

Institutionalized Inequality in Small-Scale Societies

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1. Introduction

Humans with modern anatomies and sophisticated cultural capacities have existed for at least 200,000 years and began worldwide expansion about 60,000 years ago (Bergström et al. 2021). However, sustained evidence of social stratification or institutionalized inequality is nearly absent until about 12,000 years ago (Flannery and Marcus 2012; Shultziner et al. 2010). In other words, people with evolved cognitive abilities identical to those of contemporary humans flourished (albeit at low population densities) for hundreds of millennia in relatively **egalitarian**¹ systems lacking hereditary hierarchies or other forms of institutionalized differences in wealth and power. Yet such structures are omnipresent in the modern world, having spread rapidly through internal processes, conquests, and economic interactions. How did institutionalized inequality overcome long-established patterns of egalitarianism? Why did our ancestors come to tolerate social systems that provide disproportionate rewards to the elite?

This chapter reviews key explanations for the emergence of institutionalized inequalities in wealth and power in **small-scale societies** prior to the development of formal bureaucracies, elaborate occupational or role specialization, and near-monopolies over legitimate coercive force by elites. We review prominent explanations for this process, focusing on patterns, causal drivers, and mechanisms proposed in each. We

¹ Words in bold are defined in the glossary at the end of the chapter.

This chapter is drawn from the following book:

Richerson, Peter J., Jenna Bednar, Thomas E. Currie, Sergey Gavrilets, and John Joseph Wallis, eds, *Institutional Dynamics and Organizational Complexity: How Social Rules Have Shaped the Evolution of Human Societies Throughout Human History*. Open Access Book, Cultural Evolution Society, 2022. institutionaldynamicsbook.culturalevolutionsociety.org

also summarize selected ethnographic and archaeological evidence to evaluate the plausibility of these various scenarios for the emergence of institutionalized inequality.

Our interest in this chapter is explaining the **persistent institutionalized inequality** (hereafter PII) (Mattison et al. 2016) that has become pervasive across contemporary human societies. This kind of inequality, as implied by the definition, is not transient; rather, it endures due to hereditary structures or institutions that allow individuals to maintain their wealth to the exclusion of others. This is distinct from temporary differences in status that commonly feature in societies dubbed egalitarian and more extensive than persistent status differentials (e.g., rank hierarchies) that feature in our closest living primate relatives (Jaeggi et al. 2016). PII is present when differences in power, status, and/or wealth within a **polity** are **ascribed** by some method distinct from personal qualities or **achieved** status. In many or most cases, these inequalities are socially inherited, but they could be ascribed in other ways—for example, by induction at an early age into a ritual elite. The term **institutions** refers to the patterned interactions between individuals resulting from their regular and predictable adherence to norms and rules (Glowacki 2020). Institutions structure relationships among people and between people and resources (as in institutions of ownership, including commons). They are subject to complex negotiations among stakeholders with very different interests and to specific evolutionary dynamics that do not characterize simpler negotiations among small numbers of individuals. What is it, then, that explains the emergence of institutions that create and reinforce persistent differences in wealth and power?

As human behavioral ecologists (Nettle et al. 2013; Smith and Winterhalder 1992), we focus on models that evaluate the emergence and stability of institutionalized inequality in terms of its costs and benefits to individuals. This is not straightforward: factors determining payoffs might include transaction costs, solving coordination problems, economic productivity, social unity, or other factors. In addition, payoff structures are necessarily embedded in models or scenarios that vary according to whether they focus on thresholds or tipping points versus gradual change, posit power differentials versus consensus in negotiations over institutional change, and view such change as linear or as a recursive process wherein existing institutions shape the rate and direction of change. Models emphasizing cultural transmission might revolve around individual-level processes such as payoff-biased imitation (Boyd and Richerson 2009) or conformity (Henrich and Boyd 1998). Alternatively, some explanations privilege differential survival of entire polities through some process of group competition and replacement (Richerson et al. 2016; Turchin 2011). Obviously, the scale or level at which payoffs are to be measured will vary between these different models (see below), with important implications for understanding the evolution of PII.

2. Scenarios for the Emergence of Institutionalized Inequality

The number and variety of models or scenarios that have been proposed to explain the emergence of PII is substantial. We focus here on several prominent explanations (table 1). The subsections below briefly review each explanation; the next major section discusses empirical cases that illustrate how each model might apply or be evaluated.

Following Arnold (1996) and Price and Brown (1985), we find it useful to view explanatory models as consisting of causes, their associated conditions, and their consequences. Causes are the triggers listed in table 1 that directly produce PII according to a particular model or scenario. Conditions, which we term prerequisites, are any contextual or historical factors that are necessary or helpful for the postulated trigger(s) to act. Consequences are features that result from PII but lie causally downstream. Note that the trigger in any one explanatory scenario might be considered a consequence or even a prerequisite in another scenario. For example, intergroup conflict is seen as the main trigger for PII in one formulation, as a prerequisite for the scalar stress that is the trigger in another, but as a consequence in still other scenarios. It is also important

Table 1. Explanations for Inequality: Prerequisites, Triggers, and Consequences

Explanation	Prerequisites	Triggers	Consequences	References
1. Managerial mutualism:				
a. Facilitating collective action	Economies of scale in production	Monitoring, punishment, reward; labor coordination	Management of non-kin labor; increased output; increased payoffs given costs to managers	(Arnold 1993; Hooper, Kaplan, and Boone 2010; Roscoe 2012)
b. Risk reduction (redistribution)	Inter-household resource variance; extrinsic risk	Critical shortages in some households	Control of surplus by chief/manager; redistribution of surpluses	(Sahlins 1972)
c. Scalar stress	Increase in polity size; lack of expansion possibilities	Information or coordination bottlenecks	Emergence of stable leadership	(Bandy 2004; Johnson 1982; Perret, Hart, and Powers 2020)
2. Intergroup competition:				
a. Military leadership	Chronic and severe intergroup conflict	Differential skill or authority in battle		(Ferguson 1983; Glowacki and von Rueden 2015; Makowsky and Smaldino 2016)
b. Plunder-based	Portable wealth; labor shortages; raiding	Wealth or slaves obtained by raiding		(Maschner 1991; Mitchell 1984)
3. Resource base:				
a. Circumscription / Ideal-despotic distribution	Steep gradient in resource quality	High costs to out-migration	Impoverishment of subordinates	(Bell and Winterhalder 2014; Carneiro 1988)
b. Patrol-client model	Clumped, defensible resources	Asymmetric resource control	Access exchanged for services; differentiation of social and economic roles	(Boone 1992; Hooper et al. 2018; Smith and Choi 2007)
4. Wealth transmission	Resource gradients, defensibility	Inheritance structures/ institutions reinforcing intergenerational differentials	Lineage differentials in different forms of wealth	(Borgerhoff Mulder et al. 2009; Bowles, Smith, and Borgerhoff Mulder 2010 and others in special issue)

to note that these models are not always mutually exclusive explanations, and in any real-world scenario, multiple models may be required to explain different aspects of the emergence of PII. These complexities pose a challenge for empirical evaluation and synthesis.

