Temporal Scale and Qualitative Social Transformation at Chaco Canyon

Ruth M. Van Dyke

One of the strengths of the archaeological discipline is our ability to examine social transformations over the course of centuries or millennia. However, we rarely think about the ways in which temporal scale affects our interpretations of these processes. Transformative social changes look different when seen from the perspective of the *longue durée*, a human lifespan, or a single day. Although they clearly result from human actions, long-term, major social changes cannot be understood simply as additive concatenations of short-term shifts.

The issue of scale is partly behind Southwestern US archaeologists' difficulties in understanding the rise of sociopolitical hierarchy in Chaco Canyon, New Mexico during the Early Bonito phase, between the AD ninth and eleventh centuries (Fig. 1). Around AD 850, Ancestral Puebloans founded a series of small agricultural settlements — such as Pueblo Bonito — in Chaco Canyon. By AD 1020, Pueblo Bonito and some of its neighbours had become 'great houses' — formal, massive, monumental public buildings at the centre of a regional ritual complex. Tree-ring data enables Chaco scholars to reconstruct extremely detailed building sequences across these centuries, but we lack good models to help us think about the transformative social changes that accompanied and instigated

this architectural expansion. The problem has partly been one of temporal scale. In this paper, I argue that it is necessary to think about social transformations from the perspective of decisions made at the scale of a human lifespan, I present a model that can help us do so, and I use the rise of Chaco Canyon as a case study to illustrate my point.

Agency and social transformation

There are clear articulations and relationships among long-term processes, collective agency, and individual decisions. Archaeological snapshots across centuries or millennia allow us to describe major social shifts, but if we want to understand the motivations, decisions, and perceptions that drive transformative change, we need theory and models that help us to think at the scale of the individual, human life. Chaos theorists are familiar with the nested nature of scalar relationships in the physical world. For example, the coastline of California looks very different when viewed from a satellite, through the eyes of an individual walking along the beach, or from the perspective of a worm laboriously slithering through grains of sand. Yet these three scales are interrelated: they are nested versions of the same shape, and change in one involves change in all the others (Mandelbrot 1983). Similarly, archaeologists can look at a group of sites spanning several centuries, and we can see how the adoption of agriculture transformed small groups of mobile hunter-gatherers into large groups of sedentary farmers. However, this transition would have looked quite different to an individual living through some portion of these times. The archaeological *longue durée* (measured in millennia or in centuries) is like a satellite photo of the California coast: we see the big picture, but the fine nuances blur away. We should not discard our satellite photos, but if we want to understand the particular processes of erosion and sedimentation that are creating the coastline, we need to walk the beach, to examine the stratigraphy at a human scale. If we want to understand the motivations and issues involved in transformative social change, we need to think about the decisions and motivations people make within the world as they understand it, at a human scale.

Individuals act within social and economic contexts that both enable and constrain them (Bourdieu 1977; Dobres & Robb 2000; Giddens 1979; 1984; Hodder 2000; Sewell 1992). The decisions of individuals ultimately become transformative; 'it is at the human scale that contradictions and conflicts are worked out, lived through and resolved' (Hodder 2000, 26). This does not, however, mean that archaeologists must
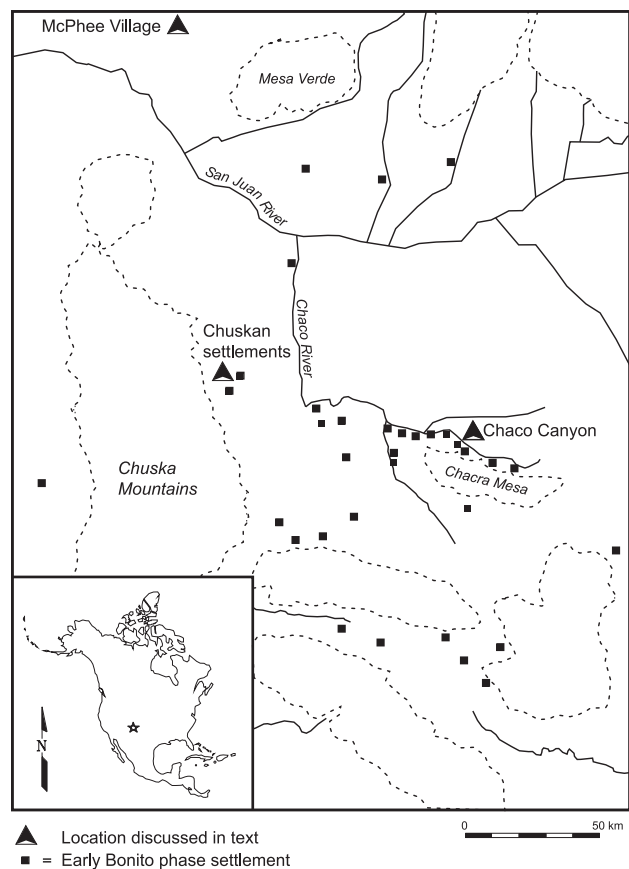

