Land Tenure and the "Evidence Landscape" in Developing Countries

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The utility of landscape as an important component of cultural geography continues to evolve. This article demonstrates the utility of the landscape concept in reconciling informal and formal land rights. Land tenure has proved to be one of the most perplexing issues in the developing world. The inability of formal and customary property rights systems to effectively connect in ways that provide for tenure security creates dilemmas not easily overcome. Typical manifestations of this incompatibility involve problems relating to land claims and disputes, which rest upon proving access and ownership rights. Such proof is at the heart of both the capital-poverty-property rights argument and the rights recognition approach, as well as noncommodity, identity-based, and service attachments to lands. This article argues that evidence proving (attesting to) rights to land is an important but overlooked domain of interaction for formal and customary tenure systems and is where opportunity resides for a potential contribution to effective cooperation between tenure regimes. Moreover, this evidence is embedded in the same landscapes that are and have been of interest to cultural geography. This "evidence landscape" is examined in the context of its utility and connection to customary tenure and formal law and how it plays a role in attending to tenurial incompatibility in three cases: Mozambique, East Timor, and the Zuni of the United States. *Key Words: cultural geography, evidence, landscape, land tenure.*

Landscape is a central notion in geography, with a rich body of literature that provides opportunities for understanding relationships between people and land, and the articulation of meaning within such relationships. The treatment of landscape is of interest to the subfield of cultural geography, where a prominent theme is the social relations about land. In an international development context, researchers are struggling with a pervasive landscape problem: how to reconcile formal and informal land tenure regimes. This issue has significant implications for large populations in many countries in the developing world.

The pervasiveness of the ongoing incompatibility between informal customary land tenure and formal state property rights regimes in the developing world has major repercussions not only on development, but also on issues of conflict, resource degradation, and the role of property in the operationalization of capital (Bruce and Migot-Adholla 1994; Platteau 1996; de Soto 2000; Okoth-Ogendo 2000; Otsuka and Place 2001; Meinzen-Dick et al. 2002; Hussein and McKay 2003; McAuslan 2003; Blomley 2004; Gausset, Whyte, and Birch-Thomsen 2005). As the academic and development community has recognized the problems that result from the separation of customary and national land tenure systems, two broad approaches have been developed to connect smallholders with national property rights systems. The first seeks to provide title as proof of possession of land (Carter, Wiebe, and Blarel 1994; Golan 1994; Migot-Adholla and Bruce 1994; Roth, Cochrane, and Kisamba–Mugerwa 1994; Roth, Unruh, and Barrows 1994). Many experiences, however, have revealed that giving title to small-scale agriculturalists often accomplishes neither inclusion nor linkage between tenure systems (Lemel 1988; Bromley and Cernea 1989; Bruce, Migot-Adholla, and Atherton 1994; Golan 1994; Roth, Cochrane, and Kisamba–Mugerwa 1994; Unruh 2002b).

The problematic nature of titling efforts has led to a second approach, which promotes giving official recognition, under national legal codes, to diverse, local, in-place patterns of access to and control over resources (Lane 1991; Swift 1991; Bruce and Migot-Adholla 1994; Samatar 1994; Shipton 1994; Tanner and Monnerat 1995; Delville 2000; Quan 2000). Certainly attempting to incorporate informal land rights and customary laws into formal law is important, but this approach produces another tension: it is extremely difficult for formal law to incorporate diverse customary rights and laws while creating a law that is predictable and equally open to all citizens. The diversity of customary land tenure systems, which are often fluid and based on lineage or ethnicity, may frustrate a state's requirement for a uniform enforceable code (Elias 1994; Roberts 1994;

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Unsworth 1994; Pipes 1999; de Soto 2000; Guadagni 2002; Maganga 2003; McAuslan 2003).

To overcome the contradictions within and incompatibilities between these two approaches, this article develops a new analytical focus that joins geography's "morphology of landscape" (Sauer 1963) with Western-based evidence law. This combined approach connects customary rights to formal law by considering real cultural practices embedded in the landscape—in other words, what people are doing "on the ground." From this perspective, landscape-based evidence serves as the essential anchor for customary land tenure rights. Proving that customary communities, households, and individuals have some form of claim to land is a prerequisite to acknowledging rights to those lands, since the evidence attests to rights. In essence this "evidence landscape" is comprised of spatially explicit features that can be used to access, or make the case for the existence of, human social relations about land that are relevant to spatially-based claims. The importance of the designation or derivation of evidence in ownership, claiming, and disputing has not yet received attention in the literature on the disconnection between customary and formal land tenure in the developing world. Landscape-based evidence is potentially significant, but currently underutilized, in establishing customary land tenure rights. The evidence landscape approach also demonstrates geography's increasing relevance to international research in development and conservation policy (Blaikie and Brookfield 1987; Turner et al. 1990; Zimmerer 1994; Zimmerer and Young 1998; Warf, Hansen, and Janelle 2004; Wood 2004).

In the next section, I explain why cultural geography is best positioned to articulate and translate landscape-based evidence. This is followed by a discussion of the primary issues involved in adaptation and adjudication in tenure systems, an examination of the nature of the evidence domain, and a consideration of three examples of the evidence landscape.

Cultural Geography and the Evidence Landscape

Cultural geography's examination of "the active role of human groups in transforming natural environments" (Cosgrove 2002, 134) is a key foundation for considering landscape features as evidence. Thus it is the "morphology of landscape" (Sauer 1963) that results from "the agency of culture as a force in shaping the visible features of the earth's surface in delimited areas" (Cosgrove 2002, 138) that is of utility due to the connection between visible landscape features and local meaning. In this context, a consideration of landscapes as representations that communicate many varied messages and readings is valuable (Barnes and Duncan 1992; Schein 1993; King 1996; Pred 1997). Such representations, made possible by the appropriation, recomposition, and particularization of the meaning of culturally specific landscape material (Duncan 2000; Valentine 2001), constitute the translation of such material into meaningful evidence for claims to land. Duncan (2000, 704) notes that "people accept cultural ideas and social relations embedded in landscapes because landscapes are taken for granted as material facts of life."

In a similar vein, Odgaard (2003) highlights the importance of social relationships to land rights, and Berry (1997) observes that land rights are understood not only as rules and laws but as a function of daily interaction. Cleaver (2003) highlights the importance of daily interactions to institutional formation, noting that without the "social embedding of new arrangements, bureaucratic institutions are unlikely to be effective" (Cleaver 2003, 15; also Van Donge 1993; Maganga 2003). And Mathieu, Zongo, and Pare (2003, 119) note that inscriptions on the landscape are "also acts of 'formalisation' which have a high degree of social visibility . . .," and in cases of transfer of land rights, such formalization "signifies a public claim, on the part of the buyer, and a public acceptance, by the traditional indigenous owner, of the permanent transfer of rights." Moreover, intentional reinterpretations of the dominant or common readings of landscapes create new spatially-based representations (Creswell 1996). In this regard, one view of the cultural turn in geography is relevant, whereby "meaning is actively constructed, negotiated and contested, always constituted through the shared discourses of human and non-human agents" (Crang 2002, 142; see also Barnett 1998).

