all other efforts and investments in the stormwater program will be effective and efficient. Without proper maintenance, resources that have been allocated to stormwater programs may be wasted. In many communities maintenance is neglected or, at best, is performed sporadically. The stormwater control facilities that society has come to rely on cannot be operated safely and effectively without proper maintenance, and unsafe facilities jeopardize the safety of the people they are intended to protect.

For years the City of Austin has required that single-family or duplex developments that construct BMPs as a part of their water quality management plan must deed the BMP to the City one year after completion of the subdivision. This policy was adopted as City officials recognized that once this type of development was completed, the residents of the development would probably not provide funding to maintain the structures. The City of Austin has accepted this maintenance responsibility.

The City of Austin maintains 154 BMPs that it has taken over from residential development since 1993. The City actually may be responsible for maintaining an even larger number of stormwater retention ponds: the lack of communication among City departments prior to 1993 raises the question of whether the Stormwater Department is fully aware of all the structures that they are required to maintain.[12]

Fiscal year 1993-1994 was the first time that the City budgeted funds to maintain these structures. During this year, the City has been able to maintain only 35 of the 154 ponds: previous lack of annual maintenance of structures has expanded the City's maintenance task to a more complex responsibility. Thirty-five BMPs inspected by City staff have been characterized as severely or highly ineffective. For example, one pond in the Harris Branch subdivision had more than four feet of sludge in the sedimentation basin (City code requires that no basin should contain more than six inches of silt). Other problems have included standing water and excess vegetation present in the structures. Each problem indicates that the BMPs are not working properly.

Further problems have arisen as the City has had to retrofit a number of BMPs in order to access them for maintenance. Costs for retrofitting and maintaining BMPs typically amount to $15,000 per structure. Since the total maintenance budget is $341,000 ($241,000 for direct maintenance and $100,000 for vegetation control), the department does not have adequate funding to address its maintenance needs. While costs for maintaining each BMP should decrease once the department has mitigated the effects from the lack of maintenance in the past, the department still faces fiscal problems concerning maintenance of BMPs. The fiscal problem will continue to intensify as City staff estimate that the number of BMPs maintained by the city will double in the next year.

Fiscal year 1994-1995 will not provide the funds needed by the Stormwater Department to properly retrofit and maintain the City's BMPs. Although staff estimated that they would need $1,171,375 for maintenance, the department only received $351,000. Under-funding will lead to the continued deferral of maintenance, compounding problems by delaying needed repairs and regular upkeep.

Although structural controls in commercial and multifamily development must be maintained by the property owner, it is the responsibility of the City to ensure that

the more than 1,400 other control structures are functioning properly. However, the department does not have adequate funding to provide this service. The City only has one staff member to inspect the BMPs. Furthermore, even if the inspector recognizes a problem, the City does not have the enforcement power to require that the property owner maintain the structure.

The City needs to make a long-term financial commitment to maintaining these structures if they are serious about maintaining water quality. The question at hand is who should be responsible for the costs of maintaining BMPs created by new development. Suggestions have been made, some even by developers themselves, that the developers should be the ones to provide the funding for this maintenance. These costs could be incorporated into performance standards. Under such a scenario, the developer would be required to provide two types of funding. The first would provide an annuity that would supply funds for regular operating maintenance requirements and testing to ensure that the BMP functions properly. A second fund would be needed to provide money in case the City incurred expenses that exceeded the costs for regular maintenance. This money would be used in cases where the BMP failed to remove its required pollutant level and capital expenditure was needed to retrofit.

With this solution it would still be difficult for most developers to provide money for the second fund since it would require a substantial investment. Developers would also be reluctant to pay the costs of excessive maintenance in the event that the funds may never be used if the BMP functions and is maintained properly. To avoid these potential problems, developers could pay into a city-wide fund that would be established for capital repairs. This would serve as a type of insurance against BMP failures. The City would reduce its risk by ensuring that the BMPs are designed and functioning properly prior to allowing the developer to sign off on the BMPs.

The City should also consider contracting the work needed to maintain and retrofit the BMP to engineering and planning consultants who specialize in this field. Such an investment would be an efficient use of City funds.

Will Environmentalists and Developers Accept These Criteria?

While a definite answer to this question cannot be presented at this time, these ideas were written with an emphasis on creating solutions that would provide greater flexibility to developers while still maintaining water quality. The use of bioassessment should provide a means for both developers and environmentalists to evaluate suitable levels for nondegradation. Providing developers with alternatives should give them the options that they desire without degrading water quality. Finally, recognizing and providing funding for maintenance will ensure that BMPs function effectively to provide the needed water quality levels.

Conclusion

While the City of Austin continues to be a leader in the attempt to mitigate the impact of development on water quality, the City still has not adopted an ordinance that effectively serves the community's needs. The effort to protect water quality has created a conflict between environmentalists and developers that will be difficult to resolve. Realizing that the actions of the past several years have only led to accusations in political campaigns and expensive court trials, the interested parties should resolve the matter on a comprehensive level that addresses water quality throughout the planning process. This will not occur unless the parties can agree to discuss the relevant issues instead of the politics which have permeated this dispute in the past.

Resolution of this matter will require earnest efforts from the City, developers and environmentalists to create an ordinance that will protect water quality while realizing that the City of Austin's population is growing. If it is not possible to develop property in the Barton Creek watershed, the City needs to realize that development will have to occur elsewhere. Furthermore, the City may need to provide alternatives for property owners in the watershed to explore other development. This could include providing credits for other properties in other locations in the City. Resolution cannot be based on water quality issues alone. Instead, the community must realize that water quality issues are an important factor in comprehensive planning.

ABOUT THE AUTHOR

Scott Pasternak received his B.A. from The University of Texas at Austin, and he is a May, 1995 graduate of the masters program in Community and Regional Planning, U.T. Austin. His masters thesis focused on urban stormwater management.

ENDNOTES

1 *Quick, Jerry, et al. v. the City of Austin.* Filed in Hays County 22nd District Court.

2 This article will only focus on the water quality issues related to the SOS Ordinance. It is important to realize, however, that there are other important legal issues in this lawsuit. They include property rights, the use of referenda for a technical ordinance like SOS, and the legality of an ordinance that affects people who did not have the opportunity to vote in the election.

3 The recharge zone is the area where surface water flows into the ground and recharges the aquifer. The contributing zone is the area upstream of the recharge zone that drains to the recharge zone.

4 A watershed or basin is a defined geographic area from which surface runoff drains into a stream system.

5 Water quality standards, set forth by the Texas Natural Resource Conservation Commission, have designated that the Barton Springs segment of Barton Creek must maintain water quality criteria for drinking water supply, contact recreation, aquifer protection and high quality aquatic habitat (Texas Water Commission, 1992).

6 Impervious cover includes structures like buildings, parking lots, and roads that do not allow water to infiltrate into the ground.

7 *AAS* will be used as an abbreviation for the *Austin-American Statesman* throughout this article.

8 In addition to the claims regarding water quality, the petition stated that the SOS Ordinance was invalid because of other reasons. These reasons included (1) The SOS Ordinance was not a valid subject for initiative legislation; (2) The SOS Ordinance is not presently effective under state law; (3) The SOS Ordinance conflicts with the Texas Water Code; (4) The SOS Ordinance is an unlawful regulation of land use in violation of the Texas Local Government Code; (5) Denying residents in the ETJ of the right to participate in the initiative election denied them their constitutional rights; (6) The SOS Ordinance violates state law concerning approval of applications for governmental permits and (7) Application of the SOS Ordinance in Hays County or in areas less than five miles outside of Hays County would violate the Act establishing the Edwards Aquifer Authority (*Quick*, 1994).