Figure 1. *The San Juan Basin in the Southwest US, showing the locations of Early Bonito phase settlements in Chaco Canyon, the Chuskan settlements, and surrounding areas. (Based on maps and data published in Kantner 2003; Vivian 1990, 179, fig. 7.6; Wilshusen & Van Dyke 2006, 251, fig. 7.7.)*

attempt to reconstruct the lives of single individuals in the past (Barrett 2000, 61). This would be a largely futile undertaking. A current archaeological obsession with the individual is part of a modern, capitalist obsession with such ideas as intimacy, personhood, and self-determination (Bernbeck 2003; Giddens 1992). But we do need to think about how individuals experience, conceptualize, understand, and ultimately act within social and economic milieus that both constrain and enable possible actions. No isolated action, in and of itself, can effect transformative change; rather, social transformations are the collective outcome of the actions of groups seeking to enhance and preserve wealth and power relative to each other. Marx (1978 [1852], 9) said it best, 'Men make their own history, but they do not make it just as they please; they do not make it under circumstances chosen by themselves, but under given circumstances directly encountered and inherited from the past.' Using their shared,

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partial understandings of the world, acting in ways that are intentional, unintentional, and contradictory, individuals collectively drive change. It is this process that should be our focus of study when we examine social change at the scale of the individual.

Groups — comprised of individuals — can and do act deliberately and collectively. Agency becomes praxis when social groups collectively try to facilitate transformative change to further their own interests (Gramsci 1971; Crehan 2002). Transformations might result in greater social equality and less human suffering, as Gramsci advocated, but more often these changes lead in the opposite direction. The disenfranchised tend to lack the leisure and the means to facilitate positive, transformative change (Bourdieu 1963, 303). And some groups are left behind in the wake of transformative change, continuing to follow strategies that became outdated, standing on the sidelines like Bourdieu's (2002) *celibataires* at the edge of the dance.

When the transformation in question involves increasing social inequalities, collective factions may be seen as aggrandizers who are rationally and intentionally trying to promote their interests (Blanton *et al*. 1996; Hayden 1995; Stanish 2002). But these models may reveal more about the lived experiences of white male academics than they do about peoples in the past. Agency is seen as a property exclusive to aggrandizers (Clark & Blake 1994), who are viewed as 'omniscient, practical, and free-willed economists' (Dobres & Robb 2000, 4). The actions of individuals only have major social consequences if those individuals have, or seek, positions of power. However, not every human decision is about pragmatic rationality; many are about beliefs, meanings, aesthetics (Ortner 1984, 151). Humans are not omniscient, and other people are simultaneously acting, so that efforts to effect change of any kind may well lead to unintended long-term consequences.

At the opposite end of the spectrum, following Bourdieu (1977) and Giddens (1984), some practice theorists have suggested a 'tragedy-of-the-commons' type scenario (Hardin 1977) in which the actions of all agents — whether aggrandizing or not, whether selfconscious or not, whether elite or commoner — can lead to unforeseen outcomes over the long term (Barrett 1994; Pauketat 2000). Individuals act in ways that make cultural sense to them within the universe of possibilities as they perceive them, and over time, the cumulative effect of those actions and decisions may lead to political hierarchy. Beliefs and practices constrain the actions of some individuals at the same time that they enable others, and the most significant actions may be those with unintentional consequences.

