

**Grass-Roots Critical Cartography:
The University, Resistance Mapping and Social Change**

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Abstract

A partnership between the Colorado Community Organizing Collaborative and a University of Colorado Political Science department was recently formed to utilize GIS to deliver action-research "power maps," aimed at catalyzing and empowering grass-roots social change efforts. The result has been a 65 page Denver political-economy atlas built under the advisement of community organizations, a series of popular education seminars introducing residents to the power of GIS in leveraging social change, and a "GIS in Political Science" seminar that will deliver research interns to community organizing partners.

This presentation will exhibit copies of "*The Denver Atlas: A Region in Living Color*," and will describe how the university-community partnership works to involve faculty and students in community-directed GIS research in low-income areas. The session will include presentation of maps that are already impacting local politics, including maps of Denver's geography of bleached barrios, landscape of homeless deaths, and reality of racially-biased policing.

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On April 29, 2007, the Denver Post headlined a bold new plan for future economic development in Denver. Known as the 2007 Downtown Plan, the blueprint is the brainchild of the city elite: “Power brokers and city leaders have spent the past year sifting through ideas about how to shape downtown Denver over the next 20 years” (Jackson 2007, K1). The Post article included graphics showing a lower-income area of today’s downtown Denver, and a rendition of what that area was slated to become under the new plan. Many elements included in the first picture had disappeared in the second picture’s rendering of the future: gone was the day shelter and service-center for low-income immigrants, gone was Denver Housing Authority open space that could be used for low-income housing, gone was a bus depot frequented by immigrants for economically priced rides between Denver and Mexico. In their place in the graphic of the future downtown was a slick new downtown retail mall, a “new urbanist” retail/loft live work space, and a well groomed public park populated with images of the affluent “creative class” so sought after in Denver’s new Downtown Plan.

Below the fold, the article included a large GIS-designed map of the proposed new downtown. Interestingly, the map neglected to name two historic downtown neighborhoods famed as homes of working class Latinos and Blacks (Curtis Park and Five Points), but instead carved niches out of these neighborhoods and offered up entirely new monikers of neighborhoods to come: “Ballpark” and “Arapahoe Square.” The power elite behind the 2007 Downtown Plan had turned their gaze on upscale transformation of Denver’s historic low income communities, and rolled out their fancy maps of exactly how the new order would look, and the implications for many in existing low-income communities was ominous. “We have an opportunity to change the whole landscape of downtown there,” claimed Tami Door, the president of Denver’s elite Downtown Denver Partnership (Castrone and Svaldi 2007, 4C). John Desmond, a plan author and officer with the “Downtown Denver Partnership” (a consortiums of downtown business owners), added that “this is an opportunity to create a 21st century neighborhood where newer elements would dictate the character” (Jackson 2007. 9K). The Downtown Denver Partnership’s authoritative voice of transformation rings loud and clear in this article, and the photos and maps arrayed in the piece lend a sheen of legitimacy and inevitability to their plan. It leads one to ask: where in this plan are the photos, the renderings, and the maps that might come from the low-income residents and marginalized businesses of the current inner-city? What happened to the immigrant bus depot in these pictures, and would low-income residents be pleased to find part of their historic community now mapped as “Arapahoe Square” rather than Curtis Park or Five Points?

It is not surprising that downtown business owners and developers, and their compliant partners in Denver officialdom, seek upwards transformation of low-income and unprofitable urban neighborhoods. And it is no surprise that these growth regime forces find it useful to legitimate their plans and capture the imagination of the city with sophisticated mapping projects—compelling visual depictions of a better Denver to come. But the use of powerful new tools like GIS to mobilize city energies behind urban redevelopment plans that benefit one segment of society at the expense of another raises fundamental questions for those in the

academy concerned with the ethical implications of the new skills they teach. GIS is a powerful new tool, and the university plays a vital role in educating users in how to master this tool—but are we doing enough to insure that literacy in and access to this tool is democratically distributed throughout society? In addition to training professionals to go to work for the Downtown Denver Partnership and City Planning Office, is there room and is there an obligation to link university GIS resources to marginalized urban communities? What strategies exist to unite town and gown to design radical “counter-mapping” projects that help low-income communities access GIS technology as a tool of resistance to plans such as Denver’s 2007 Downtown Plan?

This paper will explore those questions in several parts. First, I will explore the theoretical bent of the critical cartographers, who have worked hard to expand GIS beyond its roots as an elitist, positivist research method that was largely disconnected from grass-roots social struggles. Mapping is inevitably biased, and inherently political, the critical cartographers point out, and researchers have an ethical obligation to help realize the emancipatory potential of new technologies like GIS by delivering them to resource-poor communities that have the greatest need. Second, I will provide a case study of mapping as a politicized act of authoritative world-making by examining how Denver officials and the downtown business community have energized their downtown gentrification agenda with selective mapping projects. Third, I will tell the story of a “counter-mapping project” (The Denver Atlas) (Robinson 2006), which recently came together as an act of resistance against Denver’s “Downtown Agenda,” and which involved the university in working with the community through a participatory GIS project to produce alternative narratives to those mapped by the cartographers of state.

Elitist and Critical Cartography

GIS remains an elite tool. Only a few professionals are truly adept in the high Latin of this new technology. The digital divide between the social base most in need of the emancipatory potential of GIS and the elites who understand and utilize this technology to advance their various agendas is undeniably vast. With its steep learning curve, the expensive software and hardware required to run a GIS system, and the difficulty in acquiring and managing much of the digital data needed in a GIS enterprise, the fact is that GIS has anti-democratic potential. It is a widely used tool by state offices, and by the business/corporate community, but most of the lay public has little understanding of nor connection to this technology.

The university can play a role in delivering GIS resources, training and expertise into impoverished and otherwise marginalized communities, and well-designed university service-learning and community-research programs can take their cues from neighborhood organizers and activists in terms of connecting GIS research projects to community advocacy campaigns. Increasingly, just such participatory GIS projects are uniting town and gown in innovative GIS projects that are directly relevant to humanistic concerns and social struggles of the day.

The old “science wars” between the those aspiring to neutral positivism in their mapping work and the “human geographers”/“critical cartographers” remains real today, though the battle is

certainly not as pitched as in the 1990s, when GIS was first blossoming throughout the academy (Crampton and Krygier 2006; Shuurman 2000). Just a decade ago, many interested scholars saw new and heavily technical GIS tools as hopelessly positivist and technocratic—a set of precise physical geography analysis and visualization tools mastered only by a few high technicians, and divorced from society in terms of being useful in engaging social and humanistic questions. Scholars like Taylor (1990) and Dobson (1993) once argued that GIS was something of a fact-driven “trivial pursuit” geography that, “while well equipped to manage information, is inadequate in the realm of knowledge production, concerned with facts but incapable of meaningful analyses” (Shuurman 2000, 572). Dobson (1993) argued bluntly that “GIS does not address social issues, especially those that occur in a decision space somewhat independent of Euclidean space” (435).

In more recent years, such critiques have become somewhat muted. User-Friendly innovations in GIS software and the spread of GIS methods across many academic disciplines, in the professional world, and even among the general public at large, has resulted in innovative applications of GIS to all manner of social and humanistic questions. Correspondingly, something of a consensus has emerged that mapmaking, even with positivist, fact-driven technologies like GIS, is deeply political, and always addresses political and social questions, either implicitly or explicitly. Though GIS is exceptional in visualizing territories in highly precise fashion, there is no denying that symbols chosen on a map (how large to present the governor’s mansion, whether to include symbols for clusters of low-income housing, etc.) and colors and classification schemes chosen to symbolize different incomes, environmental pollutants, or crime levels all have profound impacts on the message and political implications of a map (Harley 1992). Inevitably, maps highlight certain facts/interpretations of the surrounding world, while remaining silent about other aspects. Positivist claims of the technical neutrality of mapmaking, therefore, are always false—maps always lie in terms of perfectly conveying social and physical space, they always encode their author’s choices, intentions, and values (Monmonier 1996; Rose-Redwood 2007).

Beyond the fact that maps reflect the values and choices of their authors is the reality that the production of maps itself can be a costly enterprise, available only to those trained in GIS technologies and supported by adequate financial and social resources. This means that certain actors, resources, or political officials enable certain maps to be produced (e.g., a developer’s map of urban blight in a neighborhood targeted for urban renewal), whereas other maps remain unmade and unread (e.g., a map that could conceivably be commissioned by a neighborhood group in that same blighted community to highlight local sites of intriguing popular history, community gardens, and/or displaced renters) (Harris and Hazen 2006). The unmade maps, the ones that might tell the story of marginalized communities but that rarely see the light of day due to lack of resources and inadequate local expertise, reveal what was once called “the second face of power” (Bachrach and Boratz 1969)—the power to set the agenda and determine economic/political outcomes by keeping competing visions out of the public sphere and official arenas.

Maps, both those made and those unmade, have political, social and economic implications and can be immediately relevant to humanistic and social justice endeavors (consider the implications of a map of accidental police shootings/killings that revealed all such shootings

occurred in neighborhoods more than 80% non-white). For such reasons, GIS scholars and map-makers (who have special access to a unique technology that remains antidemocratic in its concentration in universities, corporate research divisions, and government offices) must remain aware of the moral implications of their mapping projects and pedagogy. Schuurman (2000) does well to remind us of the late Brian Harley's constant refrain that "mapmakers were ethically responsible for the effects of these maps" (16).

A segment of "critical cartographers" are closely attuned to such moral imperatives. Harris and Harrower (2006, 1) describe how critical cartography involves analysis of "the socio-political relations inscribed in mapping products and practices" (see also Rose-Redwood 2007). In their modern history of critical cartography, Crampton and Krygier (2006) describe a recent "one-two punch" that has unhinged traditional patterns of allegedly positivist (and elite controlled) cartography. This one-two punch is (first) the spread of mapmaking technologies out of the hands of the experts and more broadly into the hands of the general public, and (second) the rising academic critique that map-making should serve not only interests of the state and other established powers, but should be mobilized in "counter-mapping" campaigns to help marginalized communities "make competing and equally powerful claims" (12). Crampton and Krygier define these trends as leading to a Foucaultian "insurrection of knowledges," in which "cartography has been slipping from the control of the powerful elites that have exercised dominance over it for several hundred years" (12). The university, long a site of potential challenge to existing social relations and political powers, can play an important role in this insurrection of knowledges, as critical cartographers in the academy work to link geographic knowledge with communities in need of power and resources, thus challenging the current distribution of geographic power.

From the view of critical cartography, the positivistic and technical bent of GIS is not all bad. Some focus on hard facts, and on mastering formal methods of analyzing these facts in the pursuit of social change, has a role in legitimating and empowering alternative perspectives and marginalized communities. There is a difference between "trivial pursuit" quantitative geography and the creative use of socially relevant data that a robust GIS system allows. For this reason, scholars like Goodchild (1991, 336) have rightly concluded that GIS is not a "mere tool" for gathering and displaying data, but can be a powerful means of arousing "profound geographical thoughts," that are directly relevant to humanistic and social questions.

A rapidly growing way in which GIS has been used to provoke these profound geographical thoughts is through what many scholars call "counter-mapping" projects. Counter-Mapping, Harris and Hazen (2006, 101) explain, "are projects designed to dramatically increase the power of people living in a mapped area to control the representations of themselves and to increase their control of resources" (see also Peluso, 1995). Along similar lines, Elwood (2006, 326) notes that "Geographers' work on 'counter-mapping' highlights the ways that marginalized social groups have used maps to define and negotiate spatial goals, claims and perceptions to their own advantage. . . New approaches to GIS-based visualization have sought to include the spatial knowledge of marginalized and underrepresented social groups. . . As well, there exist many examples of participatory GIS initiatives that have enabled community organizations and grassroots groups to disseminate their own spatial knowledge."

The last decade has seen GIS usage by community-based groups blossom, as the technology has become more widely and easily usable, as the number of trained users continues to grow, and as the radical potentials of the technology become more clear. This “counter-mapping” application of GIS ranges from building GIS technical capacity and literacy in a range of community organizations that have traditionally had little access to the technology (e.g., throughout interactive mapping websites maintained by local foundations such as Denver’s Piton foundation, or through community organizations hiring staff with some degree of training in GIS technology), to more openly radical uses of critical cartography to fundamentally critique and challenge established relations of power (e.g., the People’s Geography Project headed by Don Mitchell out of Syracuse University [www.peoplesgeography.org], or the Critical Spatial Practices group out of the University of North Carolina, Chapel Hill— [<http://criticalspatialpractice.blogspot.com/2006/11/3cs-counter-cartographies-collective.html>]).

Such projects are growing as more community groups realize the “potential of certain geospatial technologies to be emancipatory or to forge new political possibilities” (Harris and Harrower 2006, 3). The powerful spatial analyses made possible by GIS (e.g., of toxic plumes flowing into a low-income community bordering an industrial site, or racially biased police citations), together with the accessible and visually compelling maps and graphics that can be produced by GIS technology, are powerful tools in advocating social change and addressing community needs. In any case, there is little alternative but for community based organizations and marginalized populations to develop some mastery of the new technologies—unless they wish to be rendered irrelevant and mute in the face of inevitable transformations to come. Marginalized communities must find strategies to engage in the new cartographic practices, or face “the alternative futures, of not being on the map, as it were, being obscured from view and having local claims obscured” (Fox and Peluso, quoted in Johnson, Louis and Pramono 2006, 86).