9 FM Properties is a subsidary of Freeport McMoran.

10 In each lawsuit, the plaintiffs were represented by the same attorney, Roy Minton.

11 The City of Austin may appeal based on the denial of a mistrial by Judge Forbis. The City requested the mistrial after the plaintiff's attorney, Roy Minton, asked a witness about settlement negotiations with the City of Austin even though the judge had explicitly prohibited questions regarding any possible settlement of the case.

12 The City of Austin received a grant as a pilot project from the Lower Colorado River Authority which is serving as a contractor under the state's Clean Rivers Program.

13 TNRCC is in the process of changing the water quality standards to evaluate water quality from a chemical to a biological assessment.

14 Realizing the need for better communication between City staff, Joe Guerrero of the Stormwater maintenance department has organized a water quality task force of city staff that will work to coordinate the process related to structural BMPs.

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IMPLEMENTING STORM WATER REGULATIONS

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A Community and Regional Planning course taught at the University of Texas at Austin in Spring 1994 focused on the topic of Urban Nonpoint Source Pollution. The laboratory assignment for the class was to evaluate a site development plan in terms of the nonpoint source (NPS) pollution control system and to design a more efficient or effective system. Four case studies of recent developments were selected from the Austin area. Each of the case study sites was developed with a different land use which allowed the class to evaluate the effects of water quality regulations on institutional, single-family residential, small business, and commercial developments. This article identifies common problems that planners should be aware of when they are involved with projects requiring water quality controls.

The case studies illustrate the various problems encountered while developing an effective NPS pollution control system. In the first case study, the design of the system was implicitly dictated by the restrictions imposed by the water quality regulations. The student evaluation team learned that only a non-discharging system could be used because the regulations limited impervious cover to 20 percent. Case study two identified problems of designing an NPS pollution control system for a single-family residential development. The third case study illustrates how conflicting land use and development regulations impact the design of water quality control systems. In the fourth case study, the construction-related problems of translating the blueprint design into working water quality basin structures are discussed. For each case study, the proposed maintenance activities addressed within the development plans fell short of the actual maintenance needs. Implementation problems are described in greater detail in the "Lessons Learned" section of each case study.

The City of Austin, Texas implements storm water quality protection measures in order to preserve the water quality of Town Lake, Lake Austin, and to protect the Edwards Aquifer. The Edwards Aquifer is a karst aquifer; groundwater recharge occurs primarily through faults and solution cavities within creek beds located in the area where porous limestone is present on the ground surface. This makes the aquifer very susceptible to contamination from surface water runoff. Rapid movement of recharging groundwater through open cavities does not allow for subsurface filtration of the pollutants that are present in surface water runoff. For this reason, the City of Austin has been proactive in writing water quality protection ordinances to protect its surface water and groundwater resources.

Regulatory compliance with Austin's water quality protection ordinances is rather straightforward because the design and construction standards are dictated within the ordinance, or within the City of Austin Environmental Criteria Manual.[1] In all of the case studies evaluated, developers and site planners selected an NPS pollution control system prescribed by the City rather than attempting to implement an alternative system. This is due to the City's lengthy "proving it works" process and the requirement that stormwater discharges be monitored to demonstrate the effectiveness of the system. This process quickly translates into high consulting and engineering costs, and the unfortunate outcome is that innovative NPS pollution control structures are rarely proposed.

A balance must be maintained, however, between creating opportunities for skirting the regulations on the one hand and obtaining widespread compliance with known, effective controls on the other. If greater flexibility was included in the water quality ordinances, then the City might benefit from the use of more innovative and potentially more efficient structures.

Water Quality Regulations in Austin

Austin is considered one of the most aggressive

cities in the nation in its effort to control NPS pollution. In 1980, the Austin City Council recognized that greater NPS pollution corresponded with rapid growth occurring in the area and passed Austin's first land development ordinance. This was followed in subsequent years by additional ordinances regulating the type and nature of urban growth. These earlier ordinances were not stringent enough to maintain suitable water quality. By the mid-1980s the water in the Barton Springs Recharge Zone was becoming contaminated with bacteria and wastes associated with septic systems and stormwater runoff from upstream developments. In an effort to mitigate water quality degradation, the Austin City Council passed the first Comprehensive Watershed Ordinance (CWO) in 1986.[2] The City of Austin has since adopted three additional water quality ordinances that have been progressively more stringent. With the evolving regulatory environment in the Austin area, the community has adopted a myriad of land development and water quality ordinances over the past 15 years. This article provides an overview of the technical requirements of some of these regulations.

Section 208 of the 1972 Clean Water Act was geared toward NPS pollution, but was ineffective in controlling pollution because it offered no specific controls or funding for nonpoint sources. The 1987 Water Quality Act, which amends the 1972 Clean Water Act, contains a section designed to assist in controlling NPS pollution. While the legislation authorized the government to allocate $400 million to control NPS pollution, funding from the EPA has been limited–the agency only spent $78 million of this money during the first three years of the five-year funding period. The primary role of the federal government in controlling NPS pollution is to provide technical assistance to state and local governments.

Since states receive limited federal assistance through legislation and the EPA, the analysis and decision-making required for effective implementation of targeted controls is directed to take place on a state and local level. While states must assess their water quality and implement management programs, local governments represent the best opportunity to implement specific control measures. Although Texas has not implemented an NPS pollution management program, Austin has taken the initiative to develop NPS pollution management practices via land use ordinances and technical guidelines for specific control measures.

CASE STUDIES

The case studies evaluate how NPS pollution controls have been implemented for four different types of development. Various problems associated in complying with the regulatory requirements while satisfying economic considerations are demonstrated in each case. Planners should be aware of potential problems that may occur during the course of water quality control system design and implementation. The "Lessons Learned" section of each case study provides examples of typical situations and problems that may arise during the process of application review and development. Site plans can be found at the end of the article, on pages 109 and 110.

Case Study One: Gordon Bailey Middle School

The primary problem identified in this case study is the maintenance requirements for systems which rely on vegetative cover as the primary pollutant reduction mechanism.

Project Description

Gordon Bailey Middle School (GBMS), completed in August, 1993, is one of the newest schools in the Austin Independent School District. GBMS is located in southwestern Travis County on 47 acres of former rangeland. The gently sloping site has been developed with a one-story permanent building, several portable buildings, athletic fields, and tennis courts. This site is the largest of all middle school sites in Austin. The applicant, the Austin Independent School District, selected this site since its acreage was large enough to comply with the Interim Ordinance which essentially limited the site's impervious cover to 20 percent.

Controlling NPS pollution was emphasized during the planning and site design of the school because regulations required that the development maintain a nondegradation standard for water quality. The project engineers and developers, representing the applicant, gave careful thought to the control of NPS pollution in this environmentally sensitive area. The school's location within the Barton Springs Edwards Aquifer Recharge Zone invoked restrictions regarding allowable pollutant runoff rates. These restrictions served as a major constraint in the design and development of the school building, the athletic fields and the storm water management system.

Regulatory Framework and Water Quality Control Strategies

Development of the school and surrounding recreation areas needed to comply with the City of Austin's 1991 Interim Ordinance.[3] This was a very restrictive ordinance that required developed sites to maintain a nondegradation standard for four criteria pollutants: Total Suspended Solids (TSS), Total Nitrogen (TN), Total Phosphate (TP), and Chemical Oxygen Demand (COD). The regulation required that there be no increase in pollutant loadings from pre- to post-development conditions. The regulations allow specific structural and non-structural measures for NPS pollution control, based on empirical values derived from local and national water quality monitoring data. The options were limited, however, to the best management practices (BMPs) designated in the ordinance at the prescribed removal efficiency rates. Applicants could have submitted a plan with alternative BMPs, but this would have required the approval of city staff and monitoring of the water quality discharges from the controls to ensure that pollutant removal efficiency rates were met.

