The Impact of Homeowners Associations on Residential Landscape Form and Ecological Structure in Phoenix, Arizona

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INTRODUCTION

A majority of new homes on the urban fringe of US metropolitan areas are managed by legal entities called homeowner associations (HOAs). HOAs exercise authority by virtue of their covenants, codes, and restrictions (CC&Rs), and increasingly these CC&Rs regulate the nature of residential landscapes in American cities. Past research has examined the role of HOAs in social control and urban governance, but little attention has been paid to the effects of their regulations on residential landscape ecology. Although little is known about the range of landscape packages and management options available to homeowners, their potential impact on landscape form, and therefore function, is potentially great. Residential landscapes can be conceptualized as managed landscapes exhibiting similar characteristics to agricultural and other managed lands engaging in planned ecological diversity. A sampling of CC&Rs from the Phoenix metropolitan area was gathered and coded for regulations relating to landscape form and function in order to determine the ways in which HOAs govern the ecological structure and management of residential landscapes. Textual analysis was used to begin to unpack the rationale behind landscaping guidelines.

DATA AND METHODS

CCRs from the Phoenix metropolitan area were collected using a convenience sampling approach. An email requesting a copy of CCRs was sent to students, faculty, and friends in the Schools of Geographical Sciences, Sustainability, and Human Evolution and Social Change at Arizona State University (Table 1). They were gathered until no new landscaping restrictions were identified in the documents (to the point of saturation). The text of each CCR was coded for features of managed landscapes and the emergent themes revealed through reading the documents (Table 3). The HOA documents included both the CCRs (n=35) as well as Architectural and Landscaping Guidelines (ALG, n=14) an extension of the CCR document. In addition to example quotes from the text of both document types were also qualitative analyzed.

Table 1: Temporal and spatial extent of sample (n=35)

CC&R Age	*range*, 1960-2007
Municipalities	Avondale, Chandler, East Mesa, Gilbert, Glendale, Higley, Maricopa, Mesa, Phoenix, Scottsdale, Tempe
Type of Document	Covenants, Codes, and Restrictions (n=35), Architectural and Landscaping Guidelines (n=14)

Table 2: Number of HOAs in the United States and Sample: The number of HOAs in the United States has increased steadily since the 1960s (Table 2) and our sample reflects this temporal trend.

Decade	Number of HOAs (United States)	Number of HOAs (sample)
1960	500	1
1970	10,000	3
1980	55,000	6
1990	130,000	10
2003	230,000	13

Table 3: Coded Landscaping Clauses in CCRs by Major Categories

Plant Management	*Water Management*	*Species Composition*
Weeding	Irrigation Requirement	Turf Prohibited
Trimming	Drainage Changes Prohibited	Turf Required
Pest Control	Topography Changes Prohibited	Species Prohibited
Plant Disease Management		Species Requred
		Overhead Encroachments Prohibited
		Maximum Plant Height

RESULTS

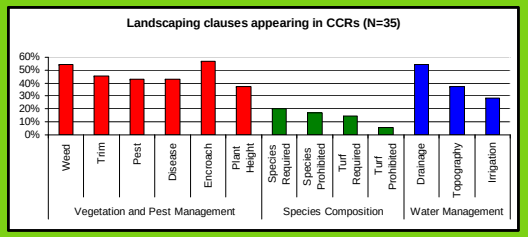

Figure 1: Landscaping clauses appearing in CCRs

Vegetation and Pest Management: Many of the vegetation and pest management clauses imply chemical inputs and biomass removal. Chemical inputs enhance or retard species growth and may degrade water quality. Biomass removal alters both the landscape form and the inputs and outputs of the system.

Pests and Diseases
No Person shall permit any thing or condition to exist upon any Lot which shall induce, breed or harbor infectious plant diseases and noxious insects.
Coronado Ranch, CC&R (4.4)

Pre-emergent Weed Control
All rock areas shall be treated with a pre-emergent weed control at regular intervals to retard weed growth. Sonoran Vista, ALG (pg. 4)

Overhead Encroachments
No tree, shrub, or planting of any kind on any Lot shall be allowed to overhang or otherwise to encroach upon any sidewalk, street, pedestrian way or Common Area from ground level to a height of eight (8) feet.
Durango Park, CC&R (17.19)

Species Composition: Clauses permitting or requiring particular species or turf were located in the ALG documents rather than the CCR. Initial review shows that plants on the commonly prohibited species list are either invasive, rapid growers in arid climates, or are common allergens.