2.1. Managerial Mutualism

Nearly any form of institutionalized inequality is likely to involve managers, be they chiefs, priests, judicial tribunals, or production supervisors. What conditions generate situations in which managers emerge from and persist within egalitarian social structures? Managerial mutualism explanations of PII focus on the benefits that managers provide to collectives as group size increases, tasks become more complicated, or new opportunities for collective action emerge (Diehl 2000; Smith and Choi 2007). What distinguishes managerial mutualism

from other explanations of PII is the presumption that managers provide a group benefit and that their role (with its associated privileges and compensation) is agreed to by others—in other words, that arrangements are driven by mutualism rather than coercion.

Scenarios based on managerial mutualism can take many forms, depending on the degree to which they are based on formal analysis, their theoretical foundations, and the particular service(s) managers are thought to provide. Some of these scenarios are more consistent with postulates of behavioral ecology or collective action theory than others. We focus here on three.

Economic production. In all human societies, including small-scale ones, there are some forms of economic production where coordinated efforts yield higher returns per capita—in other words, economies of scale. This may involve a division of labor or simply more people cooperating to perform the same tasks. For example, indigenous whale hunts in cases as far removed from each other as Lamalera, Indonesia (Alvard and Nolin 2002), and North Alaska (Sheehan 1985) have crews of a dozen or so men paddling in unison or helping haul the catch to shore under the direction of a captain and harpooner. These forms of **collective action** (Olson 1965) are more likely than others to generate inequality through managerial mutualism.

In particular, managers can facilitate finding solutions to **collective action problems** (CAPs) that would otherwise make per capita gains in collective activity difficult to achieve. CAPs result from selfishly motivated behaviors such as free-riding (sharing in collective benefits without contributing to their cost), coordination failures (e.g., not showing up at the right place at the right time [see Skyrms 2004]), and member-joiner conflicts (e.g., attempting to join a whaling crew even though this will reduce the per capita benefit [Smith 1983]). Managers can organize group production to avoid coordination failures, monitor and punish free-riders, or enforce other rules to ensure efficient production. At the same time, such leadership often entails costs above those paid by ordinary participants in group production, which in turn raises compensation issues. In their model of managerial mutualism, Hooper, Kaplan, and Boone (2010) derive the conditions under which both a manager and other group members benefit from management, including paying a “tax” that sufficiently compensates managers for their additional efforts as well as other mechanisms to solve “second-order CAPs,” such as monitoring and punishing tax evaders. We are not aware of direct tests of these more detailed aspects of the model. However, empirical evidence indicates that leaders in small-scale societies do often manage group production and may receive compensation. For example, boat captains retain control of larger shares of the catch, sometimes further redistributing their additional shares for additional gains in status and reproductive success (Alvard and Nolin 2002; Bliege Bird, Smith, and Bird 2001).

Redistribution. Whether or not production involves coordinated effort, the realized income may vary among individuals or households. Variation that cannot be controlled by the producers, such as crop failure due to weather, bad luck in hunting, or incapacity due to accident or illness, is termed risk. Such risk can be self-insured, as when households store extra grain in case of future shortfalls, or can also be reduced via inter-household sharing of resources (Gurven 2004; Winterhalder 1990) or labor (Gurven et al. 2000). Such sharing or risk-pooling can also be managed effectively through more central efforts involving managers. For example, in Native California, “chiefs” collected surplus harvests from dozens of households in their polity and redistributed them to those with shortfalls while also reserving some for themselves, for communal feasts, and for hosting important visitors (Bean 1976). Scenarios for the evolution of PII focused on managerial redistribution were once popular in anthropology (e.g., Sahlins 1972; Service 1962), but have been less favored in recent years, with critics suggesting that it was not a common function of leaders in small-scale societies (Feinman and Neitzel 1984) and that where it did occur, it was more often exploitative than mutualistic (Hayden 2001).

Scalar stress. As communities grow larger, information flow and resultant coordination become more difficult and potential conflicts increase exponentially. This scalar stress (Johnson 1982) can be resolved through fissioning or, alternatively, through institutionalized leadership. In this scenario, leaders benefit the community

by managing information flow more efficiently and/or by adjudicating conflicts. Like other forms of mutualism, such institutions depend on followers voluntarily recognizing the legitimacy of leaders. This might result from certain individuals being more capable of influencing others through charisma or other factors (Bandy 2004; Perret, Hart, and Powers 2020). Since scalar stress is presumably a potential factor in all social systems, one can question why leaders would develop sufficient authority to counteract the fissioning that would otherwise resolve the stress. One plausible reason would be population “packing” (habitat saturation) that makes fissioning less feasible, as discussed in section 2.3. Another reason would be an increase in intergroup competition, putting a premium on maintaining or increasing polity size—the focus of our next section.

2.2. Intergroup Competition

Many scholars have argued that warfare is a domain where institutionalized leadership, whether for offense or defense, offers a significant advantage (Garfield, von Reuden, and Hagen 2019; Glowacki and von Rueden 2015). But how might those who have proven their leadership skills in military contexts translate that to other domains? One possibility is intimidation: an accomplished warrior is also likely to be a formidable competitor; this need not involve frequent active fighting, as risk assessment by potential competitors as well as preferential alliance by others could be sufficient. Alternatively, if successful raiding results in plunder that can then be used to attract followers, that might also tip leadership toward skilled warriors (Maschner 1991; Mitchell 1984). Finally, accomplished warriors may be favored as leaders because they have honestly signaled their commitment to their social group (Roscoe et al. 2019).

Note that these scenarios all depend on differences or skills that are essentially achieved and are unlikely to persist beyond the life (or, indeed, the prime of life) of these individuals. Our impression is that most military leaders in small-scale societies are selected based on achievement rather than inheritance or other institutional structures (Garfield, von Reuden, and Hagen 2019). This is true even in cases where the polity is quite large (in the thousands) and formal warrior fraternities with leadership hierarchies exist, as in the classic equestrian tribes on the North American Plains (e.g., Hoebel and Adamson 1978 re: Cheyenne). Once institutionalized hierarchy exists and wealth and power are concentrated in the hands of an elite, control of plunder or military decision-making may reinforce such hierarchy, but this is far different than confirming a central role for military leadership in the emergence of PII.

Larger-scale dynamics are also important in considering the evolution of PII, as the aggregate behavior of individuals affects their group’s ability to persist in a multi-group landscape. Cultural group selection arguments link individual-level learning behaviors to group-level competition, modeling scenarios in which PII causes some groups to outperform others. Such arguments have not yet fully addressed the collective action problems to which they are subject, focusing instead on the effects that differential group success may have. Henrich and Boyd (2008), for example, have shown that prestige-biased transmission and group differentiation can lead to higher payoffs for stratified groups relative to more egalitarian ones. Makowsky and Smaldino (2016) have modeled scenarios in which selfish leaders promote success in conflicts with other groups. Here, the selfishness that promotes individual success over others within groups also facilitates success in intergroup conflicts when selfish leaders take charge.

2.3. Resource Gradients, Circumscription, and the Ideal Despotic Distribution

Whereas the above models focus on the benefits of collective action via managers, other influential models focus more directly on how resource heterogeneity can lead to PII through differential access and control, as summarized in this section and the one following (2.4). **Circumscription** (Carneiro 1970) refers to the existence of environmental factors that may be prerequisites for the emergence of PII. An environment is circumscribed if there are geographic barriers to dispersal (e.g., mountain ranges or water bodies), steep

environmental gradients (e.g., fertile river valleys surrounded by desert), or demographic or social restrictions on migration (e.g., saturated habitats, territorial boundaries). By increasing the costs of migrating elsewhere to exploit new resources, circumscription effectively limits options for individuals with varying access to and control over resources (i.e., **resource-holding potential**), which can drive highly unequal resource distribution through a number of scenarios that eventually lead to **despotism**—unequal control of critical resources through coercion rather than mutualism (e.g., Bell and Winterhalder 2014; Summers 2005; Wilson and Coddling 2021).