Actual calculations, using the formulas prescribed in the Interim Ordinance and the pollutant load removal values, indicated that the GBMS site required the use of a non-discharging retention/irrigation system. The required minimum removal loading rates were so high that no other BMP or series of BMPs could mitigate the pollutant loads generated by the planned development, although only 20 percent impervious cover was planned. A non-discharging retention / irrigation system was needed because the removal efficiency rates for other BMP's were insufficient to remove even the minimum loading amounts of the criteria pollutants. Total nitrogen was the most problematic pollutant to design for because of its high solubility and corresponding low removal efficiency rates. It was not possible to construct a series of BMPs that would treat nitrogen effectively without including a retention/irrigation system.

The site applicant contracted with an engineering firm to provide the school with a comprehensive storm water management plan designed to effectively control NPS pollution on the site.[4] The plan relies on a retention/irrigation system that contains retention and detention ponds. Runoff from the buildings, parking lots and athletic fields flows to swales located along the perimeter of the site that drain toward the ponds. The layout of the system is shown in the site plan. Stormwater flow first enters the retention basin which is designed to capture site runoff from a "first-flush" storm event. Larger flow volumes are directed to the detention basin. Retained runoff is used to irrigate the vegetated filter area. Water accumulated in the retention basin is pumped up to the irrigation area. This irrigation method removes pollutants through contact with vegetation and exposure to sunlight in addition to serving as an effective water conservation measure. The ordinance also required the applicant to install an impermeable liner on the retention basin floor to prevent pollutants from seeping into the sensitive Edwards Aquifer Recharge Zone.

Evaluation: Lessons Learned from Gordon Bailey Middle School

- Implementation and maintenance problems were evident immediately after completion of construction activities. The poor condition of the grass, which was the primary vegetative cover, threatened the pollutant removal efficiency of the system. Topsoil erosion in many areas contributed to sediment accumulation in the inlet control structure within the retention basin. The student evaluation team noted sparse grass cover over much of the retention basin due to a very thin soil layer (only 1 inch thick) covering the basin liner. Problems with the pump cycle hampered the re-irrigation process of water detained in the basin.

- A certificate of occupancy was not granted by the City of Austin to GBMS until problems with the vegetation and erosion were corrected. The advantage of the inspection process was evident in this case. The City had the opportunity to ensure that remediation of the vegetation occurred before the system was approved and that ongoing remediation would continue the following spring.

- Problems of establishing vegetative cover occurred primarily due to planning and scheduling. Revegetation efforts did not take place until midsummer. The grass barely survived the intense summer heat and certainly did not develop a uniform, dense cover.

- Requirements of the Interim Ordinance dictated the use of certain BMPs. While the reliance upon a return irrigation system is not explicitly stated in the ordinance, it became apparent from calculating pollutant removal efficiency rates for different NPS pollution control structures that the number of controls that would be approved was limited. Alternative BMPs are permitted but require extensive documentation of their expected performance and frequent water quality monitoring to demonstrate pollutant removal efficiency. These requirements are costly, and so developers are not encouraged to use alternative NPS pollution management systems.

Case Study Two: Woods of Westlake Heights

The site developer's most significant problem was complying with two different water quality ordinances that applied to the same site. The regulations applicable to the portion of the tract within the Barton Creek Watershed were more restrictive than those of the Eanes Creek Watershed, and required additional NPS pollution controls.

Project Description

The Woods of Westlake Heights is a 31.5 acre single-family development located southwest of downtown Austin, in a high-income, rapidly-developing section of the city. The majority of the subdivision, located in the Eanes Creek Watershed, is regulated under the 1986 Comprehensive Watersheds Ordinance (CWO). A small section, approximately 15 acres, lies in the Barton Creek Watershed, and, as a result, is regulated under the more stringent 1991 Composite Ordinance.

The uplands areas are heavily wooded, primarily with oak and juniper. However, most of this woodland will have to be removed to accommodate the planned residential development. The floodplain and nearby areas designated as drainage easements are less heavily wooded than the uplands, as much of this area was cleared by the original landowners. The soil on the site is thin and prone to erosion, particularly in the upland areas.

Stormwater has been detained in the site's floodplain by a berm which was constructed by the original owners several decades ago. In recent years, runoff has been detained in the pond, which had accumulated a great deal of silt from an existing subdivision located upslope. The pond was excavated and regraded during development of the Woods of Westlake Heights. It now serves as a detention basin for the development.

The project was originally planned for development in 1982, at which time the course of future development in the southwest Austin was uncertain. Several office buildings and office complexes were planned or built near the site and a single-family residential subdivision was already built on a neighboring tract. Originally, the site was planned and approved as commercial/office land use, with several mid-rise buildings, and a small shopping center. By this time, however, the market for office space was declining, and the developer could not secure financing. Rather than waiting for the office market to recover, the landowners decided to propose a different development plan.

After failing to gain the necessary approval for a multifamily development proposal, the builder proposed to construct 68 single-family homes situated on lots averaging approximately 12,500 square feet (s.f.). The developer estimates that the houses will average 2,600 to 2,800 s.f., and will sell for $260,000 to $340,000. The subdivision is laid out in a conventional grid design, which maximizes the number of buildable home sites. The only entrance to the subdivision is Heights Drive which intersects with a major Austin highway, Loop 360. Four streets, ending with cul-de-sacs, run perpendicular to Heights Drive and serve approximately fifteen homes each. As a result, there is a minimum of open space, most of which will be occupied by stormwater detention, floodplain, and water quality treatment areas, located in a separate area adjacent to Loop 360. Stormwater is conveyed via curb inlets into an underground storm sewer system.

Regulatory Framework and Water Quality Control Strategies

The Woods of Westlake Heights uses two sets of stormwater control structures, necessitated by the site's location in two watersheds. For the majority of the site, which drains to Eanes Creek, runoff is treated by one of two partial sedimentation/sand filtration basins. The ponds are sized to capture and treat one-half inch of runoff, in accordance with the requirements of the CWO. After filtering through the sand, stormwater is conveyed by perforated pipes underlying the filter media to a concrete trickle channel. Storm flows in excess of one-half inch bypass the pond, and are temporarily detained by a flood control basin before discharging to the creek.

The smaller section of the site draining to Barton Creek has a more rigorous series of water quality control structures. Because of the more strict requirements of the Composite Ordinance, 0.75 inches of runoff must be captured and treated. The first 0.25 inch is detained for at least 24 hours in a detention pond before being pumped to a sedimentation/sand filtration pond. The next 0.5 inch is treated by a partial sedimentation/sand filtration basin constructed in a similar fashion to the one used for the Eanes Creek drainage area, except that the discharge method is different. Discharge passing through the filter media is collected and pumped to a series of evapotranspiration beds. Essentially, the facility is non-discharging.

Alternative Strategies to Improve Water Quality Control

Two alternative site designs were developed by the student evaluation team to improve the water quality treatment at the site. These alternatives rely upon better use of the natural topography through a different road layout. It is possible to provide the same number of home sites using smaller, curved roads that follow the natural topography while allowing for more filtration of runoff through natural grassed swales. Both alternatives also utilize a wet pond instead of the sedimentation/sand filtration ponds. The first alternative, considered conservative, includes only these changes. The second alternative is a dramatically different land use plan which replaces the detached houses with common-wall townhomes and provides more common green space for park land. The open space may also be used as a water quality buffer. This site design approach is presented in Figure 2.