Such interpretation and reinterpretation is also a fundamental aspect of Western formal legal conceptions of evidence, as I will discuss later (Dennis 1999). That significant local meaning can be accessed through the morphological characteristics of the cultural landscape is of important legal utility. This is particularly the case because social relationships regarding land(s) are ongoing and binding, bringing a needed enforcement aspect into decisions regarding claims or disputes. Therefore, although debates critiquing cultural geography's emphasis on the visible form (morphology) as opposed to process (Cosgrove 2002) are valuable, it is the connection of the visible to cultural, social, economic, and political processes that constitutes the value of cultural geographic evidence.

Evidence and Adaptation

Evidence and Legitimacy

Fundamentally, evidence must be of ongoing value and utility in both customary and formal land tenure systems. Unless evidence or proof of claim is connected to local cultural reality and logic—and title in the rural developing world usually is not—as well as being relevant to formal law, it will not have value within the customary land tenure system and will not likely deliver the hoped-for outcome within the formal tenure system. The problem of such "proving" is at the heart of the rights recognition argument (Delville 2000; Quan 2000), the popular capital-poverty-property rights approach (Pipes 1999; de Soto 2000), and attachments or claims to land based on identity, religion, and various insurance and security functions (S. Cohen 1993; Bruce and Migot-Adholla 1994; Unruh 2002b). At the same time, the Western legal tradition in evidence law is now significantly pervasive and growing in influence in the developing world (McAuslan 1998, 2003). The fundamental intent of this legal tradition is to deliver the legitimacy of authoritative decisions that depend on the freedom of concerned parties to collect and present *any* evidence that they believe to be relevant and of probative value (Dennis 1999; Robillard, Wilson, and Brown 2002; Murphy 2003). However, connecting systems of customary social and cultural reality with spatially-explicit constructs that have utility as evidence and proof in a formal legal system remains overlooked, elusive, and undefined. Landscape-based evidence is also useful because in many circumstances people purposefully transform landscapes in order to create evidence of claim, access, or ownership. Examples include planting economically-valuable trees, clearing trees or brush, and locating family graves (Mathieu, Zongo, and Pare 2003; Odgaard 2003; Unruh, Cligget, and Hay 2005).

Evidence as Argument

Evidence proving rights to land is an important domain of interaction between formal and informal tenure systems (hence the presumed value of title), and where significant unrealized opportunity may reside for potential compatibility. Deriving such evidence involves making logical connections between the existence of observed reality and the interpretations, inferences, and conclusions regarding that reality so as to derive evidence for claim, such that an argument of sufficient strength is made. In other words, constructing an argument is the process of bringing evidentiary meaning to a purported fact or observation (Murphy 2003). The "argument" notion is important. All claims to land are part of a construction of an evidence-based "argument for claim." Even formal title, or long-term occupation, are only arguments based on evidence that can be, and often are, contested—as are claims based on tribal, ethnic, religious, and other identities, or group membership.

Thus evidence is not information or an institution, but rather an "argument." In a Western legal context such arguments have two components: facts, and the inferences and conclusions drawn from facts (Garner 2000; Murphy 2003). An argument can be strong, weak, true or untrue, convincing or unconvincing, and it can corroborate or contribute (strongly or weakly) to other arguments to make a more persuasive argument. The legitimacy of evidence depends not only on the interpretation or translation of reality into evidence but also on the acceptance by others, that the inferences, interpretations, and conclusions are logical. In other words, arguments must make sense within a widely accepted logic (Murphy 2003). Making such a logical connection in deriving or "rendering" evidence is fundamental to the philosophical and logical foundation of the formal legal concept of evidence (Robillard, Wilson, and Brown 2002; Murphy 2003). For this reason, I contend that it will be much easier to secure land tenure by getting Western-based formal law to attend more closely to its own traditions in the treatment of evidence, rather than attempting to incorporate customary rights into formal law, or to change customary tenure via titling.

Ongoing Adaptation

A comprehensive volume entitled *Searching for Land Tenure Security in Africa* (Bruce and Migot-Adholla 1994) examines the disconnection in African land tenure through eight research projects in seven countries, along with a comprehensive literature review. Given the problems associated with attempting to replace customary tenure with formal tenure, the authors come to the conclusion that there must be movement away from the "replacement paradigm" and toward an "adaptation paradigm" (Bruce and Migot-Adholla 1994, 261). Such an adaptation approach is evolutionary and implies a clear acknowledgement of the legal applicability and enforceability of important aspects of customary tenure, and in particular focuses on adjudication as a primary vehicle for adaptation between customary and formal tenure systems (Bruce, Migot-Adholla, and Atherton 1994). The significance of the Bruce and Migot-Adholla (1994) adaptation argument is the importance not only of the recognition of customary ways by formal law but of

the evolutionary transformation of customary law as well, in reaction to interaction with formal law. The utility of evidence in this adaptation is twofold: first, its role in legal adjudication, and second, its role in making an informal argument for claim in the absence of effective institutions for land rights.

The Role of Adjudication

Bruce, Migot-Adholla, and Atherton (1994) highlight that some of what has been learned about the process of adaptation includes the primary importance of conflict resolution (also see Moore 1986; Rose 1992). They point out the need to look at "how dispute settlement mechanisms can best be framed to facilitate the process of legal evolution" (Bruce, Migot-Adholla, and Atherton 1994, 262). Berry (1990) argues that instead of rewriting laws dealing with land, governments should focus on "the mediation of what, in changing and unstable economies, will continue to be conflicting interests of farmers and others with respect to rights in rural land." McAuslan (1998, 544) also notes the central role of adjudication with regard to land laws in Africa, "the successful implementation and general public acceptance of new land laws and new rights, obligations, ways of doing things and official powers will depend to no small extent on whether efficient, effective and equitable dispute settlement mechanisms are put into place." And the World Bank (1989, 104) acknowledges that "judicial mechanisms for dealing with disputes between owners claiming traditional versus modern land rights are urgently required."

Because some of the most common and problematic interactions between customary and formal tenure regimes exist within the domain of competition and disputing, this becomes an important arena for transformation (over time) of both customary and formal ways (Moore 1986; Rose 1992; Bruce, Migot-Adholla, and Atherton 1994). The role of adjudication brings considerable focus to the functioning of evidence as an important medium of interaction within adjudication—including extralegal and alternative forms of settlement. In this regard the most important question is: What aspects of customary interactions with lands are both connected to ongoing social relations about land, and exist as workable legal forms of evidence?

The Role of the Informal Argument: Evidence or Institutions?

The existence of effective institutions for adjudication is clearly important, but lack of formal institutions to utilize evidence does not prohibit evidence from being widely used to make an argument for claim to land. And in reality the reverse is often the case. Where effective, legitimate institutions are lacking, the emergence of certain forms of landscape-based evidence can be particularly robust, especially forms that connect with formal notions of claim such as occupation. Purposefully planted trees deserve particular mention in an evidentiary context due to the very clear connections made between social relations and landscape. The literature regarding the tenure role of trees is significantly large (Raintree 1987; Rocheleau and Edmunds 1997; Otsuka et al. 2001; Meinzen-Dick et al. 2002; and see Fortmann and Ridell 1985, an annotated bibliography on the topic with 414 entries). Economic, marker, and service trees are notable for their pervasive roles as legitimate evidence for claim within customary systems, and their strong connection with formal legal notions of long-term occupation or presence. S. Cohen (1993) has articulated the powerful informal role of tree planting as evidence in asserting land claims in the contested landscapes of the Middle East by both Palestinians and Israelis, given that legitimate institutions to resolve claims between these two groups are lacking.