This model is attractive, for many reasons. It gets us away from many of the clear problems with interest theory. People are not seen as aggrandizing schemers; rather, they behave according to their traditional, commonsensical, unreflective knowledge and beliefs. The actions of everyone — not just omniscient aggrandizers — result in change. The issue of scale actually helps to explain how social hierarchy and domination can emerge unintentionally from nondiscursive practices. Individual decision-makers, acting within the scale of a human life, do not foresee the long-term results of their actions over the *longue durée*.

However, the purpose of much human decision-making is not to affect change, but rather to maintain the perceived status quo. *Habitus*, doxa (Bourdieu 1977), and structure (Giddens 1984) are concepts that tell us more about why things don't change than why they do. Do inequalities really develop unintentionally and gradually over time, or it is just that nondiscursive practices can set the stage for transformative change?

Hegelian dialectic principles can provide some insights into the relationships between change, and human decisions made in the contexts of social and economic tensions. According to Marx, as interpreted by Ollman (2003, 82–7), transformational change involves three dimensions: contradiction, a quantitative to qualitative shift, and metamorphosis. Inherent social contradictions — dialectic relationships — drive the transformational process. Familiar examples of dialectic relationships include teachers and students, or husbands and wives. These social identities do not exist without their counterparts. Inequalities of different kinds may be present, but it is the relationship between the two entities that defines each (McGuire 1992, 97). As contradictory elements simultaneously support and undermine each other, over time there may be a buildup of quantitative changes in one or more aspect of social relations — some facet of social life grows or diminishes. When these quantitative changes reach a critical point — which varies depending on the elements involved — then the dialectic tensions are resolved by a permanent and total transformation — a qualitative change that transfigures all social relations as well as the larger system of which they are a part. Metamorphosis refers to the ways in which qualities of the former system are transferred to the latter, so that each may be referenced in terms of the other.

Qualitative transformation involves an initial stage in which social relationships and tensions revolve around attempts to maintain the status quo. Social groups work harder and harder to maintain existing social and economic relationships. Small, quantitative changes slowly escalate until they reach a tipping point — and then there is a qualitative trans-

formation. It is as if a number of teams, comprised of individuals, are kicking a ball along the ground, and the object of the game is to keep the ball in play. The ground is fairly level for a long time, but then it begins to slope slightly downwards, because there is a cliff off in the distance, out of sight. Eventually it becomes apparent that the cliff is looming. At this point, the struggle to control the ball intensifies, the slope of the ground increases, the ball picks up speed, and the stage has been set for the ball to drop off the cliff — either through deliberate actions of some of the players, or as an unintended consequence of the struggle. When the ball drops off the cliff, the game is transformed — it continues, but on a new field, with new rules and new goals, and there is no way back. Qualitative transformation provides a particularly useful way to think about social change that seems to erupt abruptly from a relatively stable-looking period of several generations of social life ... as in Early Bonito phase Chaco.

Chaco as qualitative social transformation

For archaeologists, historians, and anthropologists in the American Southwest, the scope of Puebloan history spans at least two millennia, from around AD 0 to present. Chaco scholars subdivide the 300-year span that encompasses Chaco into a beginning and rise (the Early Bonito phase, c. AD 850–1020), a culmination or heyday (the Classic Bonito phase, c. AD 1020–1100) and a decline and end (the Late Bonito phase, c. AD 1100–1140). Major social changes transpired between the beginning and the end of the Early Bonito phase (AD 850–1020). At the outset, Chacoan farmers lived and worked together within relatively egalitarian communities of less than a hundred people. Two centuries later, Chaco Canyon was a pilgrimage site for perhaps thousands of inhabitants of outlier settlements in the surrounding region who contributed labour, material goods, and emotional allegiance (Judge 1989; Kantner 2003; Kantner & Kintigh 2006; Toll 1985). Hierarchical elites presided over ritual and economic resources, their power legitimated by a shared ideology (Van Dyke 2007). Followers contributed labour to construct seven 'great houses' — carefully planned, imposing buildings up to four stories high, with hundreds of rooms, and associated circular, subterranean 'great kivas'. Pueblo Bonito is the largest, most central, and best known of these 'great houses' (Judd 1954; 1964; Neitzel 2003).