Evaluation: Lessons Learned from Woods of Westlake

- The traditional grid system which maximizes the number of lots does not consider water quality impacts. The housing type selected is a function of what will provide the highest return for the owners and the developer.
- Site-specific regulations discourage the development of a regional water quality pond. If such a pond were properly designed and landscaped, it could be an amenity that would possibly require less maintenance and perform better as a BMP. The City of Austin, however, provides little incentive to encourage voluntary development of regional water quality systems.
- Different regulations were applied to different sides of the same hilltop because of the watershed divide on the property. In order to comply with both regulations, two separate NPS pollution control systems had to be designed and constructed. This required additional engineering costs which increased the developer's expenses. There are no standard procedures prescribing how to accommodate conflicting water quality regulations applicable to the same site.

Case Study Three: Garden-Ville of Austin

The economic burden for developing this small business site was increased by the requirement to install water quality controls. Water quality controls presented a major constraint to this site's development because of the restrictions on the layout of the sales areas and the expense of hiring an engineer to design the controls.

Project Description

Garden-Ville of Austin is an organic nursery and garden center located southwest of Austin. The site is situated on approximately eight acres and drains to Williamson Creek. Because the owner was a local organic gardening expert, he wanted to develop the business in an environmentally sensitive manner, which included protecting water quality. Strict water quality controls were required for the site under the 1991 Composite Ordinance.

The site is gently sloping from northwest to southeast, with slopes less than 15 percent. Soils are relatively thin at the uphill end of the site, but are unusually deep at the downhill end, allowing for excellent infiltration of rainwater. The vegetation is typical of the area, with juniper and cedar elm trees, and mesquite bushes.

Regulatory Framework and
Water Quality Control Strategies

Although Garden-Ville is a commercial site, it operates with relatively little building space. The owner uses large outdoor sales and storage areas to display plants and soils, and has converted a small existing home to an indoor sales area and office. As a result, the site's impervious cover percentage is very low, at approximately 6 percent, most of which is the asphalt driveway and parking area. The owner planned to use pervious surfaces for the drive and parking areas, but was required to pave them to meet City of Austin Fire Code standards for emergency vehicle access. The Fire Department has approved the use of pervious pavement on other sites, but Garden-Ville did not conduct the demonstration necessary to obtain a variance.

The site drainage pattern has been left essentially unchanged from pre-development conditions, except that the driveway now separates the southwest corner of the site. This corner drains to a swale on the south instead of to the southeast as before. Runoff from the developed area of the site, including the asphalt drive and parking area, is now treated in a retention/re-irrigation system. All runoff flows overland or through rock-lined swales to the retention pond. The pond is equipped with an irrigation pump, which automatically activates when water reaches a set level, and irrigates vegetation around the nursery. The system is designed to be "zero discharge," except in the event of a major flood. A stormwater detention pond, located at the southeast corner of the site, can detain flows up to the 100-year flood that would overwhelm the limited capacity of the retention/irrigation system.

The ponds are excavated out of the existing Volente soils, which are unusually deep for the area. Native grasses and wildflowers are planted in and around the water quality and stormwater detention ponds. The placement of the ponds (a function of the site topography), however, renders the most prominent corner of the site useless commercially—no displays or retail activity are possible. In addition, the ponds are not particularly attractive, in spite of the wildflowers and other native plantings.

Alternative Strategies to Improve
Water Quality Control

Improving upon the site plan for Garden-Ville of Austin presented a challenge, as it is a small site (eight acres) with good BMPs (sedimentation/retention with re-irrigation) already in place, and very little impervious cover (6 percent). Nevertheless, two alternatives proposed by the student project team would equal or surpass the current design in terms of water quality performance, offering potentially more efficient and more pleasing solutions.

Both alternatives include similar revisions to the site plan. The principal modification proposed is to move the site's entrance from its current location on Old Bee Cave Road to Bell Drive, on the western side of the site. Using this new entrance, the parking lot would remain the same, but the asphalt driveway could be eliminated and replaced with pervious/vegetated areas, allowing more runoff to flow overland in sheet flow instead of being directed to swales.

For the first alternative, the sedimentation/retention pond would be replaced with a sand filtration pond, including extensive rock and Zeolite berms to filter out sediments and reduce nutrients before runoff enters the pond. The filter itself would be covered with a removable wood cover, which could serve as a seating area, and would look like a normal deck. By covering the pond, the aesthetics of the site would be preserved, and debris would not collect in the pond. The cover could be removed periodically to allow for maintenance and some use of the area. The function of the secondary retention pond would remain the same–detaining the 100-year flood flows. A schematic diagram of this NPS pollution control system is provided in Figure 3.

The second alternative uses most of the same site modifications as the first, but uses a different stormwater treatment strategy. The water quality and stormwater detention ponds are replaced with a single wet pond. This site is a good candidate for a wet pond for a number of reasons. First, the topography and site development concentrate all runoff towards the southeast corner of the site. Second, the property is served by an on-site water well, which can be used to maintain the pond's permanent pool during dry periods. Third, the aesthetics of the site are particularly important to the owner, and the wet pond would allow the surrounding site area to become an attractive and useful part of the site. In its current state, the detention pond is relatively unattractive, and the surrounding area is not available for any other use by the business or its customers. Finally, because the site was originally designed with a re-irrigation system to ensure zero discharge, the pump and irrigation

equipment could easily be used to ensure zero discharge from the wet pond. Several other additions could be provided to help retain the pond's pool with as little pumped water as possible. Additional tree planting would further shade the pond, thereby reducing evaporation. To supplement the water in the pond, all the buildings on-site could be fitted with rooftop rainfall catchment systems, and this water could be piped to the pond, using gravity flow.

Evaluation: Lessons Learned From Garden-Ville

- Water quality regulatory schemes that require prescribed controls may place an unnecessarily heavy burden on small, low-impact businesses. This development may have been able to utilize water quality controls that blended with the landscape to a greater degree than the required basin structures. Engineering costs for the basins, approximately $30,000, were a substantial expense to this business owner.

- The developer has to contend with many site restrictions set forth by the Land Development Code before water quality management can be considered.[5] As a result, the options are extremely limited once all the site, fire, access, utility, traffic, and other regulations are met. Increased flexibility in code requirements would provide better opportunities for creative site design to meet water quality needs with a less structural approach.

Case Study Four: Wal-Mart Stores, Inc., Highway 290 West, Austin, Texas

This case study is a prime example of how the construction of NPS pollution control structures must be constructed precisely according to design to ensure that they function as intended.

Project Description

The Wal-Mart store is located in a prime commercial area near the intersection of two major highways. The 43.3-acre site is within an ecologically sensitive area southwest of Austin, the Recharge Zone of the Barton Springs Segment of the Edwards Aquifer. The surface soils on-site are clay and range in thickness from 10 to 40 inches. Grasses cover most the site although a small group of juniper and oak trees stands near the drainageway bordering the southern boundary. This drainageway is an unnamed tributary of Williamson Creek and is the receiving water body. Stormwater management strategies employed at the site address the impact of the quantity and quality of the runoff into this tributary by retaining peak storm discharges and reducing the pollutant load discharged as NPS pollution.