There is no denying it. Struggles over control of space, interpretations of space, and the future of the space about us, are at the heart of many of our most pressing social and political struggles—and so we cannot deny the importance of cartographic literacy among all segments of our community. State officials, private businesses and corporations, and an increasing number of non-government organizations, are well aware of this importance, and they are all building their GIS literacy and capacity dramatically year by year (Elwood 2006, 324). As organizations and officials invest in such skills and technologies, however, those *without* such skills and technology inevitably lose credibility and influence in the halls of power. Elwood (2006, 325) describes how typical it is to have “the greater power and relevance assigned to certain types of quantitative data and ‘scientific’ or ‘expert’ knowledge in spatial decision making, compared with the experiential knowledge often gathered through community organizing efforts. Spatial knowledge and cartographic representations produced using a GIS and other digital technologies are often given greater weight in planning and policymaking than knowledge presented in other ways.” It is clear that spatial knowledge and cartographic literacy is a “critically important component of the changing practices and power relations of urban politics because it affects how and to what extent the needs, priorities, and goals of residents and community organizations are expressed and included” (Elwood 2006, 323).

The powerful potential of GIS, therefore, must be seen as a double edged sword for grass-roots CBOs. GIS has powerful potential in serving as a sharp weapon with which to analyze social/economic/political conditions in the community, and to powerfully present a community agenda based on that analysis. But, GIS cuts both ways—just as literacy in GIS can empower a community, so can a lack of cartographic knowledge and skills make a community exceedingly vulnerable to outside powers who come to a political struggle wielding their authoritative studies, compelling maps, and expert witnesses. GIS can empower a community, but it can also be used to silence a community in the face of magnificent mappings created by elites from afar. The question then becomes: *how can the university play a role not only in educating the mapmakers who will go on to serve in the normal government planning offices, developers' board rooms, and corporate research divisions—but also in harnessing the power of GIS for the marginalized communities who are often the target of transformation by these same government groups, developers' blueprints, and corporate builders?*

Authoritative World-Making and Cartographers of State

The necessity of marginalized communities to speak back when faced with the typical cartographers of power, and the consequences of remaining illiterate or unengaged in mapmaking enterprises, are evident when considering the politics of urban renewal and gentrification. Take, for example, the case of Denver, Colorado—the author's home city, and one of the fastest growing and most rapidly gentrifying cities in America over the last fifteen years. Denver's changes have not come by accident—they have been carefully planned and implemented by a downtown "growth regime" (Clarke 2002) following a strategy that has been described as "The Downtown Agenda" by one of its former architects, Denver Planning Director, Jennifer Moulton (1999). In Moulton's own words, this strategy has sought to make Denver an "efficient economic machine," to transform lower-income areas into "investor quality downtown residential neighborhoods," and to attract "people with money to spend on housing" (11-12, 14).

This upscale renewal strategy has been called the "Downtown Agenda," and Moulton is clear that, in the last decade, this agenda drove Denver's planning efforts: "there was no diversion of resources, no second thinking of priorities," she says (12). Over this decade, a good deal of official attention was dedicated to attracting the affluent "creative class" to core-city Denver. The strategy, according to Denver's former planning director, was designed to address problems of the 1970s and 1980s, when upper classes fled Denver, and "just about the only downtown residents left were those who were unwanted as neighbors anywhere else" (7).

To address the problem, Denver planners sought over the last decade to create an environment where core-city investors and homebuyers could have confidence that property values would rise. Signs of this redevelopment planning include roughly a billion dollars of public subsidies and direct public expenditures for downtown projects, two sports stadiums, loft projects in Lower Downtown (LoDo), the Denver Pavilions (an open-air mall), luxury hotel renovations, and a new Convention Center and Convention Center Hotel. Under this development model, low-income downtown neighborhoods are called by the former Planning director "an

intimidating moat that makes getting to downtown an unappealing trip.” Officials seek to make these communities “attractive to private sector investment in market housing,” by marketing them as redevelopment centers, full of “raw ground” ripe for upward development (19).

Such plans have naturally met with substantial contention, as lower-income historic neighborhoods have risen in bitter protest as their former residents and local culture have been briskly swept aside by the gentrifying arrival of Denver’s new, affluent creative class. Creating the “New Denver,” that is to say, has involved serious political struggle, and it is intriguing to consider the role that Denver’s cartographers of state have played in this struggle—producing compelling maps that assist Denver’s state planners to authoritatively remake their world.

As intrepid colonizers of dangerous low-income lands beyond the downtown urban frontier, Denver’s planners have been guided by the cartography of Denver’s 1986 Downtown Plan, and by more up-to-date maps produced by the planning department. Reflecting the viewpoint of the downtown establishment (the plan its maps were drafted by staff drawn from the Denver Partnership—a consortium of downtown business owners and developers, and from and their compliant partners in the Denver Planning Office [Downtown Plan 1986, 12]), these maps confidently presented a vision of the “known world” in which all that was known and good centered on the core downtown, and all that was unknown and dangerous resided in the “intimidating moat” of low income neighborhoods beyond. Consider, for example, the implications of the following two maps produced by the Denver Planning Department as part of an updated 2007 “Downtown Plan.” All are centered on the wealthy downtown area, and both suggest a unique “penetrate and transform” relationship with the low-income communities surrounding downtown. With planners asserting that an intimidating and underdeveloped ring of uninhabited wild lands surrounded Downtown, the 1986 plan and its 2007 update both offered up a series of authoritative maps of the Downtown area that drew attention to the well-developed downtown core, highlighted targeted areas of renewal in red, and leaving the surrounding areas of low-income, heavily black and Latino neighborhoods literally in the dark: an unmapped and non-descript, desert unworthy of comment by the planners of the emerging new world of creative class.

**First map taken from Downtown Denver Partnership,
Community Workshop Presentation on the Downtown Plan 2007;
Second two maps from the Denver Downtown Plan, 1986.**



*Figure 1: Denver Downtown Plan (2007)
Strategies to Connect Downtown to Surrounding Neighborhoods*



Figure 2
Denver Downtown Plan (1986)
Targeted Urban Renewal Areas and Dark Lands Beyond

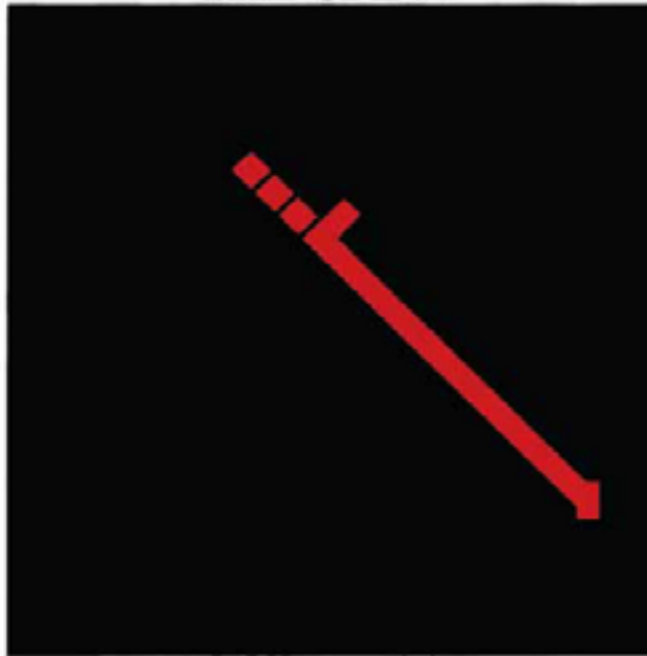


A VISION: DOWNTOWN OF THE FUTURE

Figure 3
Denver Downtown Plan (1986):
New Neighborhoods Claimed as Part of Downtown Economy

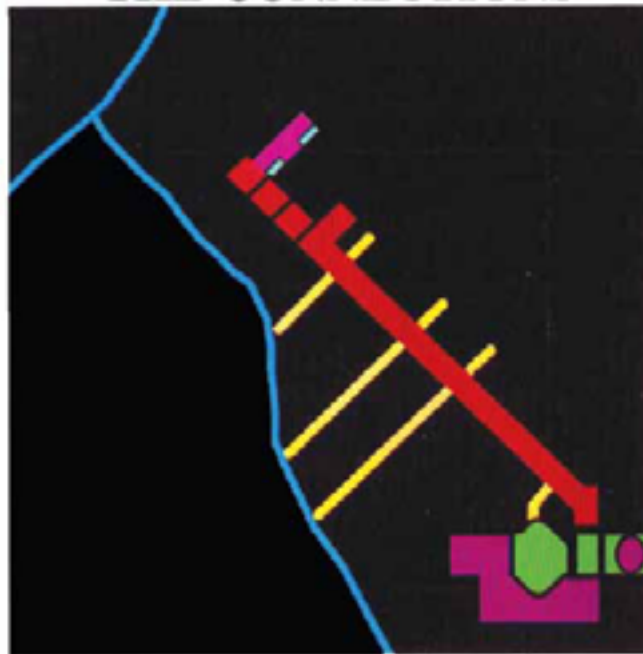
Consider also this following set of maps from the 1986 Downtown plan (19), which are part of a series of quasi-military modeling maps that show the “spine” of downtown development (16th Street) penetrating and transforming surrounding communities, which are mapped as a black void on which lines of attack are carefully laid out.

THE SPINE



The 16th Street Mall is the central organizing element, the spine within the system. It is the key reference point for anyone in the Downtown area and a magnet for people and activity. All Downtown development and infrastructure is defined by its relationship to the Mall.

THE CONNECTIONS



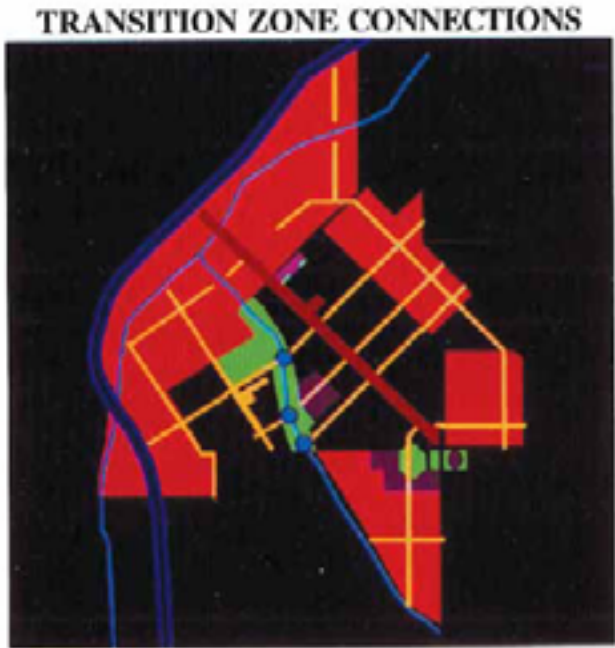


Figure 4-6
Denver Downtown Plan (1986)
Penetrating Surrounding Neighborhoods
Along the Spine of Downtown Development

Of course these maps should not be expected to comment in detail on surrounding communities, since they are, in fact, part of a “Downtown” urban renewal plan, but it is revealing that the maps often do include some detail from surrounding communities—but only when select areas of those communities are singled out to become an extension of the new downtown—for example, when select zones of gentrifying urban renewal are carved out of the unmapped core-city slums and defined as “new neighborhoods” in the gentrifying downtown. Consider, for example, this final map in the series of “military” mappings of downtown, which finally includes commentary on surrounding areas, but only to the extent of renaming those communities with new monikers and coloring them as extensions of downtown (Downtown Plan 1986, 28).



Figure 7
Denver Downtown Plan (1986):
Naming “New Neighborhoods” Surrounding Downtown

In maps like these, the Downtown Plan was clear about the fact that the downtown planners were literally creating and mapping “New Neighborhoods” by carving them out of existing communities and giving them fresh new monikers (Arapahoe Triangle, Uptown on the Hill, LoDo) (as opposed to old neighborhood names unattractive to capital investors, such as Five Points and Capitol Hill). This previous map is introduced with the claim that: “Today the core is separated from the neighborhoods by a ring of undeveloped land which creates physical and psychological barriers. The plan eliminates the barriers by *creating new neighborhoods*” (p. 29) (emphasis added).

Having created these new neighborhoods by fiat, and authoritatively mapping them in the New Downtown Plan, the new world planners also defined exactly what kind of people and uses would be welcome in the newly mapped communities. “There has been considerable land speculation in the Arapahoe Triangle,” the planners gladly trumpet. Therefore, the new neighborhood is “no longer suitable for industrial uses. . .[instead] a land-use mix of artist and design studios, housing and commercial uses should be encouraged. Further concentration of [homeless] shelters in this area would hinder redevelopment efforts” (p. 69). Social services, shelters, rentals and light industry were discouraged; instead these new neighborhoods were mapped as extensions to downtown “activity centers such as the Denver Center for the Performing Arts, Art Museum, Library and Retail District to the Mall and the waterways. . .an extension of connections knits Downtown to the neighborhoods and beyond, encouraging... an attractive environment and predictable investment to which private redevelopment can attach” (p. 20).