Aggrandizing models for the rise of Chaco postulate individuals or groups who deliberately and purposefully sought social, ritual, economic, or political power (Kantner 1996; Sebastian 1992), but these models deny non-elite actors the ability to
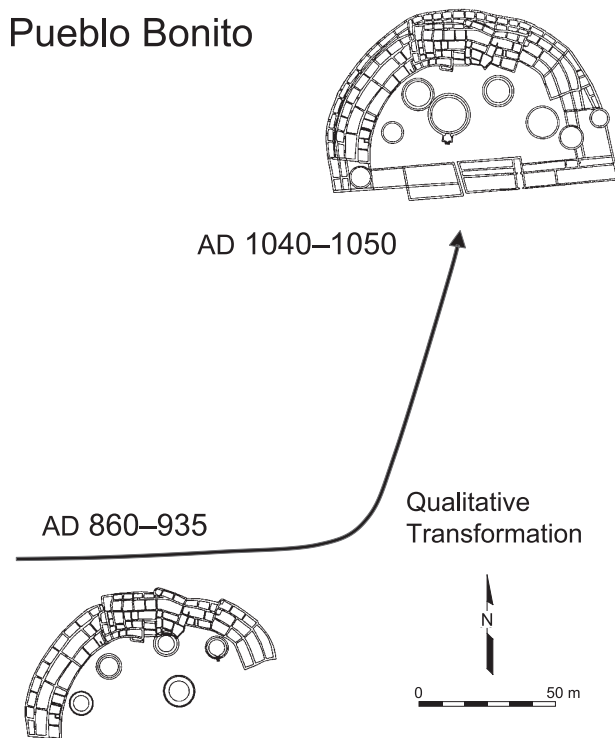

Figure 2. *Pueblo Bonito building phases between AD 860 and 1050. (Based on maps and construction sequences published in Lekson 1986; Stein et al. 2003; Windes 2003; Windes & Ford 1996.)*

do anything of consequence on their own (Pauketat 2000, 113). Alternatively, we can follow Pauketat to see hierarchy as emerging over the long term, unintentionally, from Ancestral Puebloans' short-term actions, but social transformation at Chaco was not gradual. In the tree-ring record of Pueblo Bonito, 'not much happened' across the tenth century, and then, rather suddenly, domestic structures became great houses (Lekson *et al*. 2006; Stein *et al*. 2003; Windes 2003). Small, quantitative changes were made over a long period, and then abruptly there was a qualitative change — a transformation (Fig. 2).

To understand the emergence of social hierarchy at Chaco, we need to think about the way the world would have looked at a human scale, from the vantage point of the lives of individuals. Chacoan life expectancy was about 35 years (Akins 1986, 20), and at least six to eight generations of people would have lived across the 170-year Early Bonito phase — much too long a period to have been held in any individual's living memory. People would have acted to maintain the status quo, as they understood it, within the decades that they experienced. Ollman's model of qualitative transformation can help us envision qualitative

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Figure 3. *Overview of the west end of Chaco Canyon, looking south-southwest.*

change that involves agency, strategy, and motivation, but is not mechanistic. What status quo were the Early Bonito phase Chacoans attempting to maintain? What was the tipping point?

The answers lie in the preceding centuries of Ancestral Puebloan history. In the AD 700s, Ancestral Pueblo farmers had aggregated in large settlements such as McPhee Village, on the north side of the San Juan River, approximately 150 km north of Chaco Canyon (Wilshusen & Blinman 1992; Wilshusen & Van Dyke 2006). Some of these communities were home to as many as 1000 people (Wilshusen & Varien 1996). Members of different social factions contributed knowledge and resources to community-wide ritual practices and events. These ceremonies ensured continued agricultural fertility, rainfall, cosmological balance, and social stability (Adler & Wilshusen 1990; Lipe & Hegmon 1989; Wilshusen & Ortman 1999). Basic tenets of Puebloan cosmography, such as balanced dualism and centre place, likely date from this time (Van Dyke 2007, 61–104).

However, in the mid-800s, the northern San Juan villages broke apart, in some cases violently. Ancestral Puebloans migrated south into the San Juan Basin of northwest New Mexico, along routes such as the Chaco River (Wilshusen & Van Dyke 2006; Windes n.d.). Perhaps because living together in large, aggregated groups had created unresolvable social tensions, the migrants dispersed into smaller communities across the landscape. Not every location on the high desert of the Colorado Plateau is suitable for farming. The migrants settled in places that offered reliable water and arable land. These locales included the flanks of the Chuska Mountains and Chaco Canyon (Fig. 3).