The Ideal Free Distribution (IFD) model provides a starting point for understanding the emergence of despotism from relatively egalitarian origins. This model envisions individuals arriving in a spatially heterogeneous environment and sequentially settling in the best available habitat (Fretwell and Lucas 1969). Under this simple model, individuals have equal competitive abilities, habitat quality is a decreasing function of population density, and, once the IFD is reached, resources are evenly distributed simply because population density matches resource density across habitats.

When resource patches exhibit **economically defensibility** and there is variability in individual competitive abilities, competitive exclusion results in some individuals losing freedom of choice in where to settle, giving better competitors the opportunity to disproportionately control resources (despotism). Thus, under an Ideal Despotic Distribution (IDD), the relative quality of the highest-ranked habitats declines more rapidly for newcomers (Fretwell 1972; Summers 2005), who choose the best habitats given a confined set of options and limited ability to migrate elsewhere. Limited outside options mean that **dominants**—those with disproportionate control over resources—put newcomers in the position of choosing whether to remain and accept subordinate status or move to less desirable habitats (Fretwell 1972, p. 98); either case results in skewed control of resources (Vehrencamp 1983a). Despotism emerges when subordinates would do worse to leave the group to settle new areas rather than remain in their subordinate positions (Summers 2005; Vehrencamp 1983a).

Allee effects occur when increased group size provides greater benefits to members, at least up to some asymptote (Allee et al. 1949). This can result from various factors, such as enhanced territorial defense, more reproductive opportunities, or increased productivity from economies of scale or economic specialization (e.g., Boone 1992; Krause and Ruxton 2002; Smith 1981). Allee effects can make dominants more willing to grant concessions to subordinates to keep them from leaving the group, as long as any reduction in the proportion of resources they extract from subordinates is offset by an overall increase in resources—in effect, getting a smaller share of a larger pie. However, ideal distributions with Allee effects are still likely to exhibit density dependence, since continued increases in group size beyond some optimal level will lower per capita benefits. Hence, dominants are expected to skew resources and reproductive benefits in their favor up to a point just below the threshold where subordinates would do better by leaving the group (Boone 1992; Vehrencamp 1983b). This leads to two important predictions: (1) if the benefits of group living are high and emigrating is costly or unviable, then subordinates should accept lower status and more unequal shares of critical resources (Vehrencamp 1983b); (2) dominants are expected to “recruit” subordinates into their group such that group size reaches the optimal level given the division of resources between dominants and subordinates set by the emigration threshold (Bell and Winterhalder 2014; Hamilton 2000).

2.4. Patron-Client Systems

The managerial redistribution scenario (2.1) implicitly assumes that each agent controls resource patches with roughly the same expected harvest and degree of risk. However, if some resource patches are of consistently better quality in the sense of being more productive and less variable, then the resource exchange system may shift from reciprocity (risk reduction) to asymmetrical flows of goods and services (Boone 1992). In particular, if a subset of a group (e.g., a kin group) can effectively control access to the most productive resources, then

they might leverage this control by granting access to subordinates in exchange for labor, tribute, or military support. In large-scale societies, we refer to such systems as sharecropping, serfdom, or (in capitalist systems) hiring of labor. In the smaller-scale societies that are the focus of this chapter, these are often termed patron-client systems (Boone 1992; Smith and Choi 2007). The patron-client scenario provides one plausible pathway for the emergence of institutionalized inequality, with parallels to accounts based on circumscription and ideal despotic distributions outlined above, but with a focus on the exchanges between dominants (patrons) and subordinates (clients).

But how might the division between patrons and clients be established? One possibility is simply priority of arrival: earlier occupants may be in a better position to become patrons. Another answer is that those with greater competitive ability succeed in controlling rich patches and allow less competitive individuals some access in exchange for labor or other services. Variation in competitive ability may be due to control over relevant technology (e.g., weaponry, transport technology), network structure, or information. Once sociopolitical and economic inequality is well established, enforcement can be institutionalized (via police, military, judges, etc.), although such institutions are typically found only in large-scale (e.g., state) societies (see Richerson et al. and Weibl, this volume).

What are the institutional components of patron-client systems? These appear to vary according to local conditions as well as historical context or precedent. Minimally, they involve regularities in how decision-making is carried out. Owners may decide how group production is organized and how the products of group labor are allocated (for examples, see the case studies described below). Once inequality in the form of patron-client relations is institutionalized, patrons can use their economic leverage to bolster their position. This may be through alliances with elites in other groups (often cemented through marriage), recruiting non-kin labor through incentives or even slavery, and other means. In the ideological realm, dominants will endeavor to institutionalize beliefs and rituals that reinforce the system of inequality. Depending on the cultural context, these may take the form of legal institutions (property rights being an obvious example), moral norms, signals of hierarchy (e.g., differences in dress, etiquette, and linguistic styles), and religious beliefs and practices.

To summarize, when key resources are sufficiently dense, predictable, and clumped, the richest resource patches can be successfully controlled by a subset of the social group—a lineage, for example. This subgroup can thus enforce claims of ownership that establish a system of patron-client relations, allowing the emergence of PII. In contrast, when resources are relatively evenly distributed, we may see stable ownership claims, but these will be more equally distributed within the social group. In such cases, each family group or household will maintain approximately equal access to various resource patches necessary for subsistence and cede little control over the production and distribution of these resources to others; many horticultural societies match this pattern, as do some hunter-gatherer groups (e.g., Native California—see Smith and Coddling [2021]). In sum, we do not expect PII to arise simply on the basis of rich, defensible resources. Rather, what matters is whether defensible resources are sufficiently clumped and differentiated into richer versus poorer patches, such that some individuals or factions can control valuable patches and exchange access for labor and other services—that is, develop patron-client systems. Agent-based simulations support these predictions (Hooper et al. 2018; Smith and Choi 2007).

We have emphasized differential control of resource patches as the basis for patron-client systems. However, the argument can be generalized to include control of trading networks, specialized technology, or any other defensible resource that is economically important. This allows linkage to other scenarios, including one involving wealth transmission, discussed next.

2.5. Wealth Transmission

Once differential resource control is established, a key driver of more persistent inequalities is the extent to which this differential control is transmitted across generations, allowing some lineages to monopolize

resources to the exclusion of others over long durations (Borgerhoff Mulder et al. 2009; Smith et al. 2010). Archaeological evidence, including evidence drawn from burial sites, suggests that there have long been lineage-based differences in the ownership of material resources (e.g., Kennett et al. 2017). Families can also differentially control and transmit other resources that are key determinants of reproductive success, including information, social capital, and “embodied” differences (Kaplan 1996) in health. Which types of “wealth” are most important to reproductive success depends on many factors, including production systems that structure how different forms of wealth are translated to reproductive success.