Though one wouldn’t know it from the text or maps of the Downtown Plan, these “new neighborhoods” were being carved out of existing and historic communities, full of long-time residents. Thousands of people were living in the low-income rentals of Capitol Hills, Curtis Park and Five Points, and even in the shelters and Single Room Occupancy hotels of Lower Downtown, and many of them were long-time residents with a deep love of their old

neighborhoods (Plunkett 2004)—but these existing residential landscapes were shrouded under a veil of silence by the Downtown Plan and its maps. The old communities are defined as nothing but “deteriorated and underdeveloped areas which separate the core from the surrounding neighborhoods...the current use of this land is a conglomeration of parking lots, rail yards and small industries. There are also enclaves of residential and entertainment uses, but the general impression is barren.” These areas are said to create a “physical and psychological” barrier to new use and economic activity (60). Consequently, the Downtown Plan remapped these areas as future extensions to a growing, world-class downtown, and noted that “only by increasing our market share (by tapping new markets for Downtown, for example), can we also redevelop the blighted areas that divide downtown from the surrounding neighborhoods” (8). Denver’s Director of City Planning called such inner-city gentrification a “benchmark of success,” even though she recognized the potential of redevelopment-induced gentrification to “suffocate” traditional low-income neighborhoods (Moulton 1999, 20).

Just as the Planning Director predicted, the success of these redevelopment projects has been to catalyze the gentrification of surrounding communities, with Denver’s lower-income uses and residents “smothered” in favor of the high end and the more affluent. In this result, Denver’s patterns have paralleled urban renewal strategies elsewhere, which are generally predicated on displacement for previous low income residents and on “no less than a total transformation of their historic area, an upgrading of its demographics (to put it politely), and a manifold increase in property values and rents” (Werwarth 1998, 488). Though official maps will rarely show such dynamics, the common result of urban renewal efforts guided by Downtown development plans is typically racial bleaching as whites come to dominate in formerly non-white communities, rapidly rising median income levels, displacement of renters by creative class homeowners, and the disappearance of blue collar neighborhoods beneath a rising white collar tide. The result is often the same: “Many of the original poor, non-white, less-educated residents in their historic neighborhoods left, or were forced to leave, as these areas became fashionable and their character changed” (Listokin, Listokin and Lahr 1998, 464).

Maps produced by the cartographers of state and agents of developers serve as legitimating tools in this gentrifying process (organizing resources and energy around strategic investment plans that have a spatial logic, and authoritatively defining areas as favored or blighted), and they also serve an important psychological function in helping the agents of displacement pull off what Neil Smith (1988, 483) calls a “willful self-delusion about benefits and costs.” Disguising assaults on existing communities in the tissue of professional packaged “Downtown Plans” that celebrate urban renewal as a civilizing effort that is good for the entire city, and legitimating it with slick computerized maps that celebrate emerging new neighborhoods and throw a veil of silence over others is a strategy of willed innocence, providing justificatory data with which to paper over any lingering doubts about the justice of redevelopment efforts.

Thousands have been displaced in core-city Denver (Robinson, 2005; Commission to End Homelessness 2005), and historic neighborhoods once home to Denver’s traditional Latino and Black communities have become home to a new demographic—but in the maps of the planners and developers, there is little but celebration of the new geography of downtown and nothing but silence in recognizing how Denver’s traditional inner-city residents are finding the ground literally cut out from underneath them. In this way, the act of mapping is key in creating new

spaces and defining the appropriate uses and residents of such spaces. This is why the Marxist geographer Yves Lacoste once remarked that “the map, perhaps the central referent of geography, is, and has been, fundamentally an instrument of power...It is a way of representing space which facilitates domination and control. To map...serves the practical interests of the State machine.” (quoted in Crampton and Krygier 2006, 21).

It is not too much to call Denver’s Downtown establishment a “State machine,” or as other scholars have termed it, a “Growth Machine” (Molotch 1976). The original Downtown Plan was written by professional staff drawn equally from the Downtown Business Partnership and the city planning office. At this writing, Denver’s downtown establishment is revisiting the Downtown Plan of 1986 and crafting a new Downtown Plan of 2007. The plan may be new, but the elite team of authors is the same. Here is how the Denver Post describes them: “Power brokers and city leaders have spent the past year sifting through ideas about how to shape downtown Denver over the next 20 years. About 40 architects, developers, financiers, lawyers, neighborhood activists, business owners and city officials have compiled the best of those ideas into a document called the Downtown Area Plan” (Jackson 2007, 1K).

As described on the Downtown Plan’s website: “Based on solid research and analysis, the Downtown Area Plan will provide an updated vision, goals and recommendations to replace the 1986 Downtown Area Plan. It will synthesize and coordinate the goals of previously adopted plans by incorporating them into a larger vision for Downtown.” Already some of the draft maps being used to legitimate and guide this new plan have been made available to the public. As the map below shows, one newly constructed neighborhood of the 1986 Downtown Plan (“Arapahoe Triangle, now called “Arapahoe Square”) remains in place, yet another new neighborhood has been carved out of Curtis Park (“The Ballpark Neighborhood,”) and less attractive neighborhoods like Capitol Hill and Curtis Park aren’t even mentioned on the map, which instead refers to these areas as the “cultural core” or “Arapahoe Triangle.” The map also includes suggestive brown shading reaching beyond the privileged downtown areas and into surrounding low-income communities. The meaning of this shading isn’t made clear, but suggests further encroachment of downtown interests into surrounding areas.



Figure 8
 Denver Downtown Plan (2007):
 Defining Downtown's Area of Influence

Cartographic projects such as this are an important component of defining new landscapes where investors and the affluent classes can feel comfortable moving into previously low-income core-city communities. Such maps help segregate these newly emerging privileged communities visually and psychologically from the less favored communities, just as police patrols and the location of subsidized upscale redevelopment projects play a role in supporting the physical segregation of these new neighborhoods. In other words, maps have world-shaping power, and “the relations between political economy and mapping are a viable, yet seldom explored avenue for contemporary research in critical cartography” (Crampton and Krygier 2006, 24).

Grass-Roots Counter-Mapping: The Denver Atlas Project

How are marginalized and impoverished communities to actually make the important connections between political-economy, power relations, and community cartography? How are resource-poor communities to amass the skills and resources necessary to sustain realistic counter-mapping projects with which to resist the machinations of Downtown partnerships and the cartographers of power? For those of us in the academy, trained in the methods of GIS and with access to the rich research and mapping resources of the university, part of the answer lies in service-learning projects built around participatory GIS. University-community partnerships around GIS are part of the broader community-based research and service-learning movement, whose “intent is to extend the potential of formal research by providing those who work in professional and community contexts with tools of knowledge production normally perceived as the province of academic researchers” (Stringer 1999, 17).

For those concerned about the ethical and democratic implications of GIS technologies that are typically far beyond the reach of inner-city populations, but that are tools of serious power in the hands of private business and state officials, such university-community partnerships are something of a moral imperative. Something must be done to overcome the undeniable elitism of the current distribution of GIS literacy and to “harness the emancipatory or political potential of GIS and other emergent geospatial technologies” (Harris and Harrower 2006, 6). The ongoing digital divide that leaves behind the groups already most disadvantaged in our society (nonwhite, poor, less educated) is just as Sheppard argued (as summarized by Elwood 2006): “GIS is, at present, not a democratized technology in that it is neither accessible physically or technically to those on the fringes of industry or large institutions; and 2) even if GIS were available to everyone who owned a computer, it would still not be a democratized technology as it would continue to embody algorithmic thinking, itself limited” (579). Too many marginalized communities lack not only adequate hardware to run GIS software, but also lack the on-going knowledge to use it (Crampton and Krygier 2006, 19).

University-community partnerships that bridge this digital divide with service-learning and community-based research projects are part of the answer (Elwood 2006). Increasingly, there are local and national efforts to unite GIS with resource-poor communities, and to bring GIS into engagement with struggles for social change. An entire subfield of scholarly inquiry and professional practice has grown up around “public participation GIS” (PPGIS), the National Center for Geographic Information Analysis Initiative 19 (NCGIA19) is famed for its

work along these lines, and the People's Geography Project offers a radical alternative to these more mainstream projects. Many of these programs unite students and faculty to community groups with few resources, but with a great need for the power of geographic literacy. In well-designed university-community partnerships, "the community participants direct the GIS application themselves, making choices about which spatial data will be acquired or developed, what analysis and mapping will be performed, and how the resulting output will be used by their organizations" (Elwood 2006, 328). Such programs have the promise of building a "people's cartography," by "bringing mapping technologies to the people more directly. In doing so, they [by-pass] once more the disciplinary avenues of academic expertise and control" (Crampton and Krygier 2006, 18).

The Denver Atlas, a participatory GIS project facilitated by the University of Colorado at Denver, is just such a community-based counter-mapping project. It was designed, in part, as a specific response to the "authoritative" mapping and planning of the Downtown Denver establishment. The project aimed to bring new voices to Denver's downtown development discussions, and to do so in such a way that built and deployed the impressive power of community-based counter-mapping.

The project originated in a brainstorming session between the President of the Denver Area Labor Federation and this author, as we discussed better ways to unite academic research and university resources with the specific advocacy campaigns that the Labor Federation was waging to reform Denver's development processes (in collaboration with a local 501©3 action-research agency known as the Front Range Economic Strategy Center). I had a long history of work with the Labor Federation and other community organizations in that I coordinated our Department's internship and service-learning programs, I was an urban politics scholar personally involved in many local policy advocacy campaigns, and had recently run for a city council seat with the endorsement of the labor federation.

It wasn't just the labor federation and FRESC that were looking for increased resources through partnering with the university. In fact, these two groups were members of two larger groups that had recently come together with ambitious reform agendas. One of these was known as the Campaign for Responsible Development, an alliance of over 50 community based organizations that were together organizing to secure a "Community Benefits Agreement" around a massive Denver redevelopment project—that would involve over \$100 million in public tax subsidies and that was a key piece of the Downtown Plan's long-range goal for redesigning downtown. The CRD argued that such projects were too often built with low-wage labor, resulted in low-wage superstore retail centers, and catalyzed a loss of low-income housing in the surrounding community. To mitigate such dangers, the coalition sought a guarantee of low-income housing, living wages, health care benefits and other community benefits at the project, in return for the public tax subsidy.

The other group was the Colorado Community Organizing Collaborative (CCOC). The CCOC is made up of seven community organizing groups working along the nine-county northern front range of Colorado. These organizations all use grassroots community organizing as a primary strategy, with a strong emphasis on membership-driven self-governance. Funded by a partnership of state and local foundations that support grassroots organizing, the CCOC came

together to unite grassroots efforts around large city-wide and regional campaigns on such as issues as reform of policing practices, education reform, and economic justice work.

As these two groups came together in the early 2000s, and we sat down together to plan how best to mobilize research agendas around this community-based work, a common refrain emerged that most of these groups sought the kind of research that would bring them credibility among the power-holders they were constantly engaged with. These groups had a clear sense of the kind of troubles that plagued their communities (their neighborhoods were being gentrified, low-income housing was disappearing, the police too often engaged in racial profiling), but their street-level intelligence too often was discounted by officials when stacked up against the sophisticated reports and plans of the comparably resource rich city planning office, private business sector, or police department.

The community advocates had a clear sense of direction, and they could organize residents around campaigns, but they had a serious need for the kind of credible research that could bring their voice to the table with comparable legitimacy to those wielding the plans and maps of the Downtown Denver Partnership. As a community-based research professor trained in GIS technology, with a number of interns and service-learning students ready to learn from engagement in real community struggles, I offered to help in generating this kind of research. In discussions with the CCOC and the CRD, a plan was hatched: The Denver Atlas project.