Prior to development, the site was used for cattle grazing. Following the construction of Highway 290 and Loop 1, rapid commercial development occurred. A Builders Square store is situated on the opposite side of Highway 290 and the Sunset Valley Market Fair shopping center is located just east of Wal-Mart. The project site was originally planned to be developed as a hotel and office complex. That site plan was approved by the City of Austin Planning Commission and Austin City Council but never constructed. The following plan, submitted in January 1993, proposed the construction of a 125,137 square foot retail store with an 882-lot parking area.

Regulatory Framework and
Water Quality Control Strategies

Due to the confusion as to whether the development was a modification of an existing plan or a new development plan, it was difficult to determine which water quality ordinances would apply to the site. The final regulatory status was a combination of the restrictions from the ordinance in effect during initial plan submittal, the Williamson Creek Watersheds Ordinance (1981), and a subsequent ordinance, the Comprehensive Watershed Ordinance (1986 and 1991 amendments). In addition, several variances were granted by the Austin Planning Commission and additional requirements were requested by the Austin City Council. One variance granted by the Planning Commission and Council released Wal-Mart from the requirement to adhere to the Composite Ordinance (1991) in effect during the current plan submittal because the new plan reduced the amount of impervious cover from 70 percent to 60 percent. This case study serves as an excellent example of the regulatory difficulties faced when a project does not clearly fall under a specific ordinance. In addition to applicable city regulations, the Edwards Aquifer Rules applied to the project because the site is within the Recharge Zone of the Barton Springs segment of the Edwards Aquifer.[6]

The City of Austin Environmental Criteria Manual specifies construction procedures for water quality control structures. Structures must be built in series in order to achieve pollutant reduction rates. For projects built in the Barton Springs Recharge Zone, pollutant concentration reductions are specified for the following water quality parameters: Total Suspended Solids (60 percent), Total Phosphorus (15 percent), Total Nitrogen (15 percent), and Total Organic Carbon (50 percent). These criteria were met by the stormwater management controls proposed for the Wal-Mart site.

Site design and placement of the NPS pollution control structures were limited by the large building footprint and the need for a large parking lot. The resulting site design is a layout commonly associated with mega-retail stores: a single-story, laterally expansive building separated from the highway by a large, paved parking lot. Water quality control structures are placed in the back of the building. The southern portion of the tract lies within the 100-year floodplain, which is considered the extent of the Critical Water Quality Zone (CWQZ), and has been left in its natural vegetated state.

Stormwater management structures have been built to accommodate runoff from the adjacent five building lots in addition to on-site runoff from the Wal-Mart store and parking lot. There are two sedimentation/filtration basins, two splitter boxes, one detention basin, and an oil/grit separator for the area located next to the automotive service center. Each of the sedimentation/filtration basins captures the first 0.5 inches of runoff from approximately 11 acres. Flows in excess of 0.5 inches of runoff are routed via a splitter box into the central detention basin which is sized to capture the first 0.9 inches of runoff. Roof runoff is also routed to the detention basin. A storm design of 100 years occurrence was used to size the detention basin. Final discharge from the detention basin is conveyed to the unnamed Williamson Creek tributary. The site plan and the NPS pollution control structures are shown in Figure 4.

In accordance with the applicable ordinances, NPS pollution control structures were required to handle runoff for 60 percent impervious cover. The volume of the runoff and the limited open space available for the placement of BMPs narrowed the available choices of structures to the sedimentation/filtration basin strategy. If the developer had been willing to forego using the maximum possible area of this valuable commercial property, then a different strategy such as detention and re-irrigation may have been employed.

Alternative Strategies to Improve Water Quality Control

The pollutant concentration reduction requirements of the City of Austin's Environmental Criteria Manual were met by Wal-Mart's NPS pollution control structures. Achieving greater pollutant concentration reductions would be extremely difficult without serious modification of the overall site design. The alternatives devised by the student project team relied upon two basic principles: reduce the pollutant concentrations with modified control structures or reduce the amount of impervious cover.

The first alternative strategy is to boost the filtration basin efficiency by using a peat/sand filtration basin.' This type of filtration media is expensive due to the additional costs for careful construction of the peat and sand layers. Meticulous construction is required or the basin may fail prematurely due to compaction of the peat layer. When properly installed, however, it is possible to attain removal efficiencies of 90% for Total Suspended Solids, 70% for Total Phosphorus, 50% for Total Nitrogen, 90% for Biochemical Oxygen Demand, 80% for trace metals, and 90% for bacteria. The additional pollutant reductions are particularly important for a commercial facility with heavy automobile traffic because this runoff typically has high concentrations of heavy metals, hydrocarbons and nutrients.

The second alternative strategy is to reduce the amount of impervious cover. This effective yet difficult strategy would require creative changes in the site design such as placing the parking area in an underground garage, reconfiguring the building into a multistory structure, or reducing the number of parking spaces. Because Wal-Mart relies upon a uniform store design for streamlined business operations, a multistory structure was not considered to be a feasible alternative. For similar reasons, reducing the number of parking spaces was considered an unrealistic alternative. Despite the expense of underground parking, reducing the amount of impervious cover was considered a potential alternative.

Evaluation: Lessons Learned from Wal-Mart

- The NPS pollution controls installed at the Wal-Mart store employ a structural approach. The developer found that this was the only means available within the specified designs of the City of Austin's Environmental Criteria Manual that permitted maximum use of the commercial tract.

- Developers in the Austin area typically follow the design standards in the Environmental Criteria Manual because the engineering design process is straightforward and because they know that the design will be approved by the city staff.

- As of May 1994, within three months of basin construction, there was evidence that preferential pathways for stormwater flow were developing in the filtration basins. Preferential pathways occurred where high velocity stormwater flows channelized the sand layer on the basin surface and formed a short, direct path to the outlet edge along a rock berm. Storm flows were beginning to carve underneath the berm. The channelization defeats the purpose of attempting to distribute stormwater slowly and evenly into a settling basin following rain events.

- The vegetative cover in the sedimentation basins was in poor condition within several weeks of installation. Better inspection and maintenance procedures would ensure that the grass surface was in healthy condition and able to function as a velocity dissipater and filtration media.

- Stormwater from a portion of the southeastern parking lot was found to be completely bypassing water quality control structures and draining directly into the stormwater culvert located on the receiving water body.

- The inflow box serving filtration basin A on the west side of the site was not properly routing the flow into the sedimentation basin. Channeling patterns in the grass indicated that the stormwater exited the splitter box and ran directly under the rock gabion into the filtration basin rather than flowing into the sedimentation basin. The inflow box should be moved 30 feet to the west and separated from the rock gabion to allow sheet flow into the sedimentation basin.

OVERALL LESSONS LEARNED

1. Problems Associated with Water Quality Control Implementation Identified in the Case Studies

The purpose of the case studies was to evaluate the implementation of Austin's water quality regulations on local development sites. The first case study, Gordon Bailey Middle School, illustrates how controls may be implicitly dictated by regulations. The site engineers determined that only the retention/re-irrigation strategy could be used to achieve pollutant loading rate reductions without developing a system that would require monitoring. The Austin Independent School District preferred to use a land-intensive strategy that was non-discharging in order to reduce their liability and expenses. The second case study, Woods of Westlake Heights, shows how water quality controls can be incorporated into single-family residential site plans. Here, the site engineers were faced with the problem of designing two separate systems in order to comply with different regulatory standards that applied to different areas of the same tract. Case study three, Garden-Ville, demonstrates the problems faced by small business owners who must comply with water quality regulations that are geared towards large-scale development. Perhaps the fact that the land was developed as an organic nursery should have made the owner eligible for a waiver applying less stringent standards for low intensity land uses and low level pollution generating businesses. In the fourth case study, Wal-Mart, it is shown how large scale commercial developers try to maximize their land use while still meeting the requirements of water quality regulations. This case study also illustrates the complexity of reviewing a site development plan when there are numerous restrictions derived from a variety of regulations, Planning Commission variances, and requirements imposed by City Council. The resulting water quality control strategy relied heavily upon structural devices to meet pollutant loading concentration reductions.