That tree planting serves as powerful evidence for land claims is underscored by the restriction on tree planting by certain groups (such as women, tenants, and migrants) and by the failure of agroforestry programs that do not take this tenure aspect of trees into account. Trees are valuable for land tenure claims because they make the "right" evidentiary connections among the physical, social, and cultural realms. Tree planting also suggests the utility of other forms of evidence that link these same realms, as is illustrated in the Mozambique and Zuni cases presented later in this article. Schroeder's (2000) work in The Gambia highlights the temporal and spatial dynamics of tree ownership and claim, particularly between men and women. Such dynamics are important to the interpretation and reinterpretation (over time, by different actors) of the readings of landscapes, and hence to making (and remaking) different arguments.

Planting economic trees can be one way to make an argument for claim. Another, even more pervasive, means of creating evidence of occupation and thus claim is by clearing land. This practice is also of great concern for environmental conservation. Deforestation as a form of evidence is widespread in part because it is so effective. In one sense, the more lacking local to national institutions are for adequately treating evidence (claim, dispute resolution), the greater is the need to make a strong visible argument for claim, in order to preempt, to

the degree possible, the likelihood of a counterclaim and therefore the need for an institution to resolve a dispute. Brazil's grand colonization schemes in the Amazon provide a well-known example of this phenomenon. In spite of the government having provided settlers with land titles, in some cases settlers have cleared much more land than they can cultivate in an effort to secure their claim (Fernside 1986; Postel 1988). Other examples of clearing land to create evidence of occupation where effective institutions are lacking can be found in the Philippines (Uitamo 1999), Uganda (Aluma 1989; Mulley and Unruh 2004), Cameroon (Delville 2003), Zambia (Unruh, Cligget, and Hay 2005), and Sierra Leone (author's fieldwork: Unruh 2005).

Land clearing is one way that adaptation between formal and informal tenure systems may occur, since this form of evidence fits with a concept contained in formal law—that of occupation. That this feature of adaptation can result in land degradation reveals the negative aspects of adaptation if it operates in a one-sided fashion. On the other hand, if formal law generally held other forms of landscape-based evidence to be as important or more important than "clearing to claim," would this reduce the need to pursue such an arduous form of evidence (clearing) when other forms would do?

Delville (2003) notes the derivation of evidence (informal pieces of paper) and procedures that attest to land transactions in several countries (Rwanda, Ivory Coast, Benin, Senegal) in the absence of institutions and laws to handle such evidence (also Andre 2003). This absence, however, does not prevent such evidence from having great utility as an informal argument, a way to "make the case" for the existence of rights (Deville 2003). In effect such pieces of paper participate in the translation of landscape evidence–boundary represented in pieces of paper, and witnesses whose signatures attest to boundary location. Lund has observed that negotiation plays a key role in land claiming and adjudication and that a variety of actors are engaged, as "all sorts of tactical and strategic manoeuvres [sic] that affect the outcome in terms of changing, transforming or solidifying a land claim" (Lund 2002, 18) are pursued. Such maneuvers, strategies, and assertions, in attempting claim or defense of claim without using institutions, are based on various forms of evidence attesting to the assertion, or supporting the strategy, whether this be continued use and occupation, a receipt of purchase, membership in lineage or other group, or testimony of authority figures, friends, or neighbors.

What tree planting, clearing to claim, and the rendering of pieces of paper have in common in a tenure context is that they can come about due both to the absence of effective institutions regarding land and to the relationship between tenure security and evidence. The recognition of the role of informal legalities in the absence of institutions is not new. A significant body of literature focuses on law, culture, and society issues that deal with land claiming and dispute settlement without courts, order without law, law as social process, the "shadow of the law," and folk law (Moore 1973, 2000; Ellickson 1991; Renteln and Dundes 1995; Nader 1997; Delville 2003). Therefore the real utility of such evidence is that it creates an informal "legal discourse" (Blomley 1994) of claim based on what is commonly thought to be legitimate and workable forms of evidence of claim.

Adaptation or Evolution?

The adaptation paradigm highlights the evolutionary nature of change in both customary and formal tenure systems as these adapt to each other, an approach that is significantly different from the evolutionary theory of land rights (Demsetz 1967; World Bank 1989) that Platteau (1996) effectively critiques for sub-Saharan Africa. The evolutionary theory holds that population increase results in land scarcity, change in land values, increased uncertainty, and conflict; as a result, the populace demands and the state delivers more secure property rights via title. By using population increase and land scarcity to be its primary drivers, the theory assumes that the evolution of customary property rights occurs in isolation from interaction with formal tenure systems, which is the central theme of the adaptation paradigm. Moreover, the evolutionary theory is problematic for a continent as diverse as Africa, and its evolutionary trajectory operates in isolation from the effects of pervasive socioeconomic convulsions that dramatically change population-land scenarios in parts of the developing world. These include famine, armed conflict (often over land), forced dislocation, and subtractions of people from the land-labor nexus via endemic diseases such as malaria and HIV/AIDS.

As a result, land scarcity is not the only way, or even the prevailing way, that land conflicts are generated in many locations. Platteau (1996, 38) notes that "there seems to be an emerging consensus that several key predictions depicted [in the evolutionary theory] typically fail to materialize." Of particular relevance is the low level of trust that many customary populations can have toward the state regarding a number of issues, but especially land, often for historical reasons. However strong the response by the state for the provision of the necessary security via institutions and title, trust in these

can frequently be low, and as a result so will their effectiveness (Platteau 1996). Moreover, the evolutionary theory assumes that customary landholders do not innovate or derive solutions to problems and are essentially powerless, which of course is not the case (Delville 2003). Thus, although both the adaptation paradigm and the evolutionary theory involve change over time, the orientation of the two are distinct, and this article focuses on the former.

The Evidence Domain

The Legal Heritage of Land Laws

Legislation imported to colonies by European rulers have an enduring legacy in developing country laws, land laws in particular, and play a primary role in the ongoing disconnection between formal and informal approaches to tenure (De Moor and Rothermund 1994; McAuslan 2000; Okoth-Ogendo 2000; Home 2003). Even colonies that have enjoyed several decades or more of independence have usually retained the "legal heritage" left by their colonial rulers (De Moor and Rothermund 1994; see also McAuslan 2000; Okoth-Ogendo 2000; Joireman 2001). Africa provides compelling examples (McAuslan 2000; Okoth-Ogendo 2000), as do the Americas (Shattuck 1991; O'Brien 1998; Coates 2000), Asia (Frykenberg 1969, 1977; Conrad 1994; Rothermund 1994; Slaats 1994; Ghimire 2001), and the Middle East (Khamaise 1997; Strawson 2002; Home 2003). The following discussion regarding evidence law draws from this legal heritage (De Moor and Rothermund 1994; Kollewijn 1994; Reutlinger 1996; Dennis 1999; Stevens and Pearce 2000) and attempts to articulate some of the more important aspects of evidence law, and how these intersect with customary evidence.