The Denver Atlas was to be a compendium of “counter-mapping” vignettes, approximately 60 in all, that told the story of low-income, marginalized Denver in a very different way than typical city planners, developers, police and officials. Our maps would look at Downtown Development and the Downtown Plans of 1986 and 2007 from the OTHER side of the gentrification frontier, examining the impacts of renewal on low-income housing stock, the tendency of renewal to bleach the barrios, and the invasion/succession of upper-income residents in formerly low-income areas. Our maps would delve more deeply than the popular press into the issue of police drug raids and curfew arrests, mapping their geographic and racial distribution. Our maps would interrogate Colorado’s educational testing system by mapping school test scores and correlating them with the race and class makeup of individual schools. Our maps would offer a critical eye on the state of affairs in Denver, would be crafted to tell the story from the point of view of several marginalized communities, and would be produced as sophisticated and credible research projects that would empower the advocacy claims of community-based-groups. Tied together into a 60 page, professional published “Denver Atlas,” and united to special advocacy struggles in Denver, this project was meant to help the CRD and the CCOC claim their place as a credible alternative to the celebratory bromides and elitist plans of such established powers as the Downtown Denver Partnership. Our goal was to take GIS outside the university and produce a subversive cartography that had the potential to significantly change local perceptions of urban space and (as a result) reshape local politics in directions favorable to the community partners (Crampton and Krygier 2006, 5).*

* The Denver Atlas was to have counter-maps in a variety of categories that are well summarized by Elwood (2006, 332):

- “Needs narratives” maps, “with specific meanings designed to illustrate problems manifest in neighborhoods” (e.g., a map of inadequate youth playground space);
- “Injustice narratives...seeking to demonstrate uneven development of many kinds and to frame these difference in neighborhood conditions as part of broader inequities experienced by a neighborhood and its residents” (e.g., maps of inequitable policing arrest patterns);

The Atlas was produced over the course of half a year. During my sabbatical year, I established a field office with FRESC, and visited regularly with all community partners to brainstorm the sorts of maps they wanted to see in the Denver Atlas, what data needed to be gathered, and what plans we could make to insure the final “resistance maps” (Crampton and Krygier 2006, 5) became actually useful in real advocacy campaigns. We planned for economic development maps to meet the needs of FRESC and those involved in the Campaign for Responsible Development, education maps to meet the needs of Padres Unidos which was working on racial equity in Colorado public education, policing practices maps to meet the need of the Colorado Progressive Coalition, which worked on reforming racial inequality in the justice system, etc.

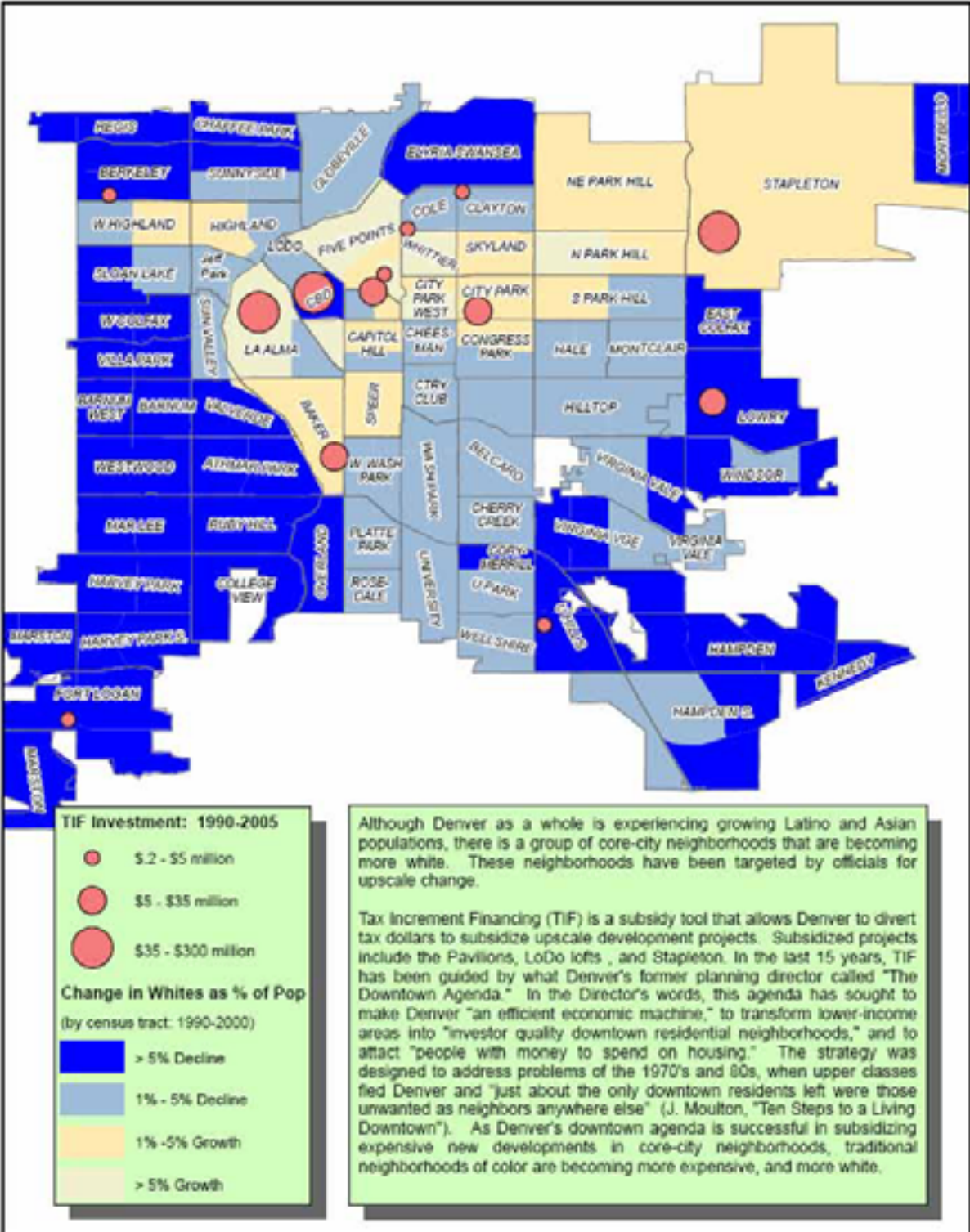
The Atlas was set to print in 2004, with some of its maps quickly paying dividends in terms of impacting politics on the ground. A good example of how Denver Atlas counter-maps changed the nature of the debate and impacted real political outcomes in Denver relates to the Campaign for Responsible Development and its work to secure a Community Benefits Agreement on a large subsidized development in Denver. The redevelopment of the old Gates rubber factory (with over \$100 million in public tax subsidies) was designed to become a slick new home for class A office space, luxury hotels, and elite residential units. Redeveloping the old factory site, located near downtown and also bordering some of Denver’s lowest-income neighborhoods, was celebrated by officials as a key strategy in bringing new investment to Denver, attracting the affluent “creative class” to downtown living, and leveraging general transformation of the surrounding area. Sophisticated public presentations were put together by The Denver Urban Renewal Authority, the Downtown Denver Partnership, and the development company with images of a shining New Urbanist village filled with urban professionals (see, e.g., <http://www.downtowndenver.com/pdfs/Cherokee%20PP.pdf>). Data was offered in celebration about rising property values in neighborhoods surrounding TIF projects, rising homeownership rates (and thus fewer renters), and increased retail activity.

Residents in the neighborhoods targeted for renewal, however, often told a different story. “There’s a lot of talk about creating a better environment for Denver’s *investors*,” said one low-income resident during Denver’s Comprehensive Plan hearing. “How about creating a better environment for its *investments*: the workers, the elderly, the disabled and the children?” (Irish 2000). The CRD and its campaign for a community benefits agreement at the Gates project was an effort to bring that story to the forefront, organizing hundreds of residents and dozens of community groups to speak up for the low-income, heavily Latino working class neighborhoods that surrounded Gates. Many residents were concerned about displacement and gentrification. There was a real sense on the ground that urban renewal projects, by catalyzing gentrification through massive subsidies for luxury projects in poor neighborhoods, were provoking what could be called an “ethnic cleansing” of these communities: pushing out poor, mostly minority residents, and subsidizing wealthy whites to move in.

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- “reinterpretation narratives,” which “present official data or accounts of neighborhood needs or conditions, but interpret them to reach different conclusions” (e.g., maps that examine gentrification results in order to reinterpret official data about economic activity catalyzed by urban renewal)

Such a claim, often leveled at officials and developers during CBA negotiations to secure more low-income housing in subsidized developments, was a powerful charge—but it was also one often discounted with official claims that they were committed to helping renters to stay in the communities, that displacement fears were overblown, etc. The point of the Denver Atlas maps on this subject was to visually dramatize exactly how extensive the displacement was, and to reveal in compelling maps the possible race and class bias behind Denver’s urban renewal agenda. With visual displays of bleached barrios and gentrified ghettos, eyes would undeniably be drawn to the data and the gentrifiers would be placed on the defensive. The following maps, correlating city urban renewal subsidies (TIF funds) with the displacement of poor and non-white residents, were completed to that purpose, and became key exhibits in many ongoing affordable housing negotiations to follow.

Rising White Population in Inner-City Denver

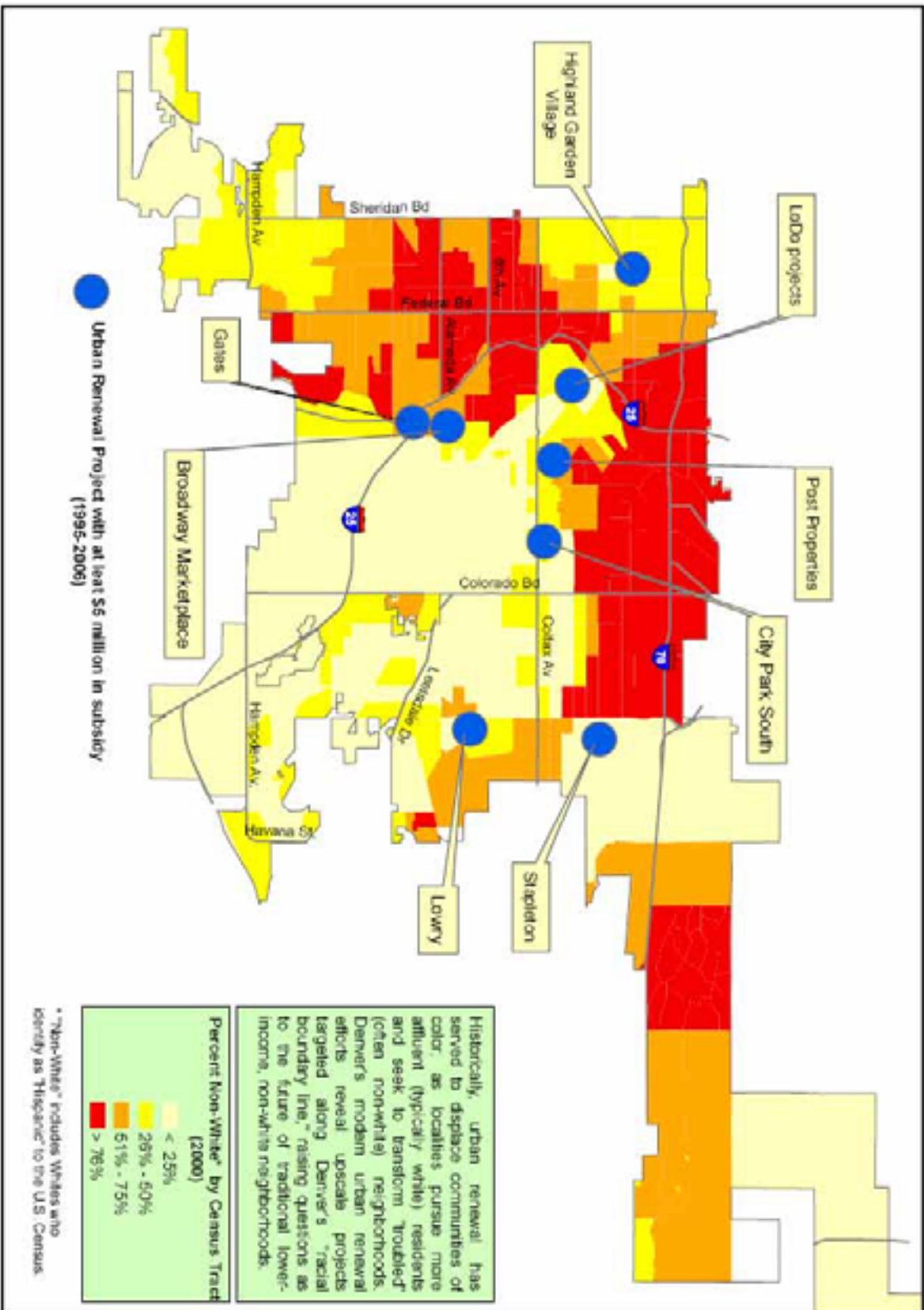


Although Denver as a whole is experiencing growing Latino and Asian populations, there is a group of core-city neighborhoods that are becoming more white. These neighborhoods have been targeted by officials for upscale change.

Tax Increment Financing (TIF) is a subsidy tool that allows Denver to divert tax dollars to subsidize upscale development projects. Subsidized projects include the Pavilions, LoDo lofts, and Stapleton. In the last 15 years, TIF has been guided by what Denver's former planning director called "The Downtown Agenda." In the Director's words, this agenda has sought to make Denver "an efficient economic machine," to transform lower-income areas into "investor quality downtown residential neighborhoods," and to attract "people with money to spend on housing." The strategy was designed to address problems of the 1970's and 80's, when upper classes fled Denver and "just about the only downtown residents left were those unwanted as neighbors anywhere else" (J. Moulton, "Ten Steps to a Living Downtown"). As Denver's downtown agenda is successful in subsidizing expensive new developments in core-city neighborhoods, traditional neighborhoods of color are becoming more expensive, and more white.