The lessons learned from the case studies provide a list of common issues for planners to be aware of:

- Familiarity with water quality regulations is needed prior to the purchase of a development site.

- Site design and building placement must accommodate

water quality control structures. Water quality control design should be included at the initiation of a project.

- Well-designed NPS pollution control structures require equally careful construction. Frequent project inspection will enable identification of potential problems early. Proper grading of the filtration basin surface is crucial in order to achieve uniform infiltration of stormwater.

- Flexible water quality control regulations is probably warranted in some cases for small, low-impact businesses. The review process should strive to accommodate NPS pollution control strategies that are appropriate to the site and the activities to be conducted there.

- Innovation in water quality control design is discouraged by the regulations. Developers are not interested in paying for extensive documentation and frequent water quality monitoring of a nontraditional water quality control system, in order to gain approval of the development project.

2. Implementation of Water Quality Controls

Water Quality BMP Design

The City of Austin's water quality regulations have evolved over the past 15 years into an extremely detailed set of requirements. The City's water quality rules and related information, codified in the Environmental Criteria Manual, constitute more than 300 pages of the 450 page manual. Proposed projects are reviewed carefully by City staff for compliance before approval is granted.

While the level of detail contained in the rules is undoubtedly intended to ensure that water quality is protected, it has the effect (intentional or unintentional) of discouraging any deviation from the standard designs. The designs laid out in the City manuals are provided in such detail that it is relatively simple for any engineer or architect (or graduate student) to determine the appropriate BMP for the site, and to quickly place the control on the plans. This represents a cost savings to the designer by saving time. The more significant savings occurs during the review process, however, because City reviewers are unlikely to challenge their own designs, as long as they are properly sized and located on the site.

This implicit resistance to innovative or nontraditional controls was encountered in the Garden-Ville project. The owner wanted to use a simple design that relied upon many infiltration areas throughout the site to prevent runoff, but met with resistance from City staff so he ultimately settled on a "standard" system similar to that recommended for any commercial site. Although the risk of damage from a failure of the proposed approach was slight due to the small size and low impact nature of the business (an organic nursery), the City was unwilling to allow what may well have been an equally effective, but far less expensive and less intensive, approach to water quality protection.

In addition to the regulatory strategy, economic and market considerations also discourage developers from proposing innovative or nontraditional approaches to water quality. A primary goal of any project, once designed, is to minimize the time to completion, thereby reducing the time required to recover the developer's initial investment. Lenders are most apt to finance projects that they believe will succeed quickly, which dictates the type of construction that a developer can realistically consider. For example, in the Woods of Westlake Heights project, an alternative approach to water quality was conceived by the student reviewers, using clustered housing units, smaller individual property sizes associated with each home, and more common park land. While the evidence to support the viability of such an arrangement is strong, lenders tend to be conservative. This type of departure from the norm would likely be seen as risky in the current local real estate market.

Also, as noted above, City review time is likely to be minimized by a project's adherence to the letter of the rules, including standard water quality controls. Given that Austin's review time is considered by some to be excessively long in comparison to other cities, this is an important consideration. Again using the Woods of Westlake Heights as an example, a regional water quality pond that could have treated a larger volume of runoff water may have been possible, even under the existing lot configurations. There was no incentive for the developer to pursue such an approach, however, because it would only have delayed the project approval process and would have incurred additional expenses for the developer. If, on the other hand, the City could offer an incentive for such a needed and beneficial use of a site, then the overall level of water quality protection in the watershed could improve.

Construction of Water Quality BMPs

In spite of the relative precision involved in the design of water quality Best Management Practices controls (BMPs), whether based on a standard design or not, site visits confirm that many begin to fail almost immediately after installation, suggesting deficiencies in construction. Commonly observed construction-related failures of water quality BMPs, including some of those evaluated for these four projects, include: short circuiting of ponds, failure of revegetation, and incorrectly constructed inlet/outlet structures.

In one of the first design manuals written about water quality BMPs, Schueler emphasizes the importance of careful grading, use of specialized equipment to avoid soil compaction, and close attention to proper construction of BMPs.[8] Nevertheless, it appears that the deceptively simple appearance of most water quality BMPs sometimes results in inadequate attention to important design details. Close attention must be paid to details such as proper grading of basins, appropriate sizing and placement of inlet/outlet structures, and careful installation of vegetation. Engineering specifications for these types of details may need to be made more explicit on the actual BMP construction plans.

Maintenance

Water quality designers and engineers consistently regard maintenance concerns as the most important, but also the most neglected, responsibilities of a stormwater management program. The importance of maintenance is that this activity ensures that all of the other efforts and investment in the stormwater program will be effective and efficient. Without proper maintenance, the resources that have been allocated to stormwater programs may be wasted. For many communities, maintenance is often neglected or, at best, performed sporadically. This maintenance deficiency poses a serious threat to the safe and effective operation of the stormwater facilities and may jeopardize public health and safety.

Maintenance, however, is much more than routine cleaning and upkeep. A successful maintenance program also focuses on how other segments of the stormwater program will affect maintenance responsibilities. The combination of an increasing number of stormwater programs through federal mandates or voluntary efforts, and decreasing funds available for stormwater programs, creates an even more pressing need for effective maintenance procedures that will improve efficiency. The most effective stormwater programs will incorporate maintenance concerns into comprehensive stormwater programs. The four case studies provide details about how efforts could have been made during the project design and construction phases to prevent future maintenance concerns.

During the planning and design process, an emphasis should be placed on eliminating future maintenance concerns. It is at this point that the success or failure of a facility is really determined. The Garden-Ville owner faced a decision during the planning stage that could have substantially reduced maintenance needs. The project planners wanted to take full advantage of the natural conditions at the site and thought that the ample open space, deep soils and gentle slopes would substantially reduce runoff through natural infiltration. The planners wanted to create a drainage system that would depend more on natural conditions and thus eliminate the need for the return irrigation system. This would have alleviated a substantial degree of future maintenance responsibility. The City's planning staff, however, voiced significant reservation about this idea and the project planners decided to implement the more conventional return/irrigation system.

For the Wal-Mart project, several steps could have been taken during the design process to reduce long-term maintenance commitments. This site developed a problem within one of the sedimentation basins because the inlet structure was not positioned properly. Drainage flowing from the inlet structure within the basin quickly developed preferential paths and flowed directly to the rock berm. This occurred because the inlet structure was not located at a point where drainage could flow evenly across the entire basin. If this process continues, severe channelization and potential structural failure may occur and will require substantial maintenance efforts. If the designers had changed the location of the inlet structure so that it would allow flow across the entire basin during the design process, this problem could have been averted.

Water quality control difficulties at the Woods of Westlake Heights were similar to the one described for Wal-Mart. Drainage entering the basin flowed directly toward the rock berm. The inlet structure was not designed to dissipate the energy of the inflowing runoff and runoff began

to channelize and erode the basin. With a suitable energy dissipator in place, the flow would have been slowed down and distributed across the entire basin. These design problems at the Woods of Westlake Heights and Wal-Mart sites have created potential future maintenance problems and reduced the pollutant removal efficiencies and lifespans of the basins.