The links between developing country formal legal reality and Western law is significant, and likely to get stronger, particularly in some regions. McAuslan (1998, 525) notes that for Africa

> [i]ssues related to land reform in Africa are particularly relevant at this time, for a number of reasons. In the first place, the twin emphases of donors, led by the World Bank, on "good governance" and the market economy as the keys to social and economic regeneration in Africa are increasingly seen as necessitating a greater reliance on legal forms and a legal culture similar to those operating in Western, market-orientated economies; conscious moves to adapt legal and judicial systems to that end are thus increasingly part of aid programmes. Secondly, land reform, while never off the African reform agenda as advanced by the donor community, is itself increasingly presented as being a candidate for legal—that is, Western-type legal—solutions.

A broadly similar situation exists on the Indian subcontinent and in the Caribbean (McAuslan 2003). In this regard the technical legal phenomenon known as the "reception clause" is important, particularly in former British colonies. "Throughout colonial Anglophone Africa, the reception clause provided that, as from a specified date, the common law, the doctrines of equity and statutes of general application applying in England as on that specified date would apply in the particular country named in the reception clause" (McAuslan 2003, 60). Although different reception dates attend to different countries, for the seventeen countries to which this applies in Africa all reception clauses were confirmed in all cases at independence. As well, these reception clauses have continued to survive and be reconfirmed in every constitutional change in all seventeen countries since independence. "In some respects indeed, the influence [of received law] has grown since independence; with the collapse in so many countries of a system of national law reports, judges rely on precedents from English and South African law reports which continue to be received in the law court libraries in lieu of anything else" (McAuslan 2003, 61).

McAuslan (2003, 53) further notes that generally for the developing world the lack of "a national legal literature of some intellectual depth and maturity" (different from the "national law reports" noted above) has hindered the development of a relationship between laws and social realities thereby continuing the influence of European law, and has hindered attempts at localization of these laws.

One feature of this context is the notion of "adverse possession" in which occupation of the land in question for a period of time (registered or unregistered) can lead to the acquisition of title. Therefore, given the extended time that many if not most customary communities have occupied their land(s), adverse possession would in one sense appear to be a primary way for customary claim to intersect with formal law. But proving adverse possession relies on the necessary evidence attesting to the fact of occupation for the period of time in question (Garner 2000; Stevens and Pearce 2000; Robillard, Wilson, and Brown 2002). Hence the utility of adverse possession in this context hinges on the discovery, relevancy, and presentation of evidence so that it is argumentative; in other words it has "persuasive power."

Legitimacy in Adjudication

The notion of legitimacy, as a fundamental objective of Western evidence law, is particularly suited to the treatment of the evidence landscape in the context of the disconnection between formal and informal tenure systems. As Dennis (1999, 36) notes, regarding the overall intent of evidence law, "if official adjudications are to succeed in gaining acceptance and respect as authoritative decisions, it is essential that they are, and are seen to be, legitimate." This form of legitimacy in law (termed "legitimacy of decision") is different from factual certainty of decision, regarding true facts of a dispute. Legitimacy of decision seeks legitimacy from the parties concerned and society at large regarding notions of integrity, acceptability, and moral authority. In civil matters particularly, "the aim of adjudication is to settle disputes within a framework of economic, social and political relations that attaches considerable value to self-determination" (Dennis 1999, 42). Thus in civil adjudication, such as cases involving land, fairness of procedure and fairness in treating the parties in a litigation can assume greater importance. This is because intent of the civil process has as one priority, the restoration of peace and equilibrium in society by the acceptable settlements of disputes. In this regard the parties concerned must be free to collect and present any evidence that they believe to be of probative value in order for the procedure and resulting decision to be regarded by the parties as legitimate (Dennis 1999).

Such legitimacy is not unrelated to formal admissibility of evidence. With the exception of where exclusionary rules prevail, relevance is the fundamental test of admissibility in Western evidence law (Emanuel 1996; Dennis 1999; Murphy 2003). Where there are variations in definitions of relevance, they tend toward the understanding that "there must be a 'probative relationship' between the piece of evidence and the factual proposition to which the evidence is addressed. That is, the evidence must make the factual proposition more (or less) likely than it would be without the evidence" (Emanuel 1996, 12; also Dennis 1999). The purpose behind such a broad test of admissibility is, again, to provide opportunities for parties to an adjudication to present their own evidence, thus promoting legitimacy of decision and procedure in the eyes of the claimants (Dennis 1999). Thus the adversary system, as a method of formal adjudication in common law whereby the opposing parties in a conflict are free to gather, interpret, and present evidence for their claim (Reutlinger 1996), seeks to engage this legitimacy.

McAuslan (2003) notes the specific connection between such legitimacy and the legal domain in Africa, observing that the "connection between land law and political stability was made an important basis for the system of indirect rule or rule through chiefs which characterized British colonial rule in Africa and was not entirely absent from other colonial systems" (McAuslan 2003, 70). And Cousins (1996, 49–50) notes a similarity to traditional African law: "the objective of traditional courts or tribunals in Africa was to reconcile the disputants and maintain peace, rather than to punish the wrongdoer . . . [such] approaches tend to be process-oriented, focused on the need and desires of the people, rather than the results. Values of respect, honesty, dignity and reciprocity are stressed."

In his critique of the evolutionary theory of property rights, Platteau (1996) articulates at length the relevance of legitimacy as a primary problem between African reality and the theory. Such a legitimacy problem can manifest itself in various ways, ranging from inertia on the part of smallholders regarding state-related land activities, to violence (Platteau 1996). In particular "if people do not consider the new system of (land) rights to be legitimate, and refuse the reshuffling which it implies, they may succeed in blocking the normal functioning of the legal system. This can be especially true in young nations with 'soft' states as in Sub-Saharan Africa" (Platteau 1996, 61).

Customary Evidence, or Rights?

A distinction between the utility of evidence, as opposed to rights, is important for five reasons. First, because of the large variation in customary tenure forms and formulations (ethnic, geographic, religious, etc.) within any one country, focusing on a few broad customary tenurial patterns (rights) connected to simple forms of evidence (e.g., group membership) will not adequately engage the disconnection. Second, this same variation also means that formal law will not be able to embrace, and thus make legal, all of this variation in ways that are meaningful to the different customary structures, and still be operable as a formal, widely applied, and uniform system. And indeed the codification of customary law can in some cases capture and emphasize ethnic differences, as Maganga and Juma (1999) have shown for Tanzania. Maganga (2003, 60) notes "the activities of one group undermine those of another, and no one group is willing to adhere to the cultural practices of another." As an example, Ethiopia has more than seventy separate languages with a larger number of distinct social units.

Third, attempts at incorporating customary laws and other structural aspects of indigenous tenure regimes into formal law find that much in customary tenure can be fluid, reflecting variation and change in a variety of social, political, and economic variables, including capricious decision making by leadership (Roberts 1994; Guadagni 2002; Unruh 2002b). Elias (1994) sees this very uncertain formal legal environment as a fundamental obstacle to reducing customary laws to written codes. In a discussion of customary trends in comparative land law, Guadagni (2002, 8) argues that to "preserve customary law in any codified or restated form" would so rob this law of its flexible utility, that codification would essentially kill it. The goals of formalized property laws are different. Such laws are much less subject to change, hence their predictability, wide application, and value in operationalizing capital and other aspects of property associated with land as a commodity (Unruh 2002b).