Table 4: Commonly Prohibited Species

Cypress
False Cypress
Eucalyptus
Olive
Mimosa
Thevetia (Yellow Orleander)
Mexican Palo Verde
Mulberry
Fountain Grass
Bermuda Grass
Citrus (backyard only)


Water Management: These clauses specified irrigation system types and prohibited alterations to drainage patterns. The type and frequency of irrigation has implications for both biomass accumulation and amount of outdoor water use. A few CCRs and ALGs encouraged water conservation through a variety of management practices such as prohibiting daytime watering or the suggested use of drought tolerant plants.

Irrigation System
All landscaping is to be irrigated by means of an automatic irrigation system. Valves are to be installed underground in a vault style valve box.
Ashland Ranch, ALG (pg. 3)

Topography and Grading
Fine grading is a critical aspect of landscaping. Each lot has been graded such that all storm water will drain away from the house. It is important that this drainage pattern be maintained when preparing the landscape design, especially if mounding or berming is proposed.
Coronado Ranch, ALG (20)

Water Conservation
In the landscape of homesites, occupants are urged to utilize plant material, irrigation systems, and maintenance practices that conserve water. Although conserving landscapes are often associated with a rather bleak, barren appearance, a more traditional "green" appearance can be achieved while still using much less water than typical residential landscapes. Mountain Park Ranch, ALG (pg. 4)

Temporal trends: Initial results show a trend toward a greater number and wider variety of landscaping clauses appearing in CCRs. Documents from the 1960s and 1970s did not reference landscaping while a majority of documents from the 1990s and 2000s did. This may reflect a shift toward conceptualizing the yard as an extension of the home in which landscape architecture is regulated similarly to home architecture.

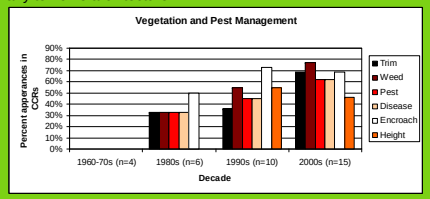

Figure 2: Vegetation and Pest management clauses appearing in CCRs through time. The increased prevalence of encroachment and height clauses reflects the elevated importance of distinguishing between private lots and public and private areas.

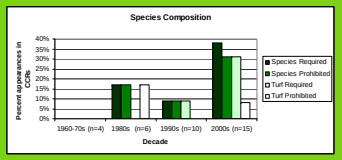

Figure 3: Species composition clauses appearing in CCRs through time. A new phenomenon emerges with the increased prevalence of master planned communities in which species lists reflect the overarching aesthetic scheme of the developer.

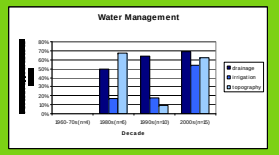

Figure 4: Water management clauses appearing in CCRs through time. Newer CCRs have emphasized the importance of drainage and topography to the structural integrity of built structures. The increased prevalence for automatic drip irrigation systems has conflicting implications for water use.

CONCLUSION AND FUTURE DIRECTIONS

Landscaping clauses have emerged as an extension of architectural clauses in CCRs and ALGs. They share similar social drivers such as maintenance of property values and aesthetic quality. In addition, landscaping clauses navigate local zoning and environment laws, at times imposing additional constraints upon homeowners. These constraints shape landscape form, influence management practices, and potentially alter ecological function.

Next steps:

- Continued collection of CCR and ALG documents in order to increase n for quantitative analysis.
- Merging of social and ecological theory in order to derive ecological questions about the implications of HOA governance that parallel social questions.
- Mapping the location and bounds of HOAs in the sample to reveal spatial trends in CCR and ALG clauses. Overlay of HOA bounds with water use, land use and land cover, and population to address the following questions:
  - *Are areas governed by HOAs associated with higher levels of water use and species diversity?*
  - *Are these areas demographically homogenous in terms of income, education, race and ethnicity?*
  - *If so, are community members imposing an ecological cost on areas and populations outside their bounds? Is a disproportionate share of limited water resources directed to residential landscapes in private communities not accessible to the majority of the population?*

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