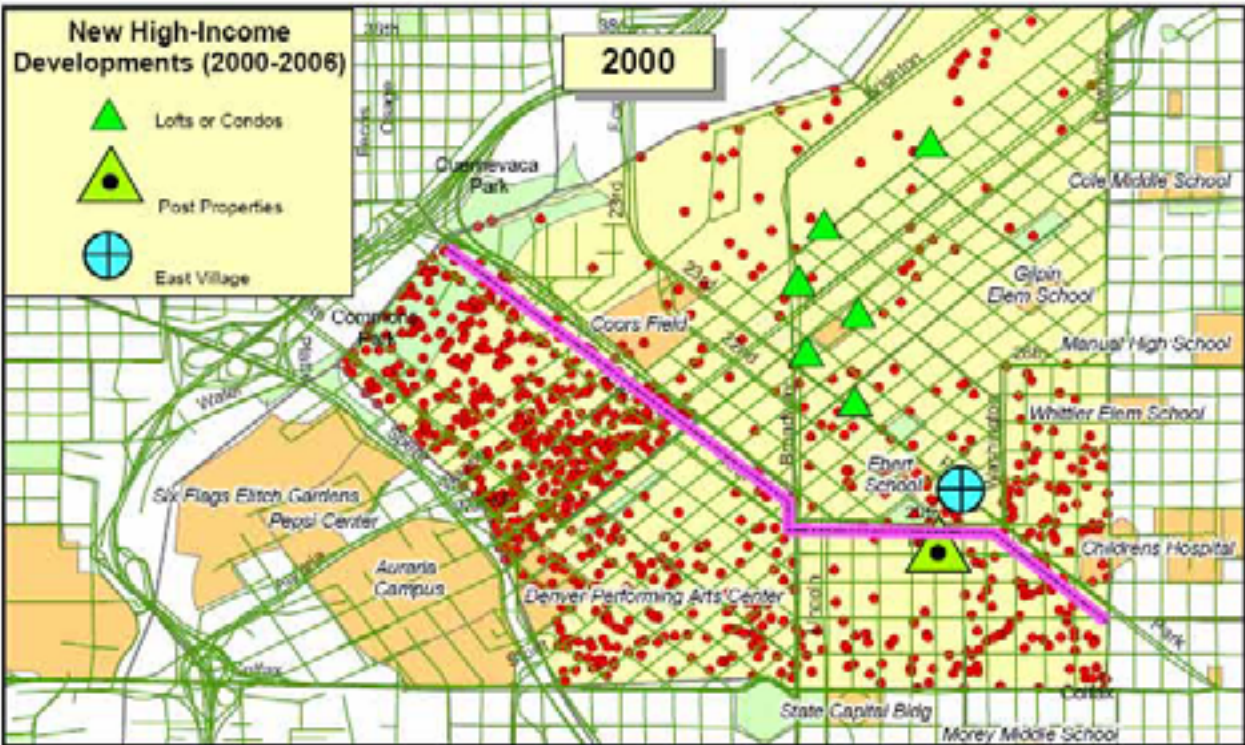
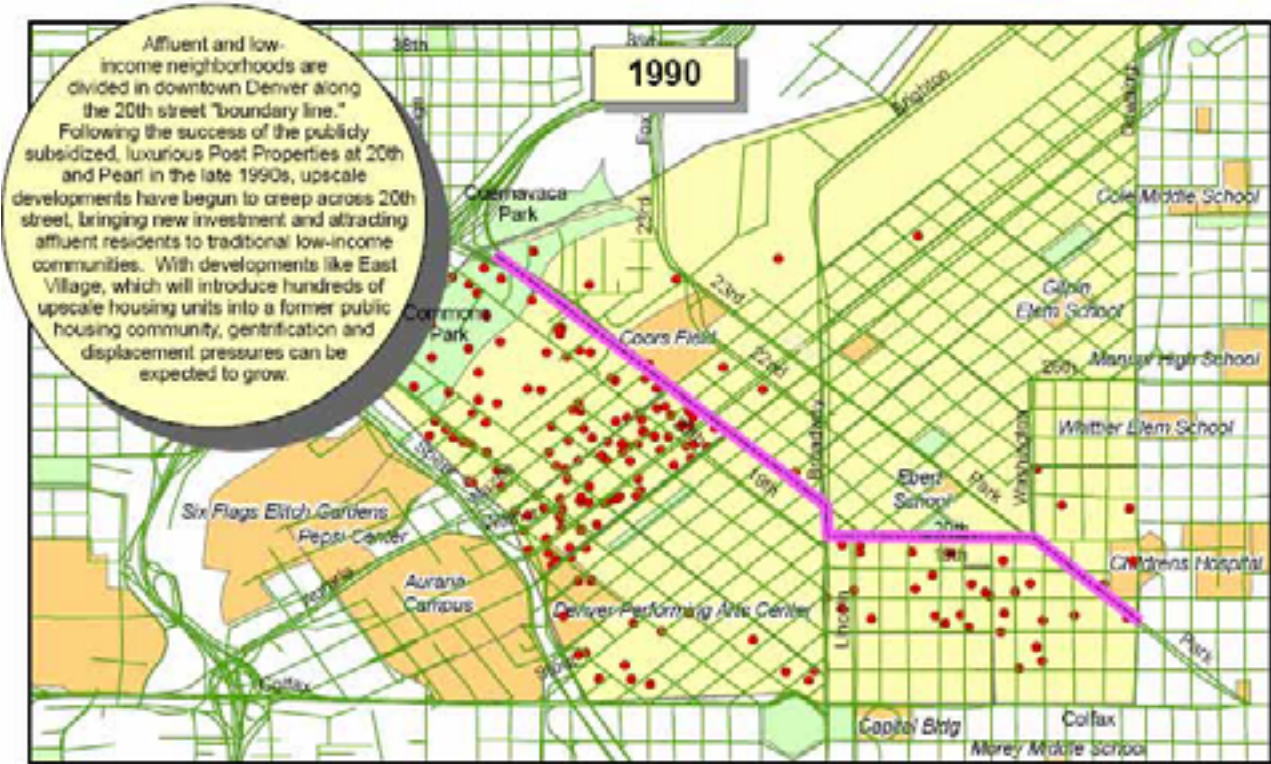
Note: Whites are non-Latino whites, as reported in Census 1990 & 2000. Table P10: "Hispanic or Latino by Race." For complete sources, see Atlas document at www.hesco.org.

Subsidized Development and Denver's Geography of Race



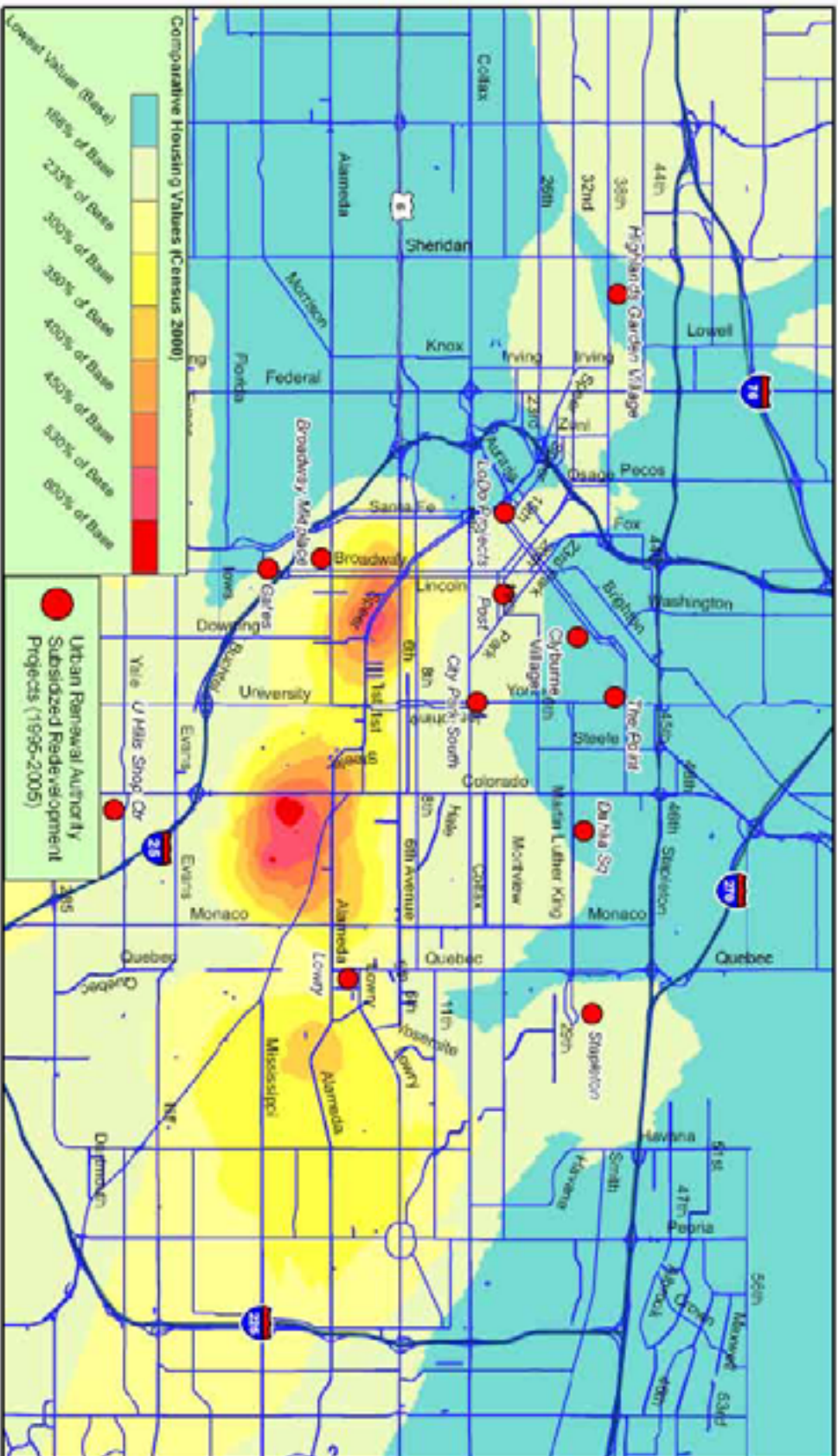
Source: For more data on urban renewal projects, visit www.denver.gov

Gentrification Pressure Along Downtown Boundary Line



Source: For complete sources, see Atlas document online at www.fresno.org.

Subsidized Denver Development Pushes Property Value Boundary Line



In the last decade, Denver officials have spent millions subsidizing upscale urban redevelopment projects, strategically located along the boundary line between low and higher property values. "Economically underutilized neighborhoods represent an untapped resource in local communities," asserts one study financed by Colorado redevelopment authorities. To "better utilize" lower income communities, subsidized redevelopment projects penetrate Denver's poorer communities, raise property values and introduce a "creative class" demographic into previously low-income areas.

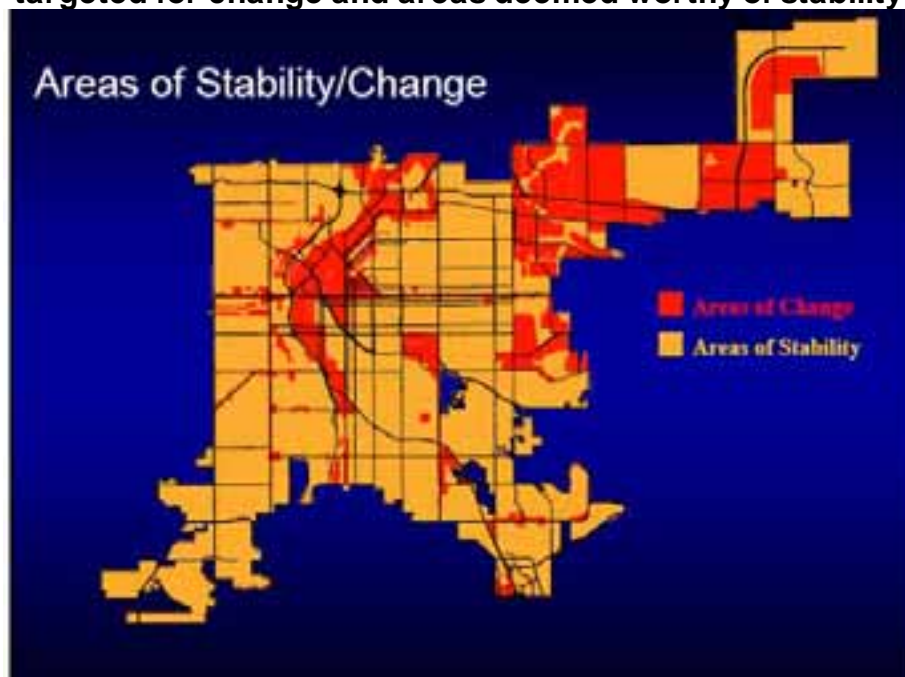
Many low income residents were displaced by condo conversion, redevelopment of affordable properties into luxury high rises and the demolition and redevelopment of some deeply subsidized affordable rental housing projects. Since 1974 Denver has lost almost 3,000 single room occupancy (SRO) units to redevelopment."