Fourth, some primary forms of rights, held as quite valuable by customary groups, are very difficult to incorporate into formal law. Rights to land based on tribe, ethnicity, lineage, opposition to a particular group, or position in a customary hierarchy can have large meaning within customary tenure regimes but can be of limited or no utility in formal tenure regimes. In fact, such rights may directly contradict the goals of formal tenure systems that elevate notions of wide applicability and equity in the context of individual rights. This is a significant problem in attempting to legalize rights attached to groups. Finally, conflicting and contradictory rights and laws, both between different sets of customary law and between customary and formal laws is a large and difficult problem (Unsworth 1994).

These issues highlight the importance of understanding that usable evidence coming from customary life exists within a domain of human interaction with the landscape. From this interaction many possibilities can be drawn that attest to the veracity of the interaction (corroboration), and hence the existence, or perceived existence, of rights for such interaction to occur in the first place. And Western evidence law is quite compatible with this. Dennis (1999,12) describes the law of evidence as not "a tidy system of clearly defined rules" but as "indisputably untidy and extremely complex," in which nearly everything that is relevant is admissible. Robillard, Wilson, and Brown (2002) and Robillard and Wilson (2003) describe the formal evidence of boundary location and control in a land and property rights context, and how a very wide variety of evidence—including evidence that is centuries old and embedded in historical and cultural landscapes—is used in dispute resolution, surveying, and resurveying.

Illustrative Cases

Three examples in different circumstances illustrate the potential contribution of the evidence landscape to managing the disconnection between formal and customary tenure regimes: Mozambique, East Timor, and the Zuni lands in the United States.

Mozambique

Mozambique in the early 1990s was recovering from a twenty-three-year civil war in which more than 40 percent of the national population was dislocated. As approximately six million people were returning to reoccupy or seek new lands, the government realized the severity of the problem created by the prevailing land law and its emphasis on documented title for all landholders (Tanner 2002). Postwar land tenure in Mozambique engages a particularly difficult national issue, which is the problematic relationship between the many relatively large commercial interests, and the indigenous or smallholder sector. These two groups frequently claimed the same land, but under different regimes of authority, legitimacy, and proof.

The problem, more specifically, became one of defining what was regarded as legitimate evidence by whom. Such an evidentiary problem in a postwar context becomes particularly difficult because the prevalence of weapons can quickly lead to violence in land disputes. The research on the spatio-evidence problem (Unruh 1997) examined customary evidence according to its social and cultural-ecological character, and found that a shift in landscape-based evidence subsequent to the war had the effect of selecting for forms of customary evidence that were more compatible with the formal tenure system (regarding occupation), particularly agroforestry trees (Table 1). Such trees became singularly important because they were easily and strongly tied to social evidence (particularly historical social evidence), and because they complied with the widely known definition of occupation in formal law (Mozambique Land Law 1997; MPPB 1997; Kloeck-Jenson 1998; Norfolk and Liversage 2003; Pancas 2003). Forces associated with the war and the tenurial disconnection between customary, migrant (war displaced), and formal tenure acted to put even greater weight on older agroforestry trees compared to younger trees and other forms of evidence (Unruh 2002a). This suggests that even in situations where formal and informal institutions re-

Table 1. Percentage of village sets mentioning social, cultural-ecological, and physical evidence

	Village set		
Evidence list	Western Nampula ($n = 200$)	Monapo ($n = 136$)	Montepuez ($n = 208$)
Social evidence			
Village elders	13	10	0
Local leaders	25	10	0
Local organization	3	0	0
Testimony family	16	11	0
History of occupation	7	2	0
Knowledge of community area	3	0	0
Testimony neighbors	36	45	3
History of economic trees	1	2	1
Cultural-ecological evidence			
Trails	4	3	1
Cemeteries	3	7	1
Location roads	4	0	0
Sacred areas	1	3	0
Ruins, old village	3	0	0
Economic trees	86	93	90
Tombs	15	7	0
Field boundaries	3	2	15
Location old crops	0	0	1
Physical evidence			
Local terrain differences	5	5	4
Very large trees	11	5	48
Location mountains	4	6	5
Termite hills	5	5	28
Rivers	8	11	28
Soil type	31	26	61
Near cotton land	0	3	0
Boulders	1	5	1
Location hills	0	1	8

Source: Unruh (1997).
Note: n = total number of households in the village set.

garding property rights are most disrupted (subsequent to war), agroforestry trees as legitimate evidence can be or can become quite strong, particularly relative to other forms of evidence.

The results of the research were incorporated into the Mozambican Land Commission's deliberations on land policy reform for the country, including the admissibility of various customary forms of evidence attesting to occupation. In the new land law such forms of evidence are now not to be prejudiced by or inferior to rights received through a formal written title (Mozambique Land Law 1997; Negrao 1999; Norfolk and Liversage 2003). The reasons for the government's desire to incorporate customary evidence into the law were to facilitate (a) peace in the country given that most smallholders returning to lands did not have documented evidence; (b) joint ventures between smallholder communities and investors due to an empowered position of smallholder communities (elaborated on in the following text); (c) conflict resolution outside of the court system (also elaborated on below); and (d) reintegration onto rural lands so as to encourage agricultural recovery and improvement in food security. Additional important rights (other than those pertaining to evidence) were included in the revised law, but such rights nonetheless rest on proving occupancy or other attachments to location.

The enhanced position of customary evidence in the new Mozambican law is linked to a debilitated set of land and property institutions subsequent to the war, including a weak court system (MNA 1999; Norfolk and Liversage 2003; Pancas 2003). This relationship between the greater role for customary evidence and weak formal institutions is important. From the Mozambican government's view, the intent of making evidence to rights in land and property clear and strong in the law is to make a substantial contribution to the extralegal resolution and avoidance of conflicts, particularly between small and largeholders (Garvey 1998; MNA 1999; Norfolk and Liversage 2003). Although not expected to preempt all conflicts, such an arrangement means that investors (foreign and national) need to negotiate directly with in-place local communities. This occurs due to the empowered position of local communities via the rights attested to by evidence of occupation, and the resulting community participation requirement in determining what areas are or are not really "open" (Kloeck-Jenson 1998; USDS 2001; de Wit 2002; Hanlon 2002; Tanner 2002; Norfolk and Liversage 2003; Pancas 2003). This position is given strength because the current land policy states that occupation according to customary evidence constitutes one way in which the use right attributed by the state is acquired without the need for documents (Hanchinamani 2003). Such evidence and rights were not seen as new, and did not have to be authorized; the law recognized them and offered them full legal protection (Mozamibique Land Law 1997, article 12; Tanner 2002).

The Mozambique case looked at three sets of villages in the provinces of Nampula and Cabo Delgado totaling 544 households. The three sets comprised different proportions of war-displaced migrants: in western Nampula these migrants were 10 percent of the population, in Monapo 23 percent, and in Montepuez 73 percent. The sampling strategy is described in Unruh (2002a). Table 1 illustrates that the different village sets prefer different types of evidence, with available evidence in this case categorized into social, cultural-ecological, and physical. Social evidence is oral or

testimonial and is provided or confirmed by members of a community. This type of evidence relates to historical occupation, and ties individuals, households, and land to local communities. Social evidence can corroborate physical, cultural-ecological, and other social evidence. Cultural-ecological evidence is defined as the physical pieces of evidence that exist due to human activity on the landscape: agroforestry trees, current and old field boundaries, tombs, cemeteries, and so forth. This evidence best demonstrates occupation and use, and can corroborate social evidence and other cultural-ecological evidence regarding human activities relevant to the land. Cultural-ecological evidence, however, is problematic exclusively on its own, and to a significant degree needs corroborative social evidence for meaning. Physical evidence is comprised of naturally occurring terrain features that are easily observable to anyone, demonstrate relative familiarity with an area, and usually corroborate no other category of evidence.