We follow Kaplan (1996) and others in defining wealth in three broad categories—material, relational (social), and embodied (including educational/noetic). All of these forms of wealth are subject to intergenerational transmission, but in different ways and some more reliably than others. Borgerhoff Mulder et al. (2009) presented the first systematic test of the importance of intergenerational wealth transmission (IWT) in driving PII. Analyzing data drawn from 21 pre-industrial societies, they showed that production systems structure the relative importance of different forms of wealth; foraging populations favor embodied and social wealth relative to material wealth, pastoralist and agriculturalist populations strongly emphasize material wealth, and horticultural populations emphasize a more even distribution of these three broad wealth classes. Importantly, despite some variation across production systems, material wealth was subject to the greatest levels of IWT (due, in part, to its greater economic defensibility), reinforcing its importance in driving PII.

The relative importance of material wealth does not imply that other forms of wealth are unimportant. In addition, changes in circumstances (e.g., production system, available resources) can cause the relative weighting to shift. An interesting case study provides a clear demonstration of this: The Chinese undertook extreme measures to level fates beginning with the Communist government in 1949, including policies meant not only to flatten but to reverse economic hierarchies. Yet, subsequent to these efforts and following the economic reforms of the 1980s and 1990s that allowed for greater individual control of resources, the very families who had lost their wealth and status re-emerged as elites, suggesting strongly that kinship ties were critical to the persistence of status and wealth differentials (Campbell and Lee 2011). Positive assortment among the wealthy (e.g., via marriage) compounds the effects of IWT, as do economies of scale that lead to cumulative advantage across generations (e.g., livestock expansion) (Bowles, Smith, and Borgerhoff Mulder 2010). IWT can vary systematically by gender (Borgerhoff Mulder et al. 2019) and, like economic defensibility, is subject to the influence of institutions that regulate the content, direction, and degree of intergenerational flows of resources.

2.6. Systems of Kinship as Early Institutions Regulating Wealth Flows

Institutions are important determinants of inequality, in part because they reinforce or erode the defensibility and intergenerational transmission of material wealth (Mattison et al. 2016). Taxation systems are institutions that redistribute wealth, whereas laws that protect assets (including their intergenerational transmission) are institutions that reinforce inequality. Theoretical modeling suggests that “rules” that initially govern behavior among small groups of individuals evolve into “institutions” that support more sustained interactions among larger groups of individuals with increasingly non-overlapping interests. How does this happen? What sorts of institutions mark the initial emergence of inequality? How do these institutions evolve and change?

Behavioral ecology points to kinship as key to the development of institutions that regulate wealth transmission. Behavioral ecologists have long understood that kinship organizes cooperation among organisms (Hamilton 1964). Correlations between type of kinship system and broad features of socio-ecologies reveal that kinship is important not only for organizing labor sharing and effort (Divalve 1974) but also for regulating the transmission of wealth, social status, and information (Murdock 1949; von Rueden 2020). In foraging societies where there is limited organization in relation to principles of descent, production is based on

voluntary skilled labor (Kaplan, Hooper, and Gurven 2009). When kin work in coordination to defend resources that are clumped and subject to resource gradients (many horticultural, pastoral, and agricultural societies), descent systems become stronger and more oriented toward institutionalizing wealth flows (Alvard 2003; Ember, Ember, and Pasternak 1974). Accordingly, there is limited differentiation among mobile foragers, where kinship is loosely organized around “extensive” principles (i.e., involving more, but often relatively weak, connections), whereas there is significantly more inequality among agriculturalists (Kaplan, Hooper, and Gurven 2009), where “intensive” kinship (i.e., favoring the kin group and competing with non-kin) likely served as one of the earliest and most fundamental institutions regulating cooperation and the flow of resources within and between populations (Flannery and Marcus 2012; Schulz et al. 2019).

Systems of inheritance, because they pattern the intergenerational flow of resources, are critical among kinship institutions affecting inequality (Glowacki 2020). As described above, material wealth, which is both relatively defensible and easily transmitted across generations, produces greater disparities than other forms of wealth regulated by kinship such as status/succession and inherited social networks and capital (Borgerhoff Mulder et al. 2009; Mattison et al. 2016; Smith et al. 2010), although there are certainly notable exceptions (e.g., Indian castes). Moreover, demographic transitions mean that wealthy parents concentrate their wealth in relatively few children, leading to even greater disparities between haves with fewer children and have-nots with many (von Rueden 2020). Finally, kinship systems reinforce gender-biased disparities: patriliney arises when resource differentials make it possible for wealthy parents to achieve greater long-term reproductive success through investments in sons whereas matriliney arises in contexts such as horticulture where there are benefits to privatizing resources but differentials are not steep enough to warrant investments in sons over daughters (Mattison 2016; but see Borgerhoff Mulder et al. 2019). Thus, by institutionalizing how resources, status, and social support are accessed and transmitted, kinship is intimately tied to the initial emergence of inequality and its variation across systems of production.

The highest rates of inequality are expected to be expressed in complex societies where kinship institutions have arguably been replaced by others (e.g., religions, systems of governance) (Newson and Richerson 2009; Schulz et al. 2019). Thus, while foundational to the development of complex institutions regulating wealth (Acemoglu and Robinson 2009), kinship institutions play a less direct role in escalating inequalities characteristic of modern nation states. Still, systems of inheritance remain critical to the persistence of inequality even within broader regulatory regimes (Piketty 2015; Yanagisako 2015). Indeed, Piketty (2015) famously differentiated between inequalities arising from labor income and inequality due to inherited assets, finding that inheritance is key to wealth concentration in developed countries. This suggests that attending to the functions of kinship, its relationship to the resource base, and enduring motivations to enhance the status and success of genealogically related individuals will be critical even to current efforts to minimize inequalities.

3. Case Studies

We can illustrate as well as evaluate the above scenarios regarding the development of hierarchy in small-scale societies by summarizing two case studies. We order these in terms of increasing population density and social scale.

3.1. Low-Density Societies: Native Americans of the Northwest Coast

The native societies of the Northwest Coast of North America (hereafter, NWC) are renowned for their artistic achievements, particularly wood carvings ranging from ceremonial masks to totem poles, and for potlaches (formal gift-presentation feasts) and other ceremonial events. Their most significant institutions governing inequality included social division into hereditary nobility, commoners, and slaves; property rights governing