-- The Denver Commission to End Homelessness

Source: For complete source, see Atlas document at www.think.org

One of the more powerful of these maps, and one that surprised many city officials, was a reinterpretation of the city's own "Blueprint Denver" map. Blueprint Denver is a much lauded official effort of the City to produce a 20 year "Comprehensive Plan" for future development in the city. Produced with immense effort of city planning staff, in partnership with stakeholders like the Downtown Denver Partnership, the plan aimed to define all of Denver as either "Areas of Stability" (where the city would work to help communities maintain current neighborhood character, and deter out of scale development) or "Areas of Change," (where the city would channel most new development, would encourage community transformation, and would hope to create a future different than the current environment). On its face, the plan is a sensible, comprehensive look at future development, channeling new growth into urban infill transportation corridors, and guiding growth to well-planned new locations.

Blueprint Denver's map of areas targeted for change and areas deemed worthy of stability



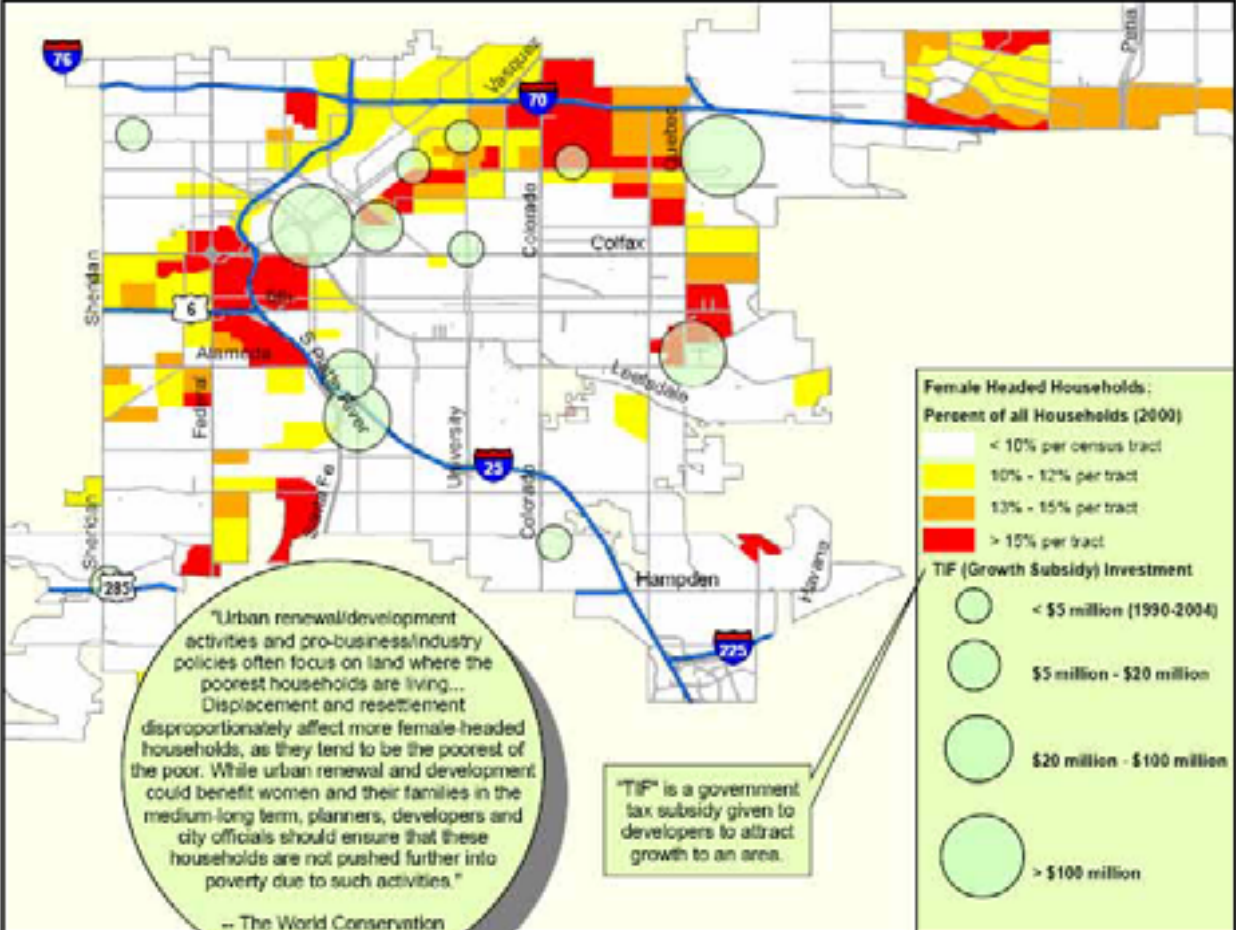
Blueprint Denver and its areas of change are one thing when mapped from above, by elite planners. It is quite another thing as experienced by low-income community residents, many of whom live in the midst of the "Areas of Change" corridor predicted by BluePrint Denver. BluePrint Denver suggests that these Areas of Change are unpopulated, dismal old industrial areas—perfect sites for transit oriented urban infill. But the reality is that much of the area mapped red for renewal are actually home to thousands of residents who do not have the means to live within the slick New Urbanist developments planned in BluePrint Denver. These residents are rendered silent and invisible, indeed they are literally wiped off the map, and their communities are defined coldly as undesirable "Areas of Change."

Such mapping has consequences. In April of 2007, for example, a contentious plan for a 25 story tower of upscale apartments in Denver's hot new Highlands neighborhood was brought

before council. The tower could only be built if the council voted to grant a zoning change, since current zoning in the low-rise residential community did not allow such tall towers. Hundreds of residents from bordering low-income neighborhoods showed up at the council meeting to resist the rezoning application, arguing that there would be no low-income housing in the tower, and even worse, the new tower would block lower-income resident's viewplane and sunlight, and cast constant shadows on their houses. Council members obligingly agonized over this dilemma, but in the end approved the zoning change by a 12-1 margin. Councilwoman MacKenzie summed up her vote by claiming that the sun-light blocking expensive towers should be allowed in this lower-income community, since BluePrint Denver mapped the community as an "area of change."

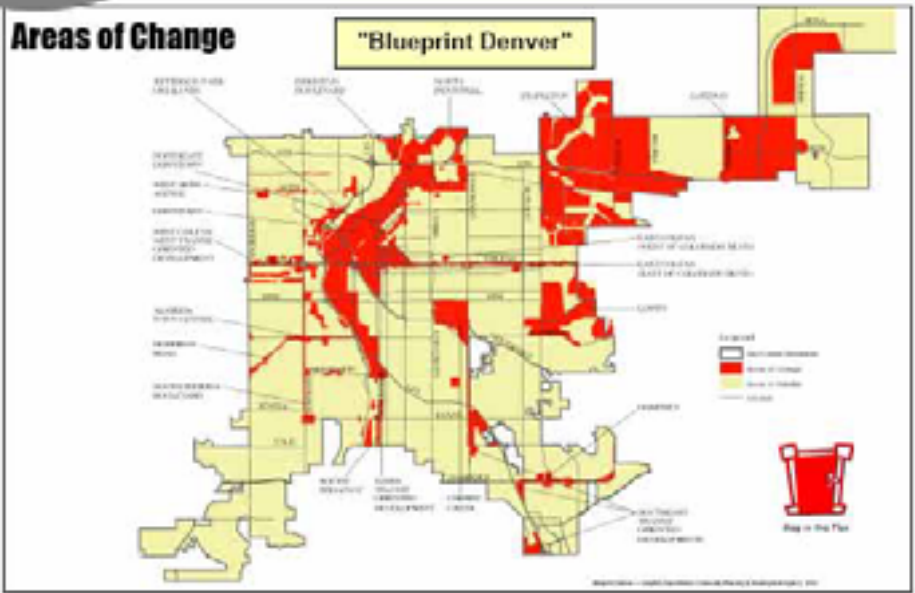
It is easy to accept the slick maps of BluePrint Denver as pointing to a well-designed urban future when they stand on their own, or when the only resistance comes from episodic emotional appeals from residents without hard data in this or that council hearing. But it becomes much harder to accept the implications of BluePrint Denver when its maps are reinterpreted with hard data revealing clearly the extent of their class, race and even gender-bias. Consider the following reinterpretation of BluePrint Denver's Areas of Change map, which compares the areas targeted for transformation with the areas that are currently home to single mothers with young children. The implication is clear: Denver officials are aiming to transform most any neighborhood where many single females with children currently live.

Female Headed Households with Children & Denver's Development Future



"Blueprint Denver" is Denver's plan to target "Areas of Change" for transformation through new investment. Substantial growth subsidies, such as tax increment financing, are already targeting these areas for upscale development. These same areas are also home to many of Denver's female-headed families (generally lower-income).

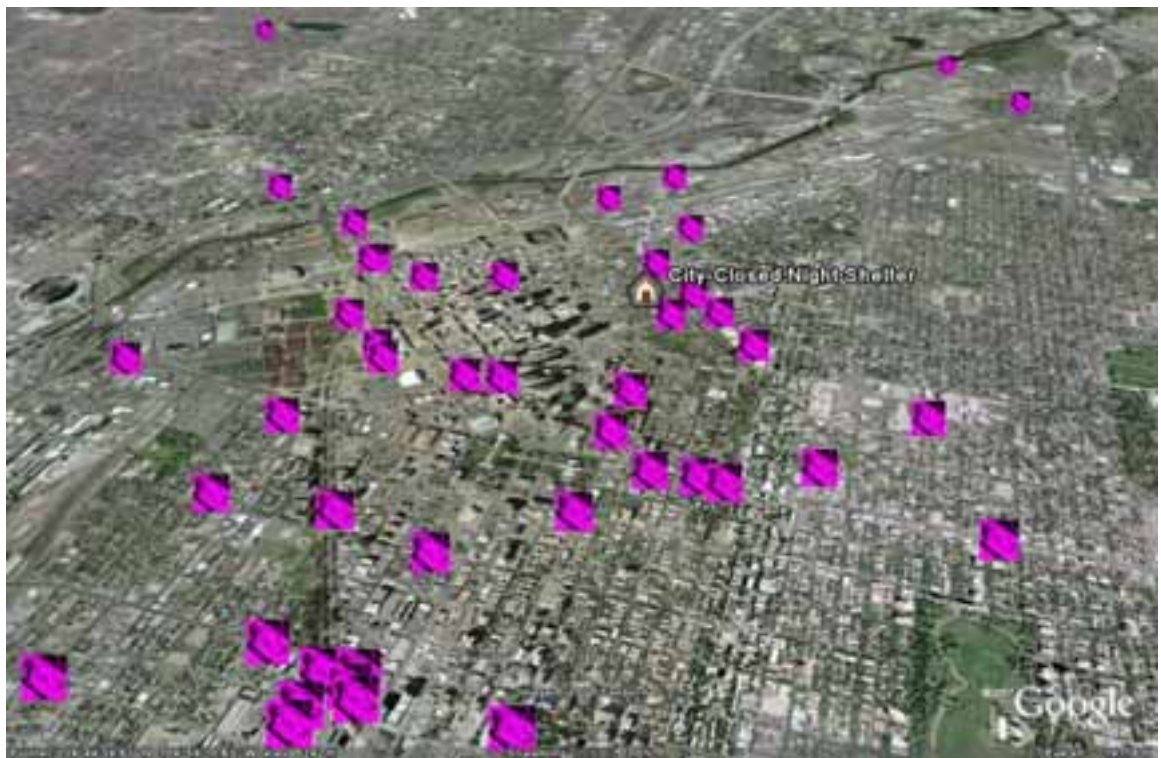
As Denver "transforms" its areas of change, lower-income families may face displacement and difficulties in benefiting from the new economy.



For complete sources, see Atlas document at www.fresc.org.

Where will those mothers and their children live? Perhaps on the street. It is undeniable that homelessness in Denver has grown 1000% in the last ten years, even while official planning efforts have called for closing shelters and reducing public housing stock in gentrifying communities. As another counter-map, the Denver Atlas actually mapped the landscape of homeless deaths in Denver. The Atlas map was updated this map more recently by loading it into Google Earth and pinpointing both the location of homeless deaths and the location of the most recent shelter shut down by NIMBY neighborhood activists in Denver's most rapidly gentrifying community (Curtis Park). While developers and officials celebrate the "rebirth" of Curtis Park in their plans and maps, a very different interpretation is suggested by this particular map.

City Closed Homeless Shelter and Geography of Homeless Deaths: Denver, 2005



Displaying the geography of bleached barrios and homeless deaths powerfully conveys a different reality than that conveyed in the official plans and developers' maps. As scholars from Pickles (1991, 1995, 2004) to Crampton and Krygier (2006) have pointed out: "Maps are active; they actively construct knowledge, they exercise power and they can be a powerful means of promoting social change" (Crampton and Krygier 2006, 15).