The quality and accuracy of construction will affect the degree and frequency of maintenance. It is not enough to rely on well-planned and -designed facilities; poor quality materials and faulty construction can negate the beneficial effects of this previous work. At this stage of project development, it is crucial to ensure that the construction meets the intent of the design. In order to prevent the need to repair, reconstruct or accept future problems with water quality BMPs, it is more sensible to correct these problems while still in the construction phase. Proper construction is needed to ensure that the maintenance will allow the facility to function properly.

Through adequate construction inspections, several problems could have been averted at the Gordon Bailey Middle School. Construction inspections should have revealed that the geotextile fabric in the retention basin was installed improperly. The fabric, which serves as an impermeable liner, should have been covered with at least eight inches of soil and grass for protection, but its surface was exposed in some locations. This exposure could result in tearing of the fabric, which would cause the water that is supposed to be retained, to enter the ground and potentially enter the aquifer. Although it would be a major endeavor to correct the problem now, inspections during construction could have identified the problem.

3. Land Use and Site Considerations

The City of Austin Land Development Code describes performance standards, criteria and restrictions applicable to site design. Many of these standards have the potential to conflict with the design of NPS pollution control structures. Building set backs, landscaping standards, roadway access, parking lot size, and restrictions on impervious cover limit the manner in which a site can be developed. Often, NPS pollution controls are addressed after these other criteria are satisfied. This can limit the use of creative approaches to water quality management. For example, the owner of Garden-Ville wished to use overland flow strategies including the use of pervious pavement as non-structural controls, but encountered potential delays in acquiring development approval. In particular, the use of pervious pavement must be approved by the Fire Department. The approval is contingent upon a demonstration that the pavement is adequate to provide site access to Fire Department vehicles.

The Land Development Code Index lists 29 standards related to Water Quality and 34 standards related to Water Quality Related Development Intensities. These are standards that are directly related to water quality control structures. In addition to these standards, there are at least six standards dictating indirect controls on site design of water quality control structures. The City's General Landscaping Requirements state that water quality basins "shall have effective buffering from street view." Similarly the Landscape Requirements for Hill Country Roadway and Southwest Country Parkway section specify a buffer width between the road and the development. Fifty percent of the buffer may be used for detention or sedimentation basins but the basins must be screened from the roadway and adjacent properties. The landscape buffering requirements create an incentive to position NPS pollution controls in the back corner of a site, as they are at the Wal-Mart site.

Innovative approaches to water quality management are also permitted as described in the Land Development Code section of Innovative Management Practices. However, the site design team must demonstrate the technical merit of the alternative system and the advantages to be gained over the practices dictated by the Land Development Code and the Environmental Criteria Manual. Developers typically attempt to follow what is specified in the Code because of the costs incurred in delaying the site plan review process. Introducing an innovative water quality control system requires documentation of the anticipated performance of the system. System demonstration may cost a substantial amount of money that may not be recovered even if the alternative system is approved. Although this section of the Code states that Innovative Management Practices are encouraged, the demonstration process presents a disincentive.

SUMMARY

The four case studies from Austin, Texas demonstrate the complexities associated with implementing storm water quality regulations. Planning professionals involved in enforcing the regulations or implementing the regulations should be aware of some of the problems that are likely to arise. The majority of developers and site planners select an NPS pollution control system prescribed by the City rather than attempt to implement an alternative system. This is due to the lengthy "proving it works" process that translates to high consulting and engineering costs. The unfortunate result is that innovative NPS pollution control structures are rarely proposed. The need for innovation and flexibility in water quality control regulation is apparent. This need for flexibility must be balanced, however, with a firm control to ensure that alternative BMPs will adequately protect water quality. A negotiated regulatory type of review process may be useful for introducing alternative NPS pollution control strategies to site development plan review staff. Incentives for designing more efficient NPS pollution control structures, particularly those suited to the prolonged dry spells and seasonal heavy rainstorms of Central Texas, could be offered by the City of Austin in an attempt to improve overall water quality protection efforts.

Water quality control structures have the potential to be an aesthetic asset to any site design. Developers, planners, site designers and regulatory authorities should work together to see how the need to protect water quality can be combined with innovative approaches to incorporating BMPs into the landscape and overall site design.

ABOUT THE AUTHORS

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GLOSSARY

BMPs - Best Management Practices. Refers to structures or strategies employed to reduce pollutant loads in stormwater runoff.

Critical Water Quality Zone (CWQZ) - The area directly adjacent to a major waterway or one of its tributaries. Defined in the City of Austin regulations as a 100 foot-wide zone on either side of the drainage channel where no development or construction may occur.

Detention basin - A basin that collects the stormwater runoff and slowly releases it to the receiving water body drainageway.

Filtration basin - A basin constructed with a layer of sand and underlain by a series of perforated pipes. Water flows into the sand and percolates downward and discharges via the pipes. The percolation action "filters" the stormwater.

First flush - Refers to the initial volume of stormwater runoff. This has been demonstrated to carry the heaviest pollutant load.

Flow velocity dissipater - A structure which partially blocks water flow so that the velocity is decreased. It is typically constructed out of staggered blocks set on a concrete apron.

100 year flood - Refers to the precipitation amount associated with a storm that is expected to occur at a frequency of every 100 years.

Impervious cover - Hard surfaces which do not transmit water to the underlying ground surface, including roofs, pavement, concrete structures, etc.

Nonpoint source (NPS) pollution - Pollution which emanates from overland flow of stormwater runoff. Because the runoff comes from a variety of sources, it is "nonpoint." An example is highway runoff where oil, fuel and exhaust fumes deposit pollutants on the pavement. Stormwater runoff washes the hydrocarbons, heavy metals, and nutrients off of the pavement and into receiving water bodies.

Retention basin - A type of basin where stormwater collects from the initial volume of stormwater runoff and is held for further treatment. Typically, the water is used for re-irrigation.

Rock berm - A berm constructed of rocks and wrapped within a wire mesh structure. It serves to dissipate rapid runoff velocities in drainage areas.

Runoff - Overland flow of stormwater.

Sedimentation basin - A basin where stormwater is held to allow the settling of the fine sediment typically carried by stormwater runoff.

Splitter box - A flow inlet structure which "splits" the volume of runoff entering into separate basins. It is typically constructed of concrete and is positioned upstream of sedimentation basins.

ENDNOTES

[1] City of Austin. 1991. Environmental Criteria Manual.

[2] City of Austin. 1986. Comprehensive Watershed Ordinance and its 1991 amendments.

[3] City of Austin. 1991. Interim Design Guidelines for Water Quality Controls in the Barton Springs Contributing Zone.

[4] Page Southerland Page. 1991. Environmental Assessment for Gordon Bailey Middle School.

[5] City of Austin. 1994. Land Development Code. Article I: Water Quality; Article III: Landscaping; Article V: Water Quality Related Development Intensities; Article VI: Site Development Regulations; and Index.

[6] Texas Administrative Code. 1991. Edwards Aquifer Rules. Title 31-313-10.4.

[7] Galli, John. 1990. *Peat-Sand Filters: A Proposed Stormwater Management Practice for Urbanized Areas.* Washington, D.C.: Metropolitan Washington Council of Governments. pp. 33-35.

[8] Schueler, Thomas. 1990. *Controlling Urban Runoff: A Practical Manual for Planning and Designing Urban BMPs.* Washington D.C.: Metropolitan Washington Council of Governments.