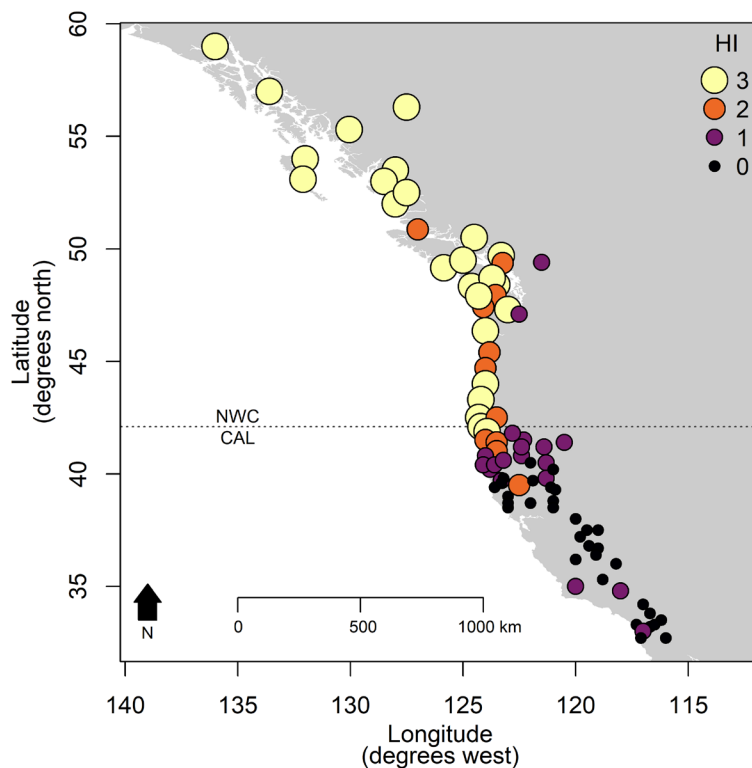


Figure 1. Map showing Hierarchy Index values of 89 hunter-gatherer societies along the Pacific coast of North America (Northwest Coast and California). The Hierarchy Index sums the presence/absence of three variables: internally ranked kinship, unequal food distribution, and slavery, thus taking values ranging from 0 to 3. (After Smith and Codding [2021].)

both material realms (resource patches, food stores, wealth objects) and symbolic rights (over titles, crests, ceremonies, songs, and dress); and elite control over organization of labor and distribution of harvested resources (figure 1). NWC societies traditionally lacked any domesticated food sources and thus illustrate that persistent institutionalized inequality is not limited to agricultural societies (Arnold et al. 2016).

The typical NWC polity consisted of a core kin group plus affiliated collateral kin and non-kin, numbering a few dozen to several hundred people, co-residing for half or more of the year in a winter village and dispersing to smaller task groups in the warmer months when most resource harvesting occurred. This unit is often termed a house group, as it might occupy a single cedar-plank longhouse (though larger groups occupied two or more adjacent longhouses). The senior male head of the core lineage or ambilineal kin group is referred to in the literature as “chief” or “house chief.” Our summary and analysis of NWC societies is based on ethnographic information pertaining to early contact times, primarily the eighteenth and nineteenth centuries (Ames 2003; Donald 1997; Drucker 1983; Ferguson 1983; Jorgensen 1980; Mitchell 1984; Richardson 1982; Schalk 1981; Suttles 1990).

Resource control. Pacific salmon (five species) were the preeminent food resource for most NWC societies, providing half the diet or more. These were available in often huge numbers but concentrated in time (a month or two per run) and space (primarily harvested at stream mouths); salmon consumption was thus constrained by labor in processing rather than harvesting. Terrestrial resources were limited, particularly for more northerly groups, and most non-salmonid resources were either dispersed or found in limited quantities. This combination of high resource density and high patchiness (circumscription) provided ideal conditions for a subset of the social group to claim and defend control and trade access for allegiance of and control over subordinates. Indeed, each NWC local group contained a set of close kin who held title to specific resource patches and directed the labor of co-residing commoners (often collateral kin) as well as a small number of

slaves who mostly performed drudge work. Commoners were generally free to reside with any local group where they had kin; this limited the power of titleholders, fitting the patron-client model rather than a truly despotic or feudal pattern.

Wealth transmission. The indigenous justification for differential control or ownership of resource sites (as well as stored foodstuffs, wealth objects, ceremonial rights, and the like) was in terms of supernaturally sanctioned property rights. That is, ownership—whether of a salmon stream or a ceremonial prerogative—had been granted to the owners' remote ancestors by a spirit being. Such property rights were clearly codified and transferred to descendants as well as through marriage or (in the case of wealth objects and surplus foods) to non-kin, particularly the elite members of allied local groups. In particular, fishing sites were transmitted to specific heirs (usually house chiefs) in the great majority of NWC polities. Thus, wealth transmission was a key component of NWC society, and much effort was directed to the accumulation of wealth through trade, gift exchanges, and the support of skilled part-time artists to create ceremonial masks, ornate feast bowls, painted house screens, seagoing canoes, and (in many areas) totem poles that depicted the sponsoring spirits of the titleholders. Wealth was also obtained (and lost) through raiding, and the slaves obtained on raids were themselves a form of wealth, exclusively owned by titleholders.

Managerial mutualism. However, wealth accumulation depended on the coordinated labor of all polity members. The house chief directed collective action in harvesting, processing, and storing salmon and many other resources. By increasing total income, this managerial role benefitted all group members; even slaves would be worse off with lower production. Granting that NWC chiefs solved coordination problems in allocating subsistence labor, their power to enforce cooperation was quite limited, as excessive coercion might result in emigration to another group (though this option was not open to slaves). As the house chief controlled much of the collective production of his group, even exacting a tithe from individual foraging efforts, he could be viewed as engaging in resource redistribution. However, it is clear that titleholders fared much better than commoners or slaves during periods of scarcity, so it is dubious to view this redistributive role as risk reduction. In addition, much surplus production was used to support wealth accumulation, feasting of allies from other polities, and provisioning of raiding parties. As regards scalar stress, although a chief and other members of the elite did help hold a polity together, the average size of NWC groups was smaller than that of Native Californians, where PII was mostly minimal or absent. However, it must be recognized that California production was primarily conducted by households rather than larger units.

Intergroup competition. Raiding was endemic over most of the NWC, though most intense in central and northern regions. Since winter villages sometimes contained multiple house groups, defense against raids might well involve inter-polity cooperation. However, offensive raiding was almost exclusively conducted by single polities, often against distant groups but also against nearby enemies. Motives for raiding were multiple, including revenge and territorial expansion, but seizure or plunder (including slaves) was a major goal. This plunder was distributed among members of the raiding party, though titleholders claimed the lion's share, including all captives. On balance, however, it is unlikely that plunder contributed a large fraction of the wealth controlled by NWC elites, with the possible exception of a few groups that specialized in slave-raiding. The contribution of elites to NWC offense and defense is difficult to ascertain, but it does not appear that chiefs were obliged to lead raids, and there was no organized military hierarchy. Chiefs played a larger role in defense, in the sense that they initiated and maintained alliances with other polities that protected them from attack by these allies. Although renowned warriors were often feared, even within their own group, there is little indication that this was a pathway to power; instead, elite status was inherited, albeit advanced and validated through wealth accumulation and resulting regional influence.