That is exactly what the maps in the Denver Atlas aim to achieve. By putting words and compelling visuals to the soul-felt loss of community and sense of injustice that permeates these lower-income communities, these maps may help catalyze what Friere would call a "critical consciousness" among inner-city communities. By bringing university resources into

partnership with a grass-roots struggle against state-subsidized gentrification, and through an iterative process of presenting maps, discussing implications, revising maps and presenting them in actual policy debates with city officials and developers, a new awareness and power builds in the community. Friere argues that such processes are part of the active empowerment of marginalized communities, who begin to break from a “culture of silence” and become knowing subjects (quoted in Johnson, Louis and Pramono 2006, 84).

In fact, these maps, supported by several other research projects, played an important role in a recent historic victory of grassroots groups against the growth machine in Denver. These maps were just one part of a much broader and long-lasting CRD that consistently brought dozens of community activists and CBOs into the halls of power as the specifics of the Gates project were being debated. As negotiations wore on, the ability of activists to bring authoritative maps and reports of their own into those meeting rooms, to display embarrassing and undeniable social consequences of gentrification, played a role in putting the development community on the defense. Hidden consequences of gentrification (homelessness, racial bleaching, loss of community) were suddenly front and center, demonstrating the power of “GIS to create alternative representations of urban transformation that reveal these otherwise invisible changes” (Pavlovskaya 2002, 282). When such changes are displayed through professional GIS maps, “they are more likely to be received as authoritative representations and can also carry tremendous emotive power in highly charged debates about social and spatial change in their community” (Elwood 2006, 337).

The ability to speak with established powers in their own scientific language, and portray community arguments in sophisticated visual form, had real results. By the time the months of negotiations between the developer, the city, and the CRD had wrapped up, Denver had implemented its very first “community benefits agreement,” requiring the developer of the Gates tax-subsidized project to deliver on a host of community concerns (Robinson 2006). As described the Annie E. Casey Foundation-funded Diarist Project, the community benefits package includes a permanent exclusion of low-wage big-box stores like Wal-Mart, regular communication between retailers and community groups about wage levels on site, three hundred fifty affordable housing units, one thousand construction jobs at the prevailing wage, and hiring preference for [low-income] residents of nearby neighborhoods” (Read 2006, 2). Beyond this Gates project, there is long-term potential of changing economic development policy on a host of projects to include more sensitivity to low-income resident concerns. City Councilman Rick Garcia explains that “the project was a turning point for the policy debate. We need to have certain values and expectations in the public sector if we are going to entice someone through a subsidy” (Read 2006, 8). The Mayor’s Director of Economic Development adds that “We created a precedent that is the right sort of outcome for similarly situated projects, of which there are likely to be quite a few” (7). A local foundation official agrees that “we are excited by the prospect for long-term economic development policy change in Denver and for the concept of community benefits becoming the norm” (8).

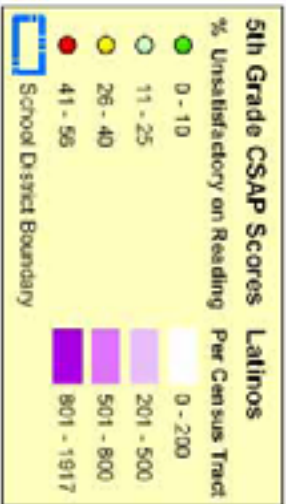
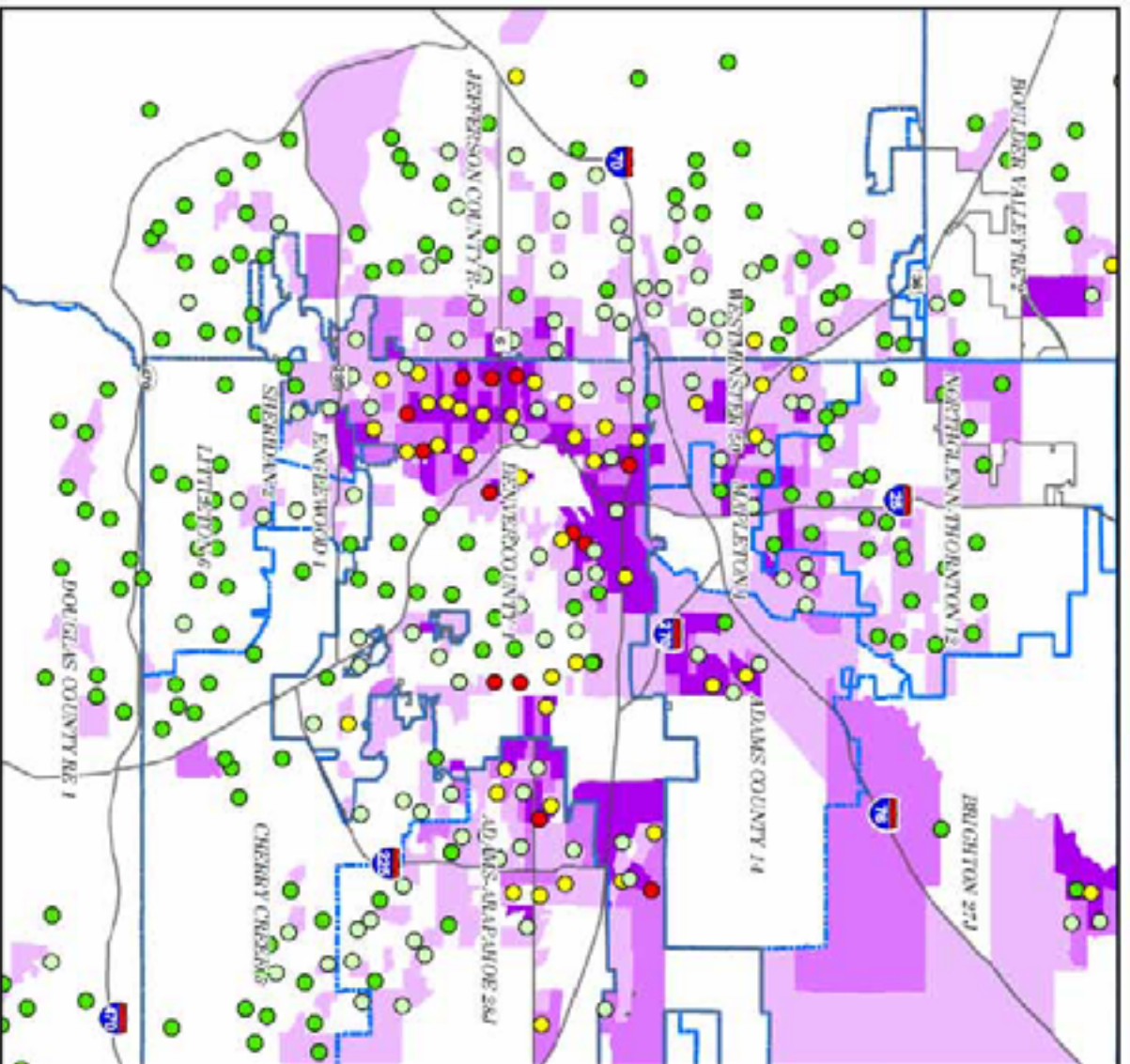
The precedent-setting victory over the standard gentrification-inducing development practices announced in Denver’s previous planning documents was made possible by several factors. A muscular movement of community activists on the ground and the persistent engagement of

activists in all manner of official planning efforts and press events were certainly key. Also important was the credibility and intellectual persuasiveness that resulted from sophisticated research (Read 2007, 30), including the kinds of maps presented in the Denver. “The visual proof that subsidized projects were driving poor people, and non-whites, out of the central city certainly empowered our arguments and peppered a sense of outrage in the community,” states Robin Kniech, Senior Policy Associate with FRESA (personal communication 2007). When impoverished neighborhood residents show up in wheelchairs to a city planning meeting demanding to know how they are going to be included in the city’s new round of luxury developments, it has one kind of power. When these residents wield visually compelling maps full of hard data showing their historic neighborhoods literally being bleached of non-whites, while homeless deaths spread, their personal testimony has an even greater impact. Councilman Garcia noted that he came to respect the Coalition’s expertise on these issues, explaining that “It had a significant impact on my thinking about the subject” (Read 2007 15). In his assessment of how this historic victory was made possible, one long-time neighborhood leader shared the key lessons: “Educate yourself before your talk to your elected representatives. If you come in there and you aren’t ready with the facts and figures, you’ve pretty much wasted their time and there’s a good chance you are not going to get their time again” (29).

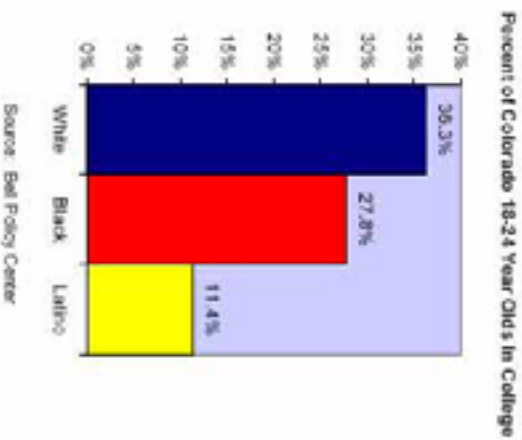
Additional Counter-Mapping Projects

The Campaign for Responsible Development was just one of the community partners who worked through a participatory GIS project to create maps of use to their advocacy project. A different partner was Padres Unidos, an alliance of parents in mostly low-income schools who believed that Colorado’s educational testing standards (that led to school closure if a school scored poorly several years in a row) unfairly threatened poor neighborhood schools with closure, and that believed school discipline patterns unfairly targeted minority youth. Another group was the Colorado Progressive Coalition, which was active in work to reform the alleged racial profiling practices of the Denver Police force. Though the link between GIS research and the on-going ground campaigns of these groups hasn’t yet paid the kind of policy dividends that can be seen in the CRD, initial counter-mapping efforts are beginning to tell the story of educational testing, school discipline, and neighborhood policing from the perspective of these lower-income community based groups. The following four maps reveal some of that work. The final map (Denver curfew citations heaviest in communities of color) is currently being used by community groups in negotiations with the Mayor and Denver Police to reform their historic practice of targeting mostly Latino youth for curfew violations due to their practice of “cruising” up and down Federal boulevard during Denver’s Cinco de Mayo festivities. The curfew citation map reveals a racial pattern to the kinds of youth targeted for citations, and may result in more powerful advocacy efforts on the part of the community coalition.

Under-Performing Schools Concentrated in Latino Communities (2005)

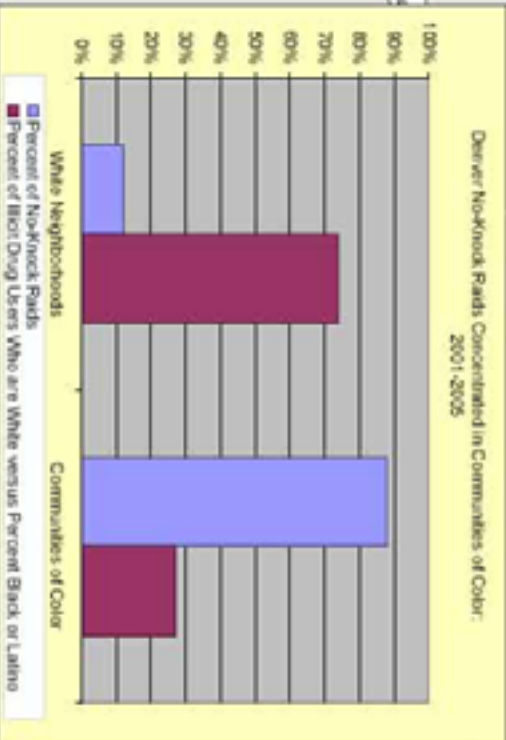
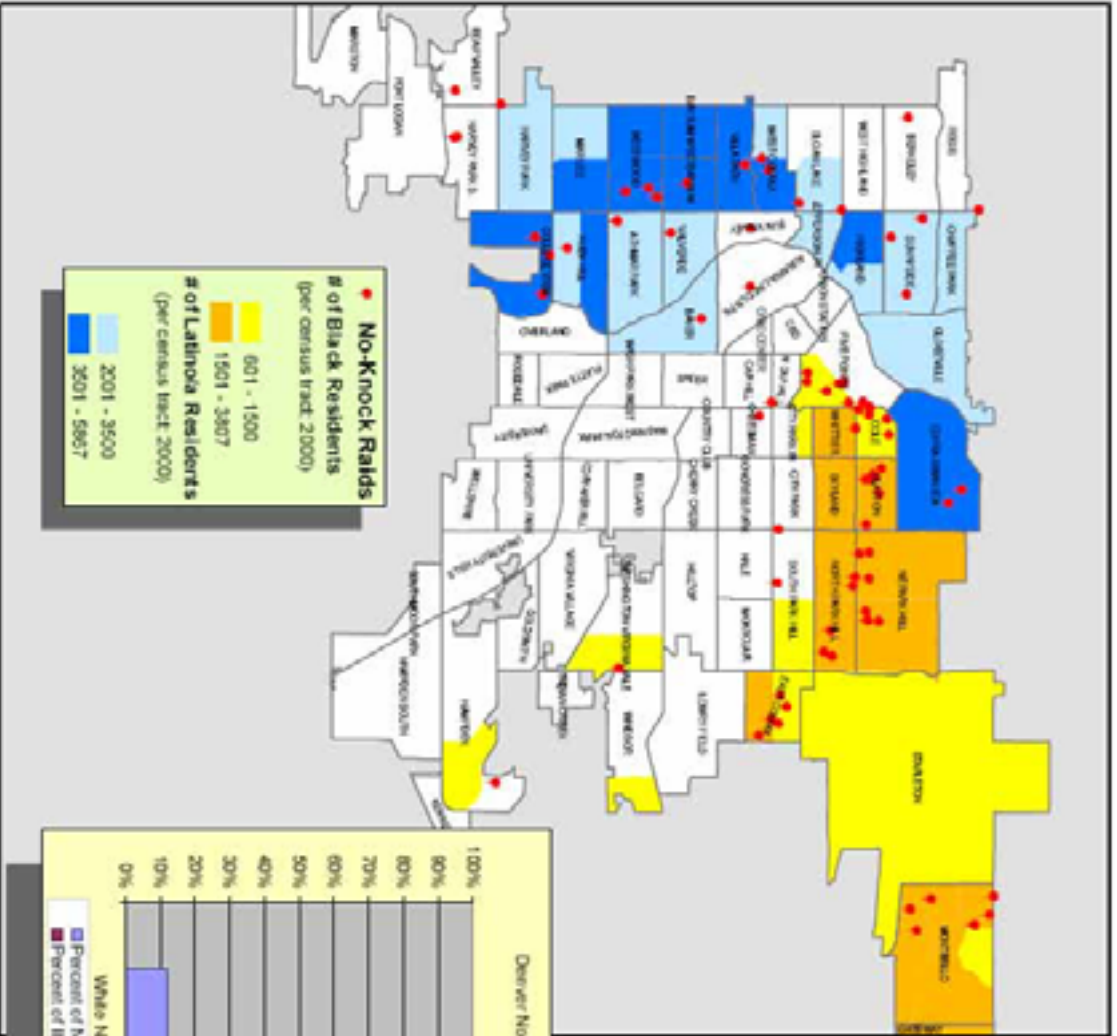