Table 1 illustrates that the western Nampula set of villages favors social evidence more than do the other village sets; the Montepuez set favors physical evidence and the Monapo set favors no one evidence type over another, having more of a balance between evidence categories. The differences in evidence type for the three village sets reflects what evidence can be accessed given different situations in different places following the war. The Montepuez villages are perhaps most noteworthy. Because most inhabitants there are migrants from elsewhere due to the war, and thus do not possess the same community-land connection or community cohesion as do households within the western Nampula or the Monapo village sets, availability of social and cultural-ecological evidence is lower.

For the three village sets in the study, the presence of agroforestry trees is the single most important piece of evidence for defending or asserting rights to land, regardless of the average number of trees per smallholder (Table 2). Although nearly all households consider trees as quite valuable evidence, many do not actually possess the evidence. In Montepuez very few possess significant numbers of trees, primarily because migrants are prevented from planting trees on lands they have been temporarily allocated by the local landowning communities.

The Mozambique case illustrates several points. Institutions for dealing with evidence in disputes are important, however their absence does not result in a reduced role for evidence. On the contrary, reduction in the presence, effectiveness, and legitimacy of institutions (formal and informal) in Mozambique meant significant reliance on certain forms of evidence most able to connect the social and cultural with the visible physical (Unruh 2002a). The utility of strong evidence in the absence of institutions has not gone unnoticed by the Mozambican government, which has made forms of customary evidence legal in formal law with the intent of avoiding or preempting as many conflicts as possible (Unruh 2005). The different circumstances experienced by the village sets can result in value placed on different forms of evidence. This highlights the fluid nature of the evidence domain, reflecting social circumstances and relations, and suggests that admissibility of such evidence in formal law be as unrestricted as possible. Therefore, operationalizing the evidence landscape, in this case making the connections between fact (observations) and argument (inferences, interpretations, and conclusions drawn from fact), has focused on the combination of specific physical and social features, and the interpretation of these as effective "occupation." This type of interpretation is made formally legal in the new law, with equal weight to title.

Table 2. Summary of variables regarding agroforestry trees as evidence

	Village sets		
Variables	Western Nampula	Monapo	Montepuez
Agroforestry trees as important evidence (%)	86	93	90
Average number of trees per household	25	39	3
Possess trees (%)	59	69	16
Trees provide a "guarantee" of not losing land (%)	99	99	94

Source: Unruh (1997).

Note: Between-village set average values are significantly different at the 0.05 level between all three village sets for "Agroforestry trees as important evidence" and for "Average number of trees per household" for the western Nampula and Monapo sites; and for "Possess trees" between Montepuez and the other two sites.

East Timor

The 1999 conflict in East Timor resulted in the destruction of almost all documents relating to land and property, such that current use of titles and other documents as evidence of ownership and access is extremely difficult (Marquardt, Unruh, and Heron 2002). Moreover, most of the rural land held by customary communities was never titled (Marquardt, Unruh, and Heron 2002). The current East Timorese government, in acknowledging the tenurial difficulties, is presently researching local rural and urban realities as well as national and international issues regarding lands, so as to

inform the derivation of national property rights laws (Marquardt, Unruh, and Heron 2002; USAID 2003; Nixon 2004). A priority in the effort is to minimize the tenurial incompatibility between rural customary landholders and commercial and state interests. Local customary evidence figures prominently in this research, and includes significant landscape-based cultural geographic evidence (Table 3; see Unruh 2003; Nixon 2004).

What the East Timor case reveals is both an enhancement of evidence as a medium of interaction with a decrease in the presence of effective institutions, and the need to leave the evidence domain as unstructured as possible in formal law. Table 3 illustrates the general agreement regarding what constitutes legitimate evidence between those holding state administration positions at various levels, and members of two customary communities. Prior to the violent departure of the Indonesians and the accompanying social upheaval, the only formal state evidence of ownership was an Indonesian land title (Fitzpatrick 2002). Subsequent to the upheaval and with the lack of effective institutions in place, the general agreement in evidence (Table 3) presents a potential opportunity for future East Timorese land law to utilize such compatibility in lawmaking. At the same time, the variability in what the three samples regard as "very important" to "very unimportant" evidence suggests caution in the establishment of formal evidence rules or norms that bar admissibility based on factors other than relevancy, that value some forms of evidence over others for reasons apart from probative value, or that unduly constrain, apart from ethical concerns, the way evidence is collected, discovered, or researched (see Bailliet 2003 for a similar issue in Guatemala). Significant efforts are underway in East Timor to mesh formal and customary tenure systems, with priority placed on evidence as a medium of interaction between the emerging systems (Unruh 2003).

In this case the operationalization of the evidence landscape involves the lack of a formal system, together with a diminished role of the customary system in areas that suffered dislocation and transmigration, and the enhanced role of a "what-works" set of evidence for migrants and local populations overwhelmed by migrants. Such a situation results in surprising agreement between customary evidence and what local state officials view as legitimate evidence. Such agreement appears to be continuing, and what works on the ground is currently becoming incorporated into formal law as evidence. This allows formal law to engage or "grow into" what people are already doing, such that evidence that is already "operationalized" informally then becomes formal.

The Zuni

In an example from the American Southwest, the Zuni Nation has successfully pursued three major court cases against the American government for damages to Zuni claimed lands and confiscation of lands in the course of western settlement (Ferguson and Hart 1985; Hart 1995). This was accomplished without title as evidence (Hart 1995). This example, occurring as it did in a developed country, illustrates the degree to which the evidence landscape can be used in land claims and dispute resolution between formal and informal tenure systems. Although in a number of ways the case and the evidence are not completely replicable in many developing country circumstances, there are significant parallels in terms of land rights, development, and marginalization, and the point is to demonstrate the large utility of the landscape to act as an archive of evidence, and as an example of the many ways such evidence can be rendered.

In the Zuni case the evidence landscape used was largely historical, and began with researching evidence of physical landscape change connected to large-scale tree cutting and other land use by white settlers on Zuni claimed land, and the subsequent erosion and changes in fluvial geomorphology (Hart 1995). Evidence was collected using soil coring that revealed biophysical landscape changes connected in time to social processes of tree cutting, settlement, and the traditional land-use activities of the Zuni. The effort linked historical physical geography with testimonial evidence from the Zuni, and expert testimony from the fields of anthropology, archeology, ethnography, and history that attested to where, when, and how events took place on the landscape (Hart 1995). The amount of time spent collecting and correlating all of the evidence, including map production (Ferguson and Hart 1985), ultimately proved quite powerful, with the tribe in one case winning a $25 million settlement, in another land access, and in a third the establishment of a $25 million trust (Hart 1995). In the Zuni example the broad question was the same: What spatially-based evidence is translatable from reality and is of meaning in both Zuni (i.e., correlated with social evidence) and formal law contexts?