Conclusions. NWC chiefs and their closest relatives formed a hereditary aristocracy; most other members of the house group were commoners (whether genealogical relatives or not), while several to many were slaves owned by the elite, who had complete control over slaves' labor and indeed their lives (Donald

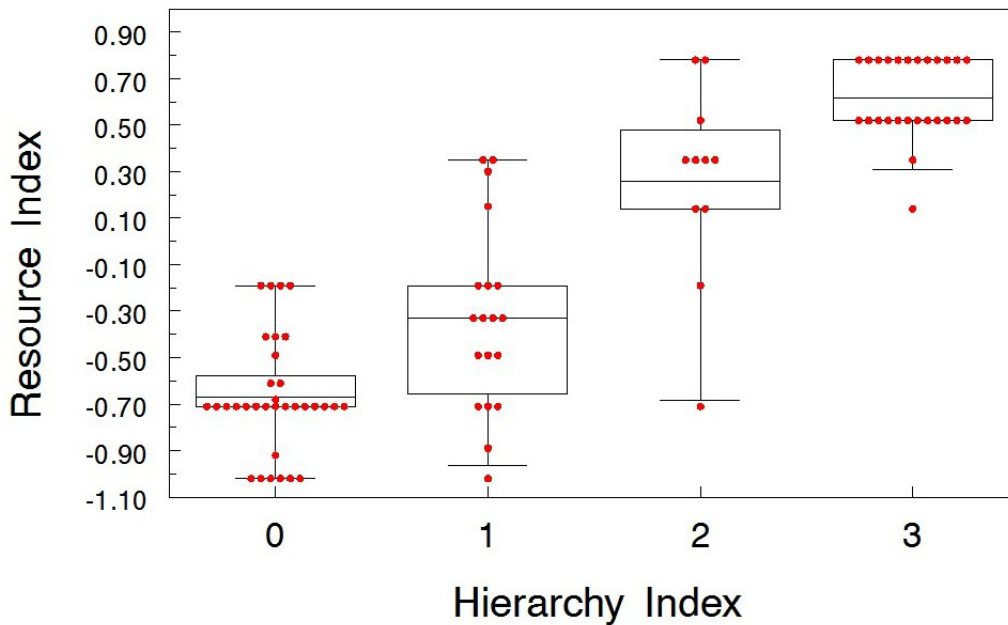


Figure 2. Relationship between Resource Index and Hierarchy Index for 89 hunter-gatherer societies along the Pacific coast of North America (box = 25th to 75th percentile; horizontal line = mean; whiskers = 95% confidence interval). The Resource Index quantifies the dietary percentage contributed by aquatic animals (primarily marine fish) relative to terrestrial plants and animals; see Figure 1 for definition of Hierarchy Index and Smith and Codding (2021) for further details.

1997). This degree of hierarchy contrasts with most Native American societies further south (in California), where chiefs had some administrative roles but little power or wealth, there was no defined aristocracy, and slavery was absent (figure 1). Note, however, that NWC chiefs had to validate their inherited rights through various means: managerial success in converting group labor into stored foodstuffs, patronage of skilled artisans to produce wealth objects, and negotiating and maintaining marital and military alliances with neighboring groups. On balance, the evidence indicates that the remarkable degree of institutionalized inequality among NWC societies is best explained by the fact that key resources (particularly major salmon runs) were dense, predictable in location and season, and concentrated in space and time (figure 2). This allowed access to these resource patches to be controlled by a subset of individuals in each local group, typically members of the highest-ranking kin group headed by a hereditary chief.

3.2. Intermediate-Density Societies: Polynesia

East Polynesia, the large expanse of Pacific islands bounded by New Zealand, Hawai‘i, and Rapa Nui (Easter Island), provides a series of examples of what are typically classified as “chiefdoms” (Kirch 1984). These groups often display a system of social ranking based on inherited status separating ariki/ali‘i (“chiefs”) from common people. Kinship largely forms the basis of ranking in the form of a “conical clan” system, where family lineages are ranked based on degree of separation from a distant ancestor (Kirch and Green 2001). Indeed, nearly all Polynesian societies exhibit some degree of hereditary ranking and inequality, particularly in terms of property rights, tapu/kapu (rules and prohibitions), and mana (spiritual power). This shared set of cultural traits spread via rapid population expansion into this vast region by closely related peoples ca. 800 years ago (Wilmshurst et al. 2011). However, within these broad shared features, there is also a high degree of variability in a range of cultural traits, including technologies, subsistence practices, and degrees of social stratification and inequality,

much of which corresponds to differences in island size and resource productivity (e.g., DiNapoli et al. 2018; Kirch 1984). Highly stratified social groups, for example, tend to be found on the more agriculturally productive high volcanic islands, whereas relatively minor status differences often occur on less productive atolls or small, marginally productive volcanic islands (Kirch 2017). Since all East Polynesian societies share a recent cultural ancestor in West Polynesia who most likely possessed simple differences in social status ranking (Currie et al. 2010; Currie and Mace 2011; Kirch and Green 2001), the resulting variation provides a series of model case studies in the cultural evolution of variable degrees of PII (DiNapoli et al. 2018; Kirch 2007).

Among East Polynesian societies, the Hawaiian Islands were organized into one of the most highly stratified and institutionalized hierarchical social systems. Over the course of several centuries, Hawaiian society strongly diverged from the typical conical clan system, with elaborate institutionalized divisions, differential access to power and resources, and extra levels of decision-making (Currie et al. 2010; Kirch 2010). At the time of European contact in the eighteenth century, Hawaiian society was divided into a large commoner class (*maka'āinana*) and a smaller rank of hereditary elite, or *ali'i*. *Maka'āinana* worked in the fields, harvested the sea, and were forbidden to own land or keep genealogies (Kirch 2010). The *ali'i* class itself was organized into a set of hereditary classes, including multiple ranks of *ali'i*, administrative chiefs, and land managers (Kamakau 1991, 1992; Malo 1987), whose status corresponded with land ownership via a highly structured system of territorial and differentiated land rights (figure 3). The main territories were *ahupua'a*—coast-to-inland land segments encompassing the area from the inland mountain peaks to the coral reefs, with boundaries denoted by physical markers. *Ahupua'a* provided the community access to a range of different resources available on the landscape, from marine foods and cultivated crops to timber. Below *ahupua'a* were further divisions called *'ili*, which were further divided into several types, such as *ko'ele* owned by chiefs. Each land division had an administrative chief and a land manager (*konohiki*) who served as administrative supervisors over the commoner class, including many aspects of the redistributive economy, and also enforced the laws and the *kapu* system. As a special interest group that served as a conduit between the *ali'i* and the common people, the *konohiki* represent a unique institutionalized managerial class in Polynesia. Their existence marks a more bureaucratic system of governance that differs from the more generalized mode of leadership typically seen in chiefdoms, leading some scholars to regard Hawai'i as an “archaic state” (Kirch 2010; Spencer 1990).

Intensive archaeological work in Kohala, a district (*moku*) in northwest Hawai'i Island, provides a unique, deep-time perspective on the emergence of an elaborated form of PII from relatively simple status differences. Kohala is a ca. 60 km² settlement site of domestic, ritual, and agricultural features, including animal enclosures, walls, and trails marking territorial *ahupua'a* boundaries (figure 3). The environment is relatively arid and windy, and subsistence focused on rain-fed cultivation of sweet potato and other dryland crops, supplemented by animal husbandry and marine foraging. Following initial human settlement between the eleventh and thirteenth centuries, Kohala was the site of intensified agricultural, residential, and ritual activity in a series of phases until its abandonment in the nineteenth century (Athens, Rieth, and Dye 2014; Dye 2016; Ladefoged, Lee, and Graves 2008). Detailed archaeological analyses of these activities highlight the ways in which these patterns match predictions of the models for PII discussed above.