The pipeline to good jobs and college education begins in early education. Unfortunately, for low-income and minority youth, this pipeline is too often shut down as early as elementary school. Poor performing schools are concentrated in minority communities. Fifth grade gaps on CSAP reading scores parallel gaps in math, writing and science, and endure throughout high school, resulting in low college attendance rates for non-white youth.



Source: Colorado Department of Education CSAP results. For complete sources, see Atlas document at www.bpc.org

Denver No-Knock Police Narcotics Raids Concentrated in Communities of Color (2001-2005)



"Immediate Entry Warrants" (e.g., No-Knock Raids) by the Denver police reflect racial bias in America's War on Drugs.

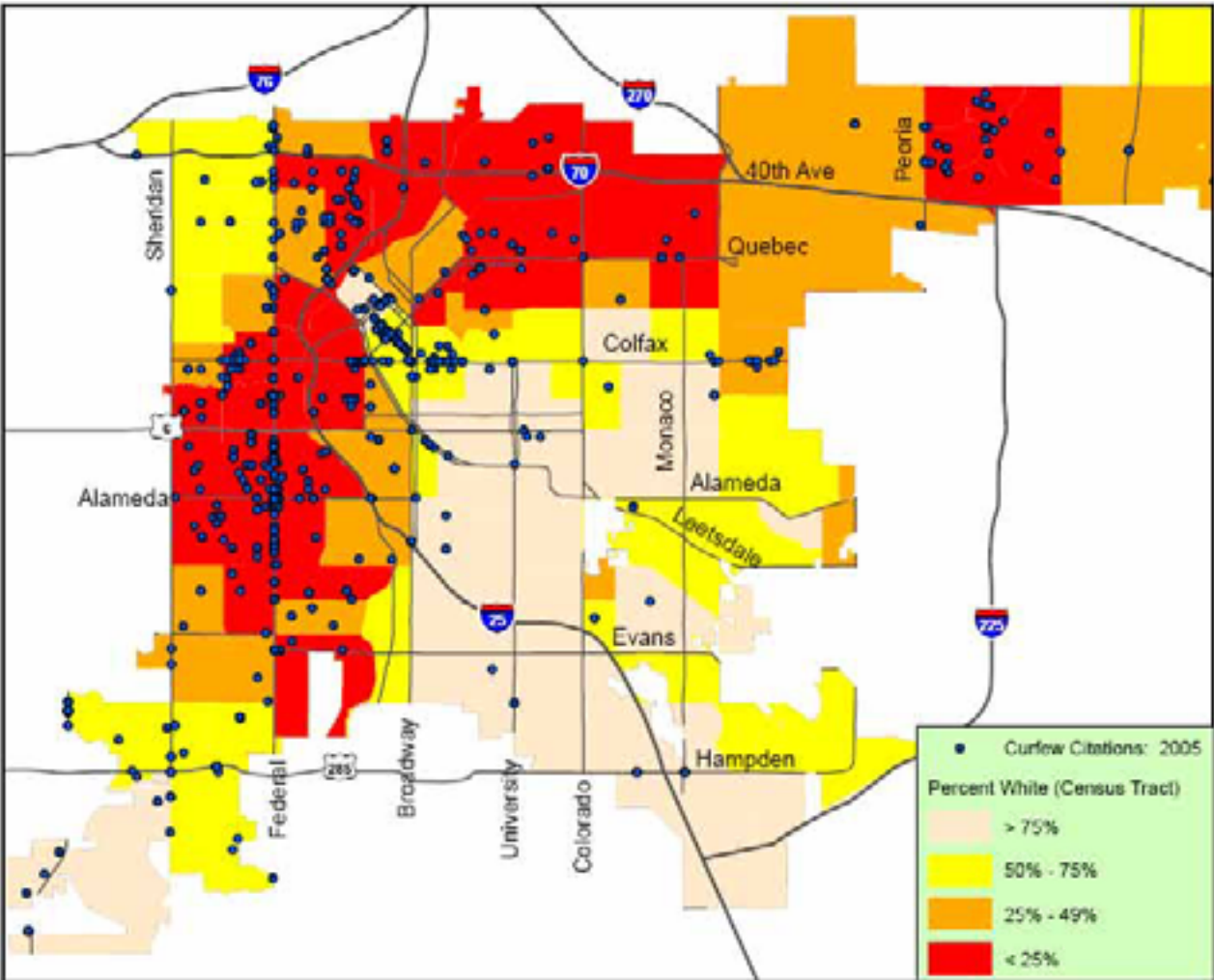
The 2004 National Survey on Drugs and Mental Health shows that over 70% of illicit drug users are white, and about 13% of drug users are black. Nevertheless, 35% of those arrested, 59% of those convicted, and 74% of those imprisoned for drug possession are black. A Rocky Mountain News study showed that white residents were targeted in only about 14% of all "No-Knock" raids in 1999. The report revealed that several raids were based on weak informant tips, turned up few drugs and netted no arrests. Only 49% of the raids resulted in any felony charges, and only two raids resulted in any prison time for a suspect.

"People often feel these raids do not take place in white middle class neighborhoods and, by and large, that is accurate," notes Hoover Institution scholar Joseph McNamara.

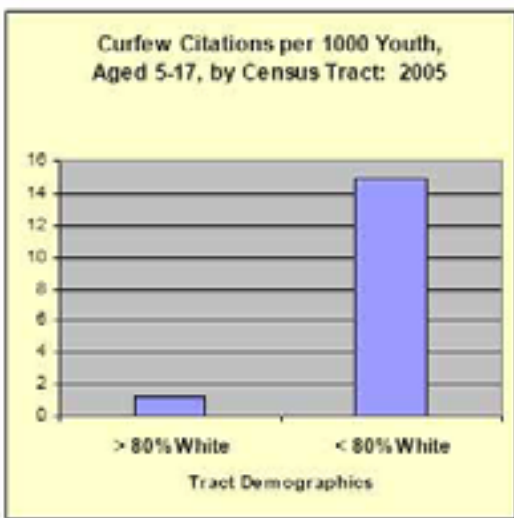
For complete sources, see Atlas document at www.fisc.org

*Communities of Color defined as census tracts with at least 600 Black or 2000 Latino residents (as shown on map).

Denver Curfew Citations Heaviest in Communities of Color (2005)



Denver has a curfew for youth under 18: 11:00 p.m. on weeknights; Midnight on weekends. Dating back to the "zoot suit" panic of the late 1940s, and revitalized following Denver's gang-scare of the 1999 "Summer of Violence," Denver's curfew resulted in 11,287 citations between 2000 and 2005. Sentences include fines, self-help classes, or even being pulled from school for 3 days of labor with a sheriff's work crew. Curfew citations are rare in affluent communities where most youth are white, and common in areas where more than 75% of youth are of-color. Controlling for population aged 5-17, a youth in a neighborhood that is at least 20% non-white is 12 times more likely to receive a citation than a youth in an 80%-plus white



"Legislatures must address the likely eventuality that small segments of the population will bear the brunt of enforcement efforts made to ease the minds of those who favor curfew laws. . . Society should remember that curfews have traditionally been created by the upper classes as a method to control the movements of the lower classes. Curfews may therefore constitute a preemptive strike against an entire segment of the population presumed to have a propensity to commit crimes."
 -- Dierdre Norton, New York University School of Law

Source: Denver Police Dept. curfew data. "White" = Census 2000 data, non-Latino White. For complete sources, see Atlas document at www.fresc.org.

Future-Steps: Expanding GIS Literacy at the Grass-Roots

To extend the Denver Atlas into the future, next steps include designing future GIS projects around community needs, regularly placing service-learning students as GIS interns with community groups, and building the long-term literacy of community groups themselves in utilizing GIS technology. Recently, the Department of Political Science at CU-Denver/HSC has taken initial steps to realize these long-term goals. A new class, GIS in Political Science, has been designed in the department that will be offered once a year. The class will engage about 15 new and intermediate GIS students in mastering GIS through service-learning with community based groups.

Most students in the class will be placed with one of several community partners (e.g., The Front Range Economic Strategy Center, Rights for All People, Colorado Progressive Coalition, Metro Organization for People, Colorado Working Women 9to5, El Centro Humanitario Para Los Trabajadores, or the Colorado Resource Center). The student will design a final GIS project for the class in collaboration with the community partner, building off the work of previous students. The course goals will be to deliver products of immediate use to our community partners, to build real-world GIS consultant skills in students, and to introduce students to unique career-paths applying these skills in unusual community settings.

To build the long-range literacy of our community partners, CU-Denver has opened the course to tuition-free auditing by staff and neighborhood resident members of our community partners. The class is taught in CU-Denver's sophisticated FASTlab, which allows access to state of art GIS systems and deep banks of digital data. When community partners agree to take on a GIS student from the class, that partner is also allowed to send one organizational representation to attend the class for free with full lab access. The partner learns long-term GIS skills, and also serves as a class partner to the student working on a project for the CBO in question. This enhances the experience for CU-Denver students by providing them in-class community guidance, while also building long-term GIS literacy, at no cost, among our community partners.

Conclusion

“The privilege and penalty of your education and the position you hold in your community is that over the coming decades, as in past decades, you will be the pace setters for political and social thought. You may not accept this responsibility, but it makes no difference. It is inescapable for, if you decide to set no pace, to forward no new ideas, to dream no dreams, you still will be pace setters. You will simply have decided there is no pace. ”

-- Adlai E. Stevenson

Adlai Stevenson was speaking to the college community in general, but his comments apply as much to the academic GIS community as to any other field. We are in possession of a unique

and powerful set of research and visualization tools. Our university affiliation means we typically have access to immense reams of data, and state of the art hardware and software to run these tools. This same kind of data access and skilled GIS staff is generally replicated in many of the government offices surrounding the university and throughout the private sector (in consortiums like the Downtown Denver Partnership, developers firms, or campaign consultant offices). But rarely will we find such GIS aptitude present in the community groups and neighborhood organizations of lower-income communities.

As a beneficent institution serving a democratic community, there is an ethical obligation of the university community to actively bridge the digital divide. Our GIS classes can be built around notions of neutral, technical expertise, and we can give students GIS skills through abstract, simulated city planning exercises or analysis of historic presidential elections. Our research agendas can be built around partnerships with state agencies and private funders to map such things as new urbanist growth corridors, crime and graffiti patterns, and traffic flow patterns. There is definitely a role for such strategies of GIS research and teaching—but our ethical obligation to a democratic community means that we should do more. The Denver Atlas and CU-Denver's new GIS in Political Science programs are small efforts at linking GIS students and technologies to immediate social needs in marginalized communities, hopefully rectifying some of the dismal imbalance that exists between those community forces with the privilege and power to map (and therefore define) the future of our society, and those relegated to silence and invisibility on such matters.

As Adlai Stevenson might have remarked: if we in the university don't mobilize research agendas around pressing and largely unfunded social needs in our midst, who will? If we don't connect emerging young professionals and vital new technologies to the most marginalized communities among us, then we are still the pacesetters for social progress in our communities. We will have simply decided that there will be no pace.

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