Extensive field data exist relating to the evidence landscape of the Zuni case (Ferguson and Hart 1985; Hart 1995); for illustration, I mention a few types here. Stauber (1995, 137) describes the "recapturing" of the landscape in the Zuni case using old U.S. Government

Table 3. Administration and village rankings of evidence for the East Timor study

Form of evidence	Key persons administration ($n = 101$, data in percent)				Emera village (conflict) ($n = 31$, data in percent)				Manatuto village (less conflict) ($n = 30$, data in percent)			
	Very important	Important	Not important	Very unimportant	Very important	Important	Not important	Very unimportant	Very important	Important	Not important	Very unimportant
Trees planted on the land	51	45	4	0	23	65	13	0	43	57	0	0
Terraces	44	51	5	0	10	58	32	0	7	77	17	0
Irrigation systems	33	47	18	2	10	55	35	0	20	73	7	0
Houses and buildings	30	52	18	0	23	61	13	3	30	60	10	0
Clearing land from forest	20	38	40	1	16	23	61	0	3	70	27	0
Fences	25	57	17	1	29	52	16	3	43	50	7	0
Rock markers	33	50	15	2	26	55	16	3	27	63	10	0
Paths	24	37	35	5	13	45	42	0	0	57	40	3
Divisions around rice fields	23	50	26	1	23	52	23	3	7	87	7	0
Oral accounts of Katuas, supporting traditional claims	48	43	8	1	39	52	10	0	60	33	7	0
Oral accounts of other witnesses	39	44	16	0	19	39	32	10	47	20	30	3
Inheritance claims	43	49	6	2	13	42	42	3	23	67	10	0
Allocation by traditional leaders	30	53	15	2	35	52	13	0	50	43	7	0
Formal certificate issued by government department	42	40	14	3	13	71	16	0	57	40	3	0
Long-term use of previously uncultivated land	22	38	13	27	10	29	58	3	10	60	27	3
Medium/short-term occupation	9	30	53	9	0	13	77	10	10	23	50	17
Agricultural lease issued by government department	18	38	42	1	0	42	39	19	10	47	37	7
Indonesian letter of recommendation for land ownership	16	37	43	4	10	48	39	3	7	63	23	7
Receipt of tax payment	20	49	29	2	16	35	42	6	0	67	30	3

Note: The villages of Emera and Manatuto are located in the northwest and north-central parts of the country, respectively.
Source: Nixon (2004).

surveys. This approach (which has a parallel in colonial occupation and administration of lands in the developing world) used General Land Office (GLO) surveys made between 1880 and 1912. Both the plat maps and the accompanying field notes comprise a large-scale historical geography providing particular information over a 36-mile^2 area at a single point in time. Approximately 2,000 pages of GLO survey notes and maps were examined by the case, and data compilations were made along criteria determined to be evidentiarily relevant (Stauber 1995). These included both environmental criteria (landform characteristics, soil type and quality, vegetation species, and condition, including quantity and quality of timber species, quantities of minerals, water resource characteristics, drainage characteristics) and cultural criteria (soil and water control features, agriculture and agricultural features, grazing and grazing features, architecture, transportation networks, industrial operations, and ethnographic and historical information dealing with attitudes or activities of the time). In addition, agricultural field polygons, peach orchards, buildings, and corrals for the entire area of concern were extracted from the GLO plats and placed onto a single scaled map. This information was compared with air photos from the 1930s, 1950s, and 1970s, together with field measurements and interviews with Zuni informants, archeological fieldwork, and historical record research, to compile a record of occupation and change over time (Stauber 1995). This approach allowed specific changes ("damages" in the court cases) to be located and calculated over time. Thus the combination of the GLO surveys, aerial photography, and Zuni testimony proved quite valuable in that they dealt with information regarding who was using the Zuni landscape, what resources were present, and the quantity and condition of those resources at the time of the survey. Zuni witnesses then compared this information with other current and historical data to calculate landscape change (Stauber 1995).

Zuni use of oral tradition as attached to landscape was also used in the litigation. Wiget's (1995) work on how to treat oral tradition and attach it to landscape so that it has evidentiary value has application beyond the Zuni case. "The problem of how to substantiate claims that depend on testimonies from oral tradition is an especially serious one for traditional peoples for whom large spans of their history and large areas of their domain lack written documentation, and whose conceptions of history do not always conform to Western notions" (Wiget 1995, 173; also see Eggan 1967).

The analysis of oral tradition attached to landscape was looked at within the criteria of validity, reliability, and consistency. In this context validity refers to "the degree of conformity between reports of the event and the event itself as recorded in other primary source material" (Hoffman 1984, 70), such that validity can be a measure of corroboration (Wiget 1995). Reliability is "the consistency with which an individual will tell the same story about the same events on the different occasions" (Hoffman 1984, 70), and, as such, reliability is an outcome of replicability (Wiget 1995). Consistency is defined as "the degree to which the form or content of one testimony conforms with other testimonies. It differs from reliability by being a measure of conformity between, rather than within, traditions" (Wiget 1995, 179). Consistency as attached to landscape deals with the description (from multiple persons) of customs or practices that involve the landscape. In the Zuni case this included the method of plugging gullies by setting rows of cedar branches and brush weighted with rock in a trench across a watercourse; the use of native irrigation techniques, including small diversion dams and wooden shunts; dry farming techniques using a digging stick; the siltation of small dams due to overgrazing and erosion, and the replacement of good grazing grasses by noxious weeds due to overgrazing (Wiget 1995).

Wiget (1995) also pursued the development of thematic coherence in Zuni testimonial evidence regarding the landscape, in which certain narratives are created and interpreted regarding events and causation. The loss of draft horses as part of the government's destocking policy toward the Zuni led to a dependence on machinery, which became too expensive and time-consuming to use and as a result drove many Zunis out of farming, with repercussions for the landscape. As well, fencing led to overgrazing, which in turn led to erosion and then to siltation of many small dams. Fencing also prevented the free movement of stock, which made herding practices more difficult. Silted dams, changed watercourses, erosion, change in floodplain fields, and use of machinery decreased the extent and effectiveness of farming, with visible outcomes on the landscape (Wiget 1995). Thus, for this approach to testimonial or "parol" evidence, techniques of studying oral history and folklore are brought to bear on the rendering of evidence.

In addition, testimonial evidence also was used to corroborate other forms of evidence. Wiget (1995) accomplished this by isolating the provision of testimonial evidence from other forms of evidence, until they could be corroborated later, so as not to influence the provision or recording of testimony. Part of the corroboration effort involved fieldwork subsequent to gathering testimonial evidence, which was conducted to verify the locations of

a sample of land use sites involved in the testimonies (Ferguson 1995). Photography of these sites produced additional evidence, as did documentation and maps produced from the testimony of Zuni elders (O'Neil 1995). In total, 232 land use sites were documented, from which maps and boundary areas were derived attesting to forms of land use over time, much of which was corroborated with the biophysical analysis of landscape change. Additional approaches to accessing the evidence landscape in the case were also used. Geological corroboration of native traditions was used, based on Delaguna's (1958) work; landscape features relevant to folk tradition as facts of history were used based on Prendergast and Meighan's (1959) work; and Boyden (1995) used the manifestation of religion on the landscape as evidence.