Kohala exhibits a high degree of spatial heterogeneity in soil productivity as well as risk and uncertainty from droughts that impacted available food resources. The central mid-elevation core was the most productive agricultural zone and least prone to risk from droughts, with productivity declining and risk increasing with distance from this central core (DiNapoli and Morrison 2017; Kirch et al. 2012). People initially settled and intensified cultivation in the highest quality resource patches—i.e., those that were the most dense and predictable. These patches in the central core were therefore also the most economically defensible, and, predictably, it is here where we see the greatest segmentation into clearly defined agricultural plots and the highest differentiation into multiple *ahupua'a* territories compared to the less productive, higher risk areas (Kirch et al. 2012; Ladefoged, Lee, and Graves 2008). These processes also coincided with an increase in

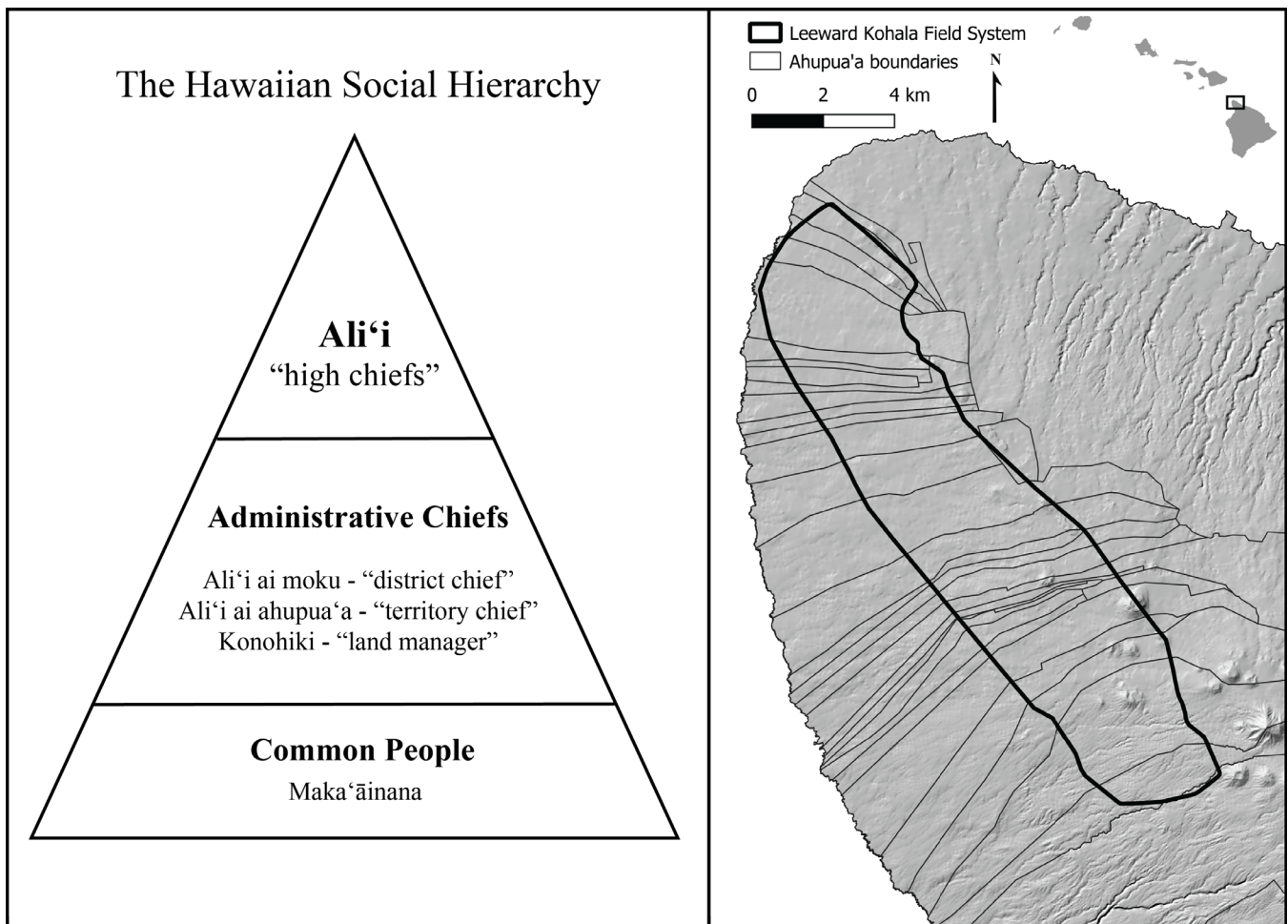


Figure 3. Left panel: The Hawaiian social hierarchy, showing different rankings within the contact-era Hawaiian society. Note that there were also several ranks of high chiefs. Right panel: The location of the Leeward Kohala Field System (black bold line) and ahupua'a territories (dark grey lines) within the moku of North Kohala, Island of Hawai'i.

residential features and temples (heiau) as well as further segmentation into more and more ahupua'a territories, argued to reflect increased managerial presence (Dye 2016; Field, Ladefoged, and Kirch 2011; Ladefoged, Lee, and Graves 2008). Moreover, changes in residential features suggest population growth and plateau in the most productive areas preceding expansion and increasing population in less productive areas (Kirch et al. 2012). This pattern is expected by the IDD—following settlement of the most economically defensible habitats and increases in population density, individuals within productive areas prevented further settlement, and newcomers were forced into more marginal and risky habitats.

Once differentials were in place, subsequent drought events amplified the differences in productivity among various ahupua'a in Kohala (DiNapoli and Morrison 2017), indicating that environmental risks may reinforce wealth differentials in certain contexts versus eliminating them in more egalitarian settings (Borgerhoff Mulder et al. 2009). This is underscored by an uneven pattern of land use resulting in pronounced despotism in Kohala according to habitat quality. Increased territory subdivision further intensified the uneven distribution of resources and led to even greater social inequality, as precipitated by IDD dynamics (Ladefoged, Lee, and Graves 2008). Because of increases in territoriality within Kohala and elsewhere on Hawai'i Island, options for emigration by subordinates would have become increasingly limited—i.e., circumscription increased. At

a certain point subordinates did better by staying within the despotic group than by risking lower quality options elsewhere.

Over several generations, the IDD and differential risk from crop failure likely would have provided the impetus for patron-client relationships between dominants (i.e., ali'i) and subordinates (i.e., maka'āinana), whereby ali'i exchanged a portion of their resources for some form of later repayment, such as labor, territory defense, or reciprocated resource exchange in good years (DiNapoli and Morrison 2017). This arrangement likely benefited both the ali'i and maka'āinana, with the latter “making the best of a bad deal.” It appears that the distinct rank of Hawaiian land managers—the konohiki—emerged to maintain patron-client relationships in increasingly large and despotic Hawaiian communities. These same processes occurring within individual territories are also hypothesized to have played out at larger geographic scales within the archipelago, where intergroup competition drove the emergence of increasing levels of organizational complexity (see Kirch 2010).

This section has provided a sketch of how archaeological settlement patterns and resource use correspond to many of the predictions of the PII models discussed above. It is in the unfolding of these interrelated processes that we can potentially explain the emergence of PII evident in the Hawaiian ethnohistoric record. Given multiple generations of frequent resource shortages and sustained differences in resource-holding, these processes of competition and cooperation may have laid the initial groundwork for the institutionalization of hierarchical social organization seen in Hawai'i at the time of European contact in the eighteenth century. These are hypotheses that warrant additional attention.