On the Chuskan slopes, migrants founded several new settlements along colluvial ridges and broad wash valleys suitable for farming (Marshall *et al*. 1979, 95–110). The nearby mountains provided settlers with access to forests of Ponderosa pine for building material and firewood, outcrops of sparkling black igneous trachyte for pottery temper, and quarries of fine-grained, colourful Narbona Pass chert prized by flint-knappers since Palaeoindian times.

In Chaco Canyon, 75 km to the east, migrants established a string of five settlements, including early Pueblo Bonito (Windes *et al*. 2000). Chaco Canyon was created by Pleistocene erosion through Tertiary and Cretaceous sandstone uplifts, and vegetation consists of low desert scrub (Fig. 3). The canyon would have been an ideal place for agriculture during the Early Bonito phase (AD 850–1000). A natural sand dune may have blocked a confluence of the Chaco Wash, creating a shallow lake (Force *et al*. 2002; Vivian *et al*. 2006). Early Pueblo Bonito resembles any other domestic

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pueblo of its day. Around AD 860, Ancestral Puebloans built a small block and a larger arc of domestic rooms fronted by pit structures. Builders added subsequent roomblocks at AD 890 and between AD 900–935 (Fig. 2). The 30-year intervals suggest these new sections of the building fulfilled the housing needs of new generations.

Each group of migrants — whether in Chaco Canyon, on the Chuska slopes, or elsewhere in the San Juan Basin — would have needed material and social resources from their neighbours, including game, raw materials for stone tools and pottery, wood for building roofs and firing pottery, and marriage partners. And, in order to continue ceremonial practices necessary to keep the world in balance, they would have needed ritual knowledge held by social factions now dispersed across the landscape. Although people chose to live in dispersed, small communities, groups with familial or other social ties likely settled near one another. Ritual events became occasions for larger groups to gather, not only for religious but also for social and economic interactions.

The Chacoans maintained particularly close ties with the Chuskans, perhaps due to social connections that pre-dated the migration. Pottery, stone, wood, and corn are among the materials steadily moving from settlements along the Chuska Mountains into Chaco Canyon (Benson *et al*. 2003; Cameron 1984; 2001; Durand *et al*. 1999; English *et al*. 2001; Mills *et al*. 1997; Shepard 1954; Toll 1984; 1985). Chuskan pottery comprises as much as 20 per cent of the ceramic assemblages at Early Bonito phase sites (Toll 1984, 115). This may be, in part, because there was not enough wood in Chaco Canyon to build pueblo roofs, cook, heat homes, and fire pottery. An Early Bonito phase connection between peoples living in Chaco Canyon and the Chuskan slopes would have provided Chacoans with access to key material resources, and it would have been in the interests of canyon dwellers to maintain these ties.

In lieu of economic resources to trade, canyon residents appear to have constructed themselves as ritual specialists and hosts. Chaco would have been a good place — although probably not the only place — for Early Bonito peoples to come together for ritual events. Chaco Canyon has intrinsic topographic and other properties that would have made it an attractive location for ceremonial gatherings focused around balanced dualism and centre place (Van Dyke 2007). Chacoan ritual leaders may have worked to turn these periodic gatherings — already emotionally charged events — into aesthetically compelling productions, with elaborate songs and intricate costumes. Participation in ceremonies at Chaco would have

provided Chuskans with access to critical spiritual resources, and it would have been in the interests of the Chuskans to maintain these connections.

Across the tenth century — the long tail that precedes a qualitative transformation — Chacoans and Chuskans would have continued to negotiate and renegotiate their mutually beneficial relationships. Chacoans and Chuskan individuals would have acted from their respective multiple, partial, overlapping perceptions of social life. Some people may have been engaged unreflectively in the traditional practices of their parents and grandparents. Others may have been looking for ways to further the interests of themselves or their groups. Some may have sought social, political, or ritual power. Others may have attempted to deflect the burdens and responsibilities of authority. For six to eight generations, the mutually supportive and conflicting actions and decisions of Chacoans and Chuskans would have enabled the continuation of existing social relationships between the two groups.