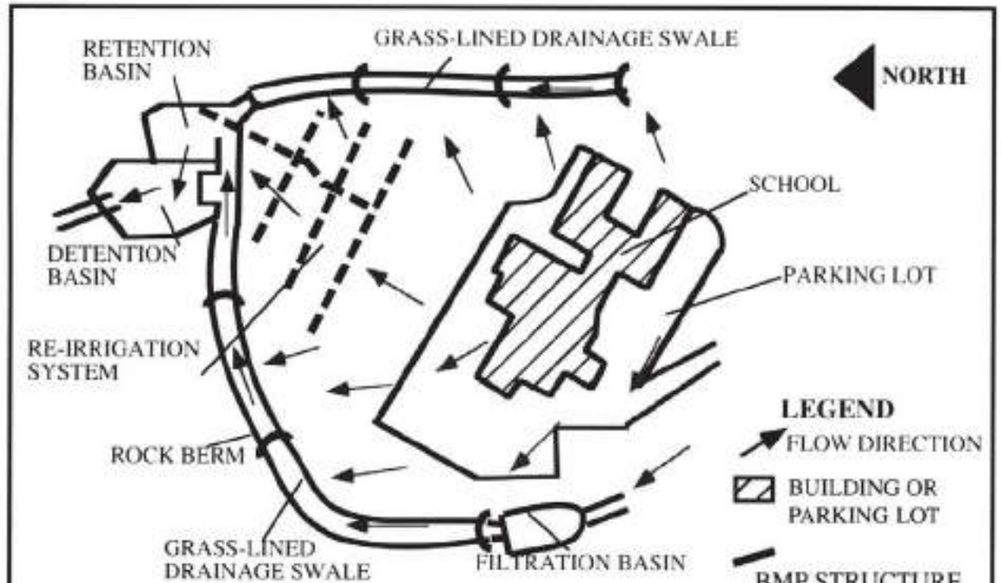

FIGURE 1. GORDON BAILEY MIDDLE SCHOOL NOT TO SCALE

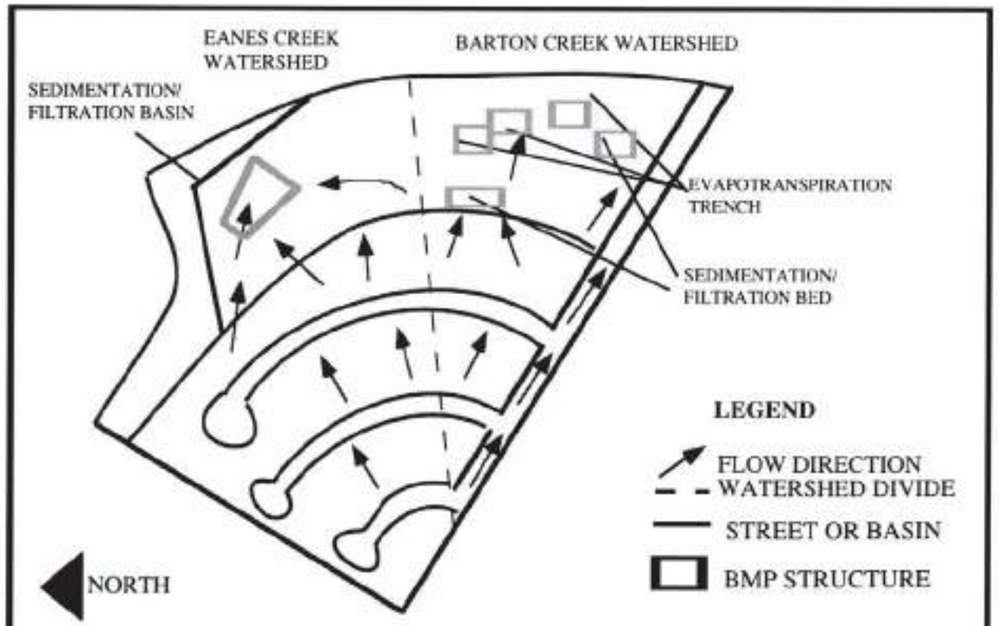

FIGURE 2. WOODS OF WESTLAKE HILLS NOT TO SCALE

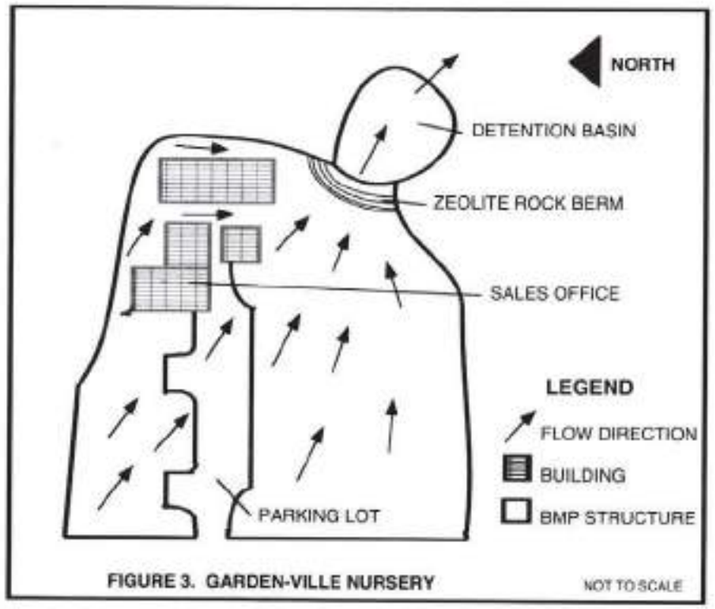

FIGURE 3. GARDEN-VILLE NURSERY

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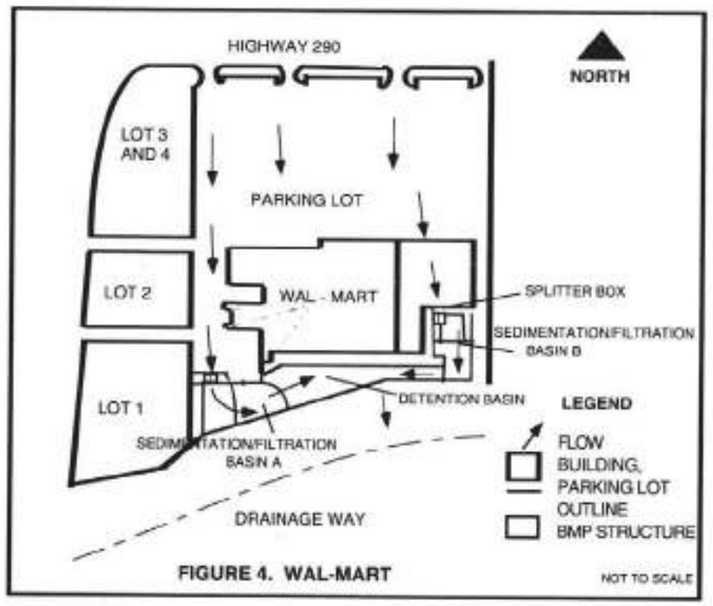

FIGURE 4. WAL-MART

NOT TO SCALE

Information for Contributors

Manuscripts may treat any subject connected with the study or practice of planning.

Suggested length is 5,000 to 10,000 words, including notes and references.

Papers submitted are reviewed anonymously. Authors should refer to themselves in the third person in text and notes.

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Authors should submit a copy of each illustration, chart, table, or graph with the manuscript. If the manuscript is accepted, the author will be required to provide a camera-ready copy of each graphic, not to exceed 6-1/2" by 9". Black and white photographs may accompany an article, but publication of these will be at the editor's discretion, due to cost considerations.

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