4. Conclusions

In this chapter, we have reviewed evolutionary explanations for the emergence of persistent institutionalized inequality—PII—that began in earnest some 10,000 years ago. In our view, the fact that PII was largely absent for the great majority of our species' existence does not suggest that humans are “naturally” cooperative. Conversely, the pervasiveness of institutionalized inequality in recent millennia does not suggest that humans had somehow subverted natural tendencies toward PII until conditions made it possible to achieve it. Rather, humans possess the distinct capacity to be both selfish and cooperative, relatively egalitarian and highly unequal, and to express these tendencies facultatively, in response to different social, cultural, and ecological drivers (Jaeggi et al. 2016).

Linking these drivers to the emergence of PII, however, is not a simple task. Despite concerted effort, there remains little resolution regarding which model or combination of models provides the “best” explanation of the evolution of PII (Wilson and Coddling 2021). Indeed, it is likely that different models or combinations account for various real-world cases of PII, and thus researchers need to remain open to a variety of possible scenarios. Accordingly, we have reviewed here a range of models that posit specific conditions under which PII is expected to evolve: managerial mutualism emerges when managers provide some benefit by coordinating group activities; this can yield to despotism (coercive dominance) when decisions of subordinates are constrained (e.g., by environmental circumscription) such that they prefer subordinate status to other alternatives, creating patron-client dynamics that increasingly serve elites as inequality becomes institutionalized. As revealed by our case studies, all of these models depend crucially on the nature of resources being exploited as well as the institutional “tool kit” locally or historically available (table 2). While recognizing the variety of factors that can shape inequality in wealth and power, the evidence from these and other small-scale societies convinces us that economic defensibility in combination with environmental circumscription, plus variation in resource-holding potential, are the most likely factors driving the emergence of PII. The intergenerational transmission of wealth allows these differentials to persist across generations, often in ways that promote cumulative advantage.

Table 2. Summary of Factors Promoting Institutionalized Inequality in Case Studies

Causal factor	Northwest Coast societies	Polynesian societies
Facilitating collective action	Important (resource harvest and storage)	Important (mitigating risk, coordination, redistribution)
Redistribution	Less important	Important (agricultural resources)
Scalar stress reduction	Unimportant (polities relatively small)	Unimportant (occurs, but doesn't drive inequality)
Intergroup competition	Important (alliances, chronic raiding)	Important
Circumscription	Important (major resources highly clumped)	Important (land limited, major resources highly clumped)
Patron-client system	Important (elites and commoners)	Important (elites, commoners, land managers)
Wealth transmission (key forms of property)	Important (resource harvesting sites, hereditary titles, slaves)	Important (land inheritance, hereditary titles)

Drawing on the work of many others (e.g., Schulz et al. 2019), we have argued that kinship institutions likely played an outsized role in shaping the flows of resources in small-scale societies with emergent inequality. Although this builds on the centrality of relatedness in the evolution of cooperation in other species, humans have culturally elaborated manifold roles and rationales for kinship and quasi-kinship on this genetically evolved base. Our case studies illustrate the ways that humans use kinship as a scaffold to erect a variety of institutional structures, some of which serve to promote PII. This has important implications for considering how the models discussed here may or may not extend to explanations of inequality in contemporary nation states, where kinship institutions have largely, but incompletely, been replaced by other institutions regulating the flow of various forms of wealth.

It is important to note that this review is not exhaustive. We have excluded some prominent explanations of inequality involving agricultural intensification, technological innovation, and population pressure that we feel are not fully supported by available evidence (e.g., Gurven et al. 2010) or are subsumed by other, more general explanations (as discussed in Mattison et al. 2016; Shultziner et al. 2010; Wilson and Coddling 2021). Nor have we addressed the important question of who stands to benefit the most from inequality. Theory suggests some of this is happenstance (e.g., who happens to first occupy a habitat or what “shocks” quasi-randomly increase the wealth of some [Borgerhoff Mulder et al. 2009]), but some explanations emphasize actors realizing their underlying potential for leadership/dominance as contexts allow (e.g., “aggrandizers” [Hayden 2001]). The linkages between inequality and leadership are important in considering the question of not only who is dominant versus subordinate in models of inequality, but also who has the power to shape the institutions that structure inequality once such institutions begin to emerge (Garfield, von Rueden, and Hagen 2019). Additionally, the dynamics of intergroup encounters are likely to shape inequality in ways that we have only touched on here (Henrich and Boyd 2008; Migliano and Vinicius, this volume; Richerson et al., this volume; Rogers, Deshpande, and Feldman 2011; Turchin 2011). Such dynamics will undoubtedly be important to consider as globalization intensifies.

Finally, we note that models addressing the emergence of PII within relatively egalitarian systems do not extend neatly to societies in which inequality is already entrenched. While the dynamics of resource defensibility and transmission may still be important in contemporary societies, governmental and third-party institutions play stronger roles in regulating inequality and are subject to power differentials among stakeholders that differ from those in small-scale societies, where negotiations are conducted face-to-face among known

individuals. Other chapters in this volume describe the evolution of institutions, how and when institutions are manipulated by elites and resisted by non-elites, and how the rules that govern changing institutions are set and re-set. Understanding such drivers of institutional change—a remarkably impoverished area of empirical inquiry (Powers, van Schaik, and Lehmann 2016)—alongside the variables affecting heterogeneous individual and group-level payoffs will be critical to understanding the factors that shape inequality generally and within a given context now and into the future.

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Glossary

- Achieved status:** differences in power or prestige that are due to personal qualities of an actor (e.g., charisma, strength) rather than ascribed by persistent institutional means.
- Ascribed status:** differences in power or prestige that are independent of personal qualities; these are often due to the sub-group the actor is born within (e.g., hereditary elites or commoners).
- Allee effects:** conditions where larger group size increases habitat suitability up to some asymptote.
- Circumscription:** boundaries on resource expansion due to geographic, institutional, population, or other restrictions that make emigration costly.
- Collective action:** coordinated activity by multiple individuals pursuing a common goal.
- Collective action problem:** any situation where the best move from a selfish point of view does not produce the best collective outcome; also termed “social dilemma” (e.g., prisoner’s dilemma, tragedy of the commons).
- Despotism:** unequal control of resources resulting from coercion rather than mutualism.
- Dominants:** elites who disproportionately control resources via coercion rather than mutualism or prestige-based mechanisms.
- Economic defensibility:** when the benefits of defending exclusive control of resources exceed the costs.
- Egalitarian:** social relations characterized by primarily achieved status differences (rather than inherited or otherwise ascribed), excluding those due to age or gender.
- Institutions:** the patterned interactions between individuals resulting from their regular and predictable adherence to norms and rules.
- Persistent institutionalized inequality (PII):** differential access to power or resources involving institutionalization of status hierarchies by ascribed privileges or positions such as social classes, castes, hereditary titles, or heritable differences in wealth.
- Polity:** an autonomous political unit controlling a contiguous resource base, but not necessarily co-residing in a single settlement.
- Resource-holding potential:** ability to control resources, which can be due to differences in size, wealth, power, or priority of arrival.
- Risk:** variation that is extrinsic to (i.e., cannot be controlled by) actions of affected individuals.
- Small-scale societies:** societies characterized by small polity size (in hundreds to several thousands), minimal occupational specialization, and subsistence economies based on foraging, pastoralism, or non-intensive agriculture; many but not all lack institutionalized inequality.
- Subordinates:** individuals subject to control by dominants due to differences in resource-holding potential.
- Territoriality:** exclusive or near-exclusive control of an area or resource patch through overt defense or advertisement.