Over this time, Chacoan ceremonial gatherings gradually grew larger, as more and more people from other neighbouring areas began to participate. Meanwhile, agricultural productivity in Chaco declined, as arroyo downcutting eroded canyon farmlands (Sebastian 1992, 114–19; Vivian *et al*. 2006, 56–8). Around the beginning of the eleventh century, Chaco reached its tipping point. Chacoans needed more labour to build larger ritual facilities, more authority to organize this labour, more corn to feed visitors and residents, more turquoise and exotic paraphernalia for ceremonial productions. These expansions would have also been in the perceived interests of Chuskans and other participants — who by now likely numbered in the hundreds, if not the thousands — and who would have desired ceremonial practices in the canyon to continue. In order to maintain the status quo, one or more of these social factions kicked the ball over the cliff.

We see the ensuing social transformation reflected in dramatic architectural changes in Chaco in the early 1000s. There was little, if any, construction at Pueblo Bonito between AD 935 and 1000. Then, in the first few decades of the eleventh century, Chacoans initiated massive building projects that would have required more than ten times the labour of earlier structures (Lekson *et al*. 2006, 81, fig. 3.7). They rapidly and systematically expanded three pueblos into monumental great houses (Lekson 1986; Lekson *et al*. 2006) (Fig. 2). At Pueblo Bonito, builders added new blocks of rooms, multiple stories, and plaza-enclosing walls, creating a structure with a streamlined, imposing, symmetrical shape (Stein *et al*. 2003; Windes

2003). Chacoans also founded three new monumental, bracket-shaped great houses using the same formal design principles (Lekson 1986, 109–44). Within Pueblo Bonito and the other great house plazas, they placed standardized, circular, semi-subterranean great kivas (Vivian & Reiter 1960). These building complexes, and their careful positioning on the landscape, embodied key Puebloan concepts such as dualism and centre place (Van Dyke 2007, 105–35).

The new, eleventh-century great houses and great kivas were venues for a ceremonialism that was not only larger in scale, but that was qualitatively different from all that came before. The relationship between Chacoans and peoples from other settlements — including the Chuskan slopes — was transformed. During the Early Bonito phase, no one settlement was more important than the rest. By the mid-eleventh century, Chaco was the focal point of the Ancestral Pueblo world; all other settlements were outliers. Chaco Canyon was now the only acceptable place in which to conduct certain ceremonies necessary to ensure successful continuation of the Puebloan way of life. This ideological assertion was affirmed for visitors through their spatial and ceremonial experiences in the canyon. Elements of the old social and ceremonial relationships were incorporated into a qualitatively different social and ceremonial order. Chacoan ritual leaders with exclusive access to sacred knowledge were transformed into elites with high social status and political authority. Chuskans and other participants in Chacoan ceremonialism were transformed into followers, contributing goods, labour, and — above all — allegiance to Chaco.

Conclusion

Archaeologists are in an excellent position to observe social transformation — as evidenced in the material world — over the *longue durée*. However, social change is driven by human agency and results from decisions made within the course of human lives. Therefore, we need to think about transformative social change not just from our vantage points as archaeologists, but also from the perspectives of the people who lived through them. I do not propose that a model of qualitative transformation is a good fit for all change in all times and places. Certainly there are cases where aggrandizers and others have deliberately employed collective agency to effect change, and there may be cases where transformations happened unintentionally as the result of habitual, commonsensical behaviours over the long term. But the transformational model seems a good fit for Early Bonito phase Chaco.

Although Chacoan scholars have long been able to describe the changes that took place across the Early Bonito phase, we have had a difficult time explaining them. The problem has been one of scale. Chaco emerged from the existing tensions and relationships that developed during the preceding centuries in Ancestral Pueblo communities. When quantitative changes in this attempt to maintain the status quo reached a tipping point, a qualitative transformation was the only way for groups to maintain existing relationships, as they perceived them, from vantage points that spanned decades, not centuries.

Ruth M. Van Dyke
Department of Anthropology
Colorado College
Colorado Springs, CO 80903
USA
Email: RVanDyke@ColoradoCollege.edu

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