The Zuni case also illustrates the importance of the interpretation of landscape features into meaning used as, or in, evidence. An important argument in the U.S. Government's case was that extensive erosion was well underway prior to white occupation of the area. Evidence was provided from an array of historical documents (early explorers, Spanish era documents, and scientific sources), as evidence that the prevalence of arroyos (as indications of erosion) was widespread prior to white settlement (Monson 1995). In rebuttal the plaintiff presented as evidence the history of the word *arroyo* as it changed meaning in Spanish and English over the course of four centuries (Monson 1995). Early accounts and use of "arroyo" indicated a stream, river, or other small volume of water. Later usages, particularly as the word entered English vernacular and English dictionaries, included the concept of "dry gully," which, prior to 1888 did not exist in its definition (Monson 1995). The careful study of the meaning of arroyo helped contribute to the success of the Zuni claims (Monson 1995). The illustrative point here is that translation of landscape features into evidence connects importantly with meaning, and can lead to important differences in interpretation, and hence argument.

The Zuni case highlights three points. First, that the potential for the evidence landscape is quite large—significantly larger than agroforestry trees and clearing to claim. Second, that techniques for reading the landscape and rendering evidence from the landscape that intersect precisely with formal law can be developed. And third, that interpretations and reinterpretations of the meaning of cultural geographic landscape features can play a significant role. This interpreting is an important part of both cultural geography and the treatment of evidence as an argument in the Western legal tradition. In this case, operationalizing landscape-based evidence meant attending to the very developed presence of Western law, and hence being as "scientific" as possible by employing various techniques of archaeology, ecology, fluvial geomorphology, testing of thematic cohesion in testimonial evidence, and corroboration between different evidence.

Conclusions

Operationalizing the Evidence Landscape

A primary point of this article is that established approaches within geography for reading landscapes and rendering evidence for formal legal purposes are essentially the same. The operationalization of the evidence landscape proceeds from landscape observations to logical interpretation, inferences, and then conclusions, to produce evidence or arguments. Murphy (2003) describes the process of logical conclusions drawn from observations as fundamental to notions of evidence in a variety of both Western and non-Western legal traditions. The legal tools of such logical conclusions in formal law include syllogistics, philosophies of cause and effect, cause and effect as a basis for inference from evidence, probability, and, notably, semiotics (L. J. Cohen 1977; Schum 1994; Murphy 2003). The argument here is that cultural geography and in particular the "morphology of landscape," together with their "fit" with how formal evidence law works, and the role of such evidence within customary communities, are what best defines the functional composition of the evidence landscape.

This composition can be elaborated when understandings of formal evidence and the act of reading landscapes interact and influence each other. In the Mozambique case, formal legal notions of occupation held that economic trees were valuable evidence of rights, particularly in disputes between smallholders and commercial interests. Such trees served as popular evidence within the customary system and allowed for other forms of evidence (testimonial, historical, ecological) to be read from the landscape and attached to trees. As well, forms of evidence emerging from different readings of the landscape in Mozambique—ancestral burial locations, locations of rituals, and, in particular, testimony—served to intrude on formal law and also become legitimate evidence for claim. The result of this interaction is to contribute to the process of interpretation and logical conclusions drawn about evidence. In other words, operationalizing the evidence landscape is a process of bringing evidentiary meaning to representations of social relations about land, and from this

meaning produce an argument with regard to laws and formal institutions (Reutlinger 1996; Garner 2000), or in the absence of laws and institutions (Delville 2003; Unruh, Cligget, and Hay 2005), or in situations of hybrid tenure (combinations of formal and customary tenure) (McAuslan 1998; Okoth-Ogendo 2000; Platteau 2000; Toulmin and Quan 2000; Maganga 2003).

Where informal or customary legalities prevail, and effective formal institutions are largely lacking, or lacking in legitimacy, operationalizing evidence constitutes the making of an informal argument, with clearing to claim and planting economic trees common. In East Timor the collapse of institutions and the rejection of Indonesian law, together with the destruction of land titles and records, meant initially that the country existed almost entirely within informal legalities—including the absence of customary institutions in a number of locations. The result was that informal evidence as arguments for claim were pursued. Where formal legalities are more prevalent, stronger, and legitimate, as in the Zuni case, the logical conclusions reached exist within the context of laws of evidence, the fit between the different "reads" of the landscape, and specific types of legal evidence. Different types of formal evidence (demonstrative, forensic, traditional, etc.) are useful for characterizing the role, effectiveness, corrobability, and limitations in the construction of an argument. Garner (2000) identifies ninety-eight types of formal evidence. What evidence types within formal law provide, with regard to landscape-based evidence, is a more direct and concrete "translation" of customary reality into specific forms of evidence useful to formal law. Thus informal legalities can begin to adopt or read forms of evidence that conform to formal evidence types, such as hand-drawn maps, informally recorded agreements, and use of scientific (forensic) evidence (as in the Zuni case). For example, the fit between clearing to claim, planting economic trees, and demonstrative evidence is explicit.

Managing the Disconnection

The larger repercussions from the ongoing incompatibility between formal and informal land tenure in the developing world are well known. Less clear are approaches that can effectively manage this disconnection. Significant attention continues to be focused on the need to incorporate structural aspects of customary tenure (particularly rights) into formal law (Deville 2000; Platteau 2000). However the tenurial incompatibility continues to operate in a situation of overall "structural chaos" (Moorehead 1997, 1), where a certain "management" of the tenurial confusion that prevails needs to be considered, as opposed to attempting to bring order through formal law (for discussions of such management versus order through formal law, see Mathieu et al. 1997; Moorehead 1997; Delville 2000). The problem at this point in history for developing countries is larger and more problematic than just fashioning local notions of property into a set of uniform enforceable laws. It is now the added dilemma of attempting to connect in a meaningful way, in-place, formal, European-derived property laws (which will not be discarded given how they are favored by urban elites and the investment and donor communities) and customary laws and activities that are bound up in ongoing social relations about land, and that service important social needs that individualized title cannot replace (Unruh 2002b).

This article argues for a much more in-depth consideration of the role of landscape-based evidence to assist in managing the disconnection in tenure systems, as an overlooked domain of interaction between the formal and informal. Five ideas within this approach are most important. First, customary evidence is different from customary laws, rights, norms, hierarchies, and other structural components of land tenure systems. Evidence, particularly that attached to the landscape, is the result of day-to-day interaction with the physical environment. And although this interaction can itself be the result of, or be influenced by, the more structural aspects of a tenure system, spatially-based evidence has considerable utility due to its cultural meaning, visible physical characteristics, and attachments to other forms of social and cultural evidence. Second, because spatially-based evidence is the result of social relations embedded in landscapes over time, the evidence landscape is an archive of large potential for the collection and interpretation of relevant evidence. Third, the evidence domain optimally needs to exist as an unstructured field of interaction between formal and customary tenure systems, where all parties are able to collect, interpret, and present evidence that is relevant, without being constrained by rigid evidence rules or norms. This is important for legitimacy, and particularly so where social upheaval has occurred, and where large variation in land use histories; tenurial orders; and social, ethnic, religious, geographic, and economic groups are common. Fourth, the interpretation of landscape characteristics provides much in the way of useful evidence material that is different from a problematic set of customary evidence based on ethnicity, personal relation, lineage, and so forth. And importantly, it is different evidence from that based on social relations defined by opposition to another group (e.g., the Palestinian–Israeli land

question). Fifth, the parallel between the functioning of the evidence domain, the heritage of Western evidence law in the developing world (particularly Africa), and the subfield of cultural geography tied to landscape provides an opportunity to engage a rich and useful tradition in human-landscape analysis.

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