



Maps and contradictions: Urban political ecology and cartographic expertise in southern Appalachia



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ABSTRACT

Commissioned by the State legislature after a succession of deadly and damaging landslides and decades of exurban growth on steep mountain slopes, the North Carolina Geological Survey produced a series of landslide hazard maps detailing for the public landslide prone areas of Macon County, North Carolina, USA. While widely supported at the state and local levels in 2005, by 2011, the mapping program was defunded in the state's budget and the maps were highly politically criticized in Macon County. Even today, the maps remain unused in any legal capacity and are unknown to many residents of the region. Empirically, this article narrates the political fate of the maps in Macon County from 2005–2011 and theoretically, it draws upon a synthesis of urban political ecology (UPE), science and technology studies (STS), and critical cartography to interpret the rapid downfall of the landslide hazard maps. I show that a particular intervention of scientific expertise in exurban contradictions not only produced the maps, but also provided the political conditions for their ultimate discard. Finally, the article concludes by offering a contribution to the growing exurban studies literature as well as the 'second wave' of UPE.

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Introduction

The stormy remnants of Hurricanes Ivan and Frances passed over mountainous Macon County, North Carolina, only days apart from one another in September 2004, together dumping nearly 50 cm of rain across the County and much of the southern Appalachian mountains of the southeastern United States. In addition to significant flooding in the cities, towns, farms, and forests of the area, one result was a landslide in the Peeks Creek hamlet of Macon County, in which five people died, dozens were injured, and over thirty homes were damaged or destroyed. While this corner of southern Appalachia is famous for its generational landholding families, they were not the only group who suffered from the Peeks Creek tragedy. Among the victims and survivors were also exurban migrants from Florida, examples of a trend in which from the 1960s to present, retirees and second-home owners from across the southeastern US fuelled low-density, amenity-based urban growth in Macon County and southern Appalachia (see [Gragson and Bolstad, 2006](#); [Gustafson et al., 2014](#)). Though subsistence farming and forestry have been the economic basis for southern Appalachia for generations, the five-decade swell of exurban migrants has supplanted agriculture with tourism and residential

construction. In terms of the spatial form of settlement patterns, exurban growth in southern Appalachia has expanded into higher elevations and onto historically uninhabited mountainsides (see [Kirk et al., 2012](#); [Gragson and Bolstad, 2006](#)).

Prompted by the tragedies of Peeks Creek and exurban housing developments creeping up mountainsides throughout the western portion of the state, the State of North Carolina sought to mitigate landslide vulnerability in the western counties in the early 2000s. In one of the first bills of the legislative session following the Peeks Creek landslide, the State legislature passed through a 47-0 vote The Hurricane Recovery Act of 2005. Part of the act commissioned the North Carolina Geological Survey (NCGS) to produce a series of landslide hazard maps for each of North Carolina's nineteen westernmost counties with the aim of delineating for the public downflow hazard zones and landslide initiation zones ([Maracle, 2005](#)). Public support for the act and the maps was high, especially given the deaths at Peeks Creek as well as the region's hundreds of other landslides in the wake of Hurricane Ivan's and Frances' remnants during the previous autumn. Rick Wooten, a Senior Geologist at the NCGS, was charged with leading a team of six other geologists in this state mandated landslide hazard mapping program.

By 2011, though, the sentiments at the state and local levels and the popularity of the mapping program with the public were dramatically different. At the state level, the legislature entirely defunded the mapping program in its 2010 budget. At the local

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level, Macon County's politics became dominated by divergent opinions on the scientific merits of the maps and their regulatory implications for a controversially defeated county-wide steep slope development ordinance in 2011. Commissioned by the County Planning Board and comprised of a group of local geologists, hydrologists, surveyors, concerned citizens, lawyers, and planners, the Steep Slope Subcommittee drafted the ordinance, using the maps to help delineate the areas of the county subject to regulation.

Adding to the controversy, though the maps were produced for public information, Macon County officials removed them from the County's website, citing an unspecified fear of being held liable for their content. The maps also were designed to be used as local planning tools, a process inhibited in local planning board meetings by land rights activists who feared over-regulation of their land by the state. While the NCGS made hundreds of presentations in western North Carolina about the maps, opponents regularly derided the merits and appropriateness of the maps in public meetings, newspapers, and other local media sources. These arguments regularly questioned the reliability of LiDAR data, the inability of the maps to predict the exact time and place of a landslide, and the arbitrary standards that the NCGS geologists used to delineate landslide prone areas. At both levels, then, the once popular maps went from a publicly valorized post-disaster relief strategy to a political lightning rod at the local and state levels. The shift in state and local politics raises the question: what happened from 2005–2011 to make such an improbable change in the public viability of the NCGS downslope hazard maps?

Drawing on recent theoretical and empirical scholarship at the intersection of urban political ecology (UPE) and science and technology studies (STS), I develop a narrative that details the political rise and fall of the NCGS downslope hazard maps from 2005–2011 in the context of longer term political ecological contradictions of exurban growth as mediated through the local epistemological politics of cartographic expertise. Following the growing literature at the intersection of UPE and STS, this paper first develops a theoretical framework linking cartographic expertise, practice, and products with the governance, management, calculation, and evaluation of exurban environments. Next, drawing on three years of fieldwork that included semi-structured interviews with southern Appalachian and Maconian scientists, homeowners, planners, officials, and other citizens; archival research; and participant observation at public meetings, the paper narrates the production, circulation, and deployment of the NCGS maps. It especially focuses on the public debates over the maps, highlighting epistemological rifts and disputes over their scientific merits. The paper concludes by offering both theoretical reflections upon and empirical consequences of the politics of exurban environmental knowledge.

This narrative combining insights from UPE and STS is important for two main reasons. First, without understanding exurban uneven development through the contradictions of exurban growth, we are left with an understanding of the politics of environmental knowledge devoid of their relationship to the process of urbanization. Second, without understanding the scientific and technical means of urban environmental governance and management, especially through cartography, we miss the technoscientific outcomes and politics of urbanization in historically rural places. In short, it is because the maps spatially delineate and reveal the geomorphically shifting foundations of exurban developments that they were so hotly contested. Yet they also participate in a cartographic story of other shaky foundations of exurban development: the shifting role of the state, the social fault lines of expert and legitimate knowledge claims, and the fractured political economy of exurbanization. Though the landslides in Macon County represent perhaps the most obvious environmentally unstable

foundations of the county's exurban growth, the controversy over the maps also exposes the contradictions of capital accumulation through residential construction and the fraught role of governance using cartographic and scientific expertise in exurbia.

Theoretical framework: urban political ecology meets STS and critical cartography

Knowable communities

In an often overlooked chapter in his otherwise widely celebrated and cited reflections on the modes of city life and country life as represented in the English novels of the 19th century, Raymond Williams in *The Country and the City* dissects novelists' strategy of creating 'knowable communities' in their work. These knowable communities, he notes, are not static, placeless, or timeless creations. Instead, as Williams shows, knowable communities as demonstrated by the interaction between characters, the diction describing the action and plot, and the familiarity of settings and relationships are often contingent upon the degree to which the novel's setting is urbanized. His observation is worth quoting at length. He writes (1975, 165):

There can be no doubt... that identity and community become more problematic, as a matter of perception and as a matter of valuation, as the scale and complexity of the characteristic social organization increase. Up to that point, the transition from country to city—from a predominantly rural to a predominantly urban society—is transforming and significant. The growth of towns and especially of cities and a metropolis; the increasing division and complexity of labor; the altered and critical relations between and within social classes: in changes like these any assumption of a knowable community—a whole community, wholly knowable—become harder and harder to sustain. But this is not the whole story, and once again, in realising the new fact of the city, we must be careful not to idealize the old and new facts of the country. For what is knowable is not only a function of objects—of what there is to be known. It is also a function of subjects, of observers—of what is desired and what needs to be known.

Here, Williams initially recognizes the common observation of the increased complexity and density of social networks and relations in cities relative to the countryside, and that as historically rural areas undergo the processes of urbanization, the intimate and informal knowability of communities fractures. He then moves beyond the trope of 'simple country life' to note something more profound about the nature of urban life: that urbanization creates new objects and subjects of knowledge. In other words, transformations in the social categories of that which is worth and not worth knowing, who knows and who does not know, and what ought to be and ought not to be known are symptoms of urbanization. Implicit in Williams' chapter and in the novels he examines is the social upheaval and contestation that results from these transformations. Indeed, a central theme of these 19th century novels is the public and private struggle against the constraining yet dynamic categories of the age. Though Williams' aim is to critique Dickens', Bronte's, and other novelists' representations of knowable communities in the British countryside and cities, his argument has implications beyond literary criticism. In particular, Williams' insight into how urbanization changes the objects and subjects of knowledge and the concomitant contestation of these changes can contribute to scholarship at the intersection of UPE and STS by considering the role of cartographic expertise in urbanization.

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