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What is a society? Building an interdisciplinary perspective and why that's important

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Abstract

I propose the need to establish a comparative study of societies, conceived of specificially here as *bounded groups beyond a simple, immediate family that have the potential to endure for generations, whose constituent individuals recognize one another as members, and that maintain control over a physical space*. This definition, with refinements and ramifications I explore, serves for cross-disciplinary research because it applies not just to nations but to diverse hunter–gatherer and tribal groups with a pedigree that likely traces back to the societies of our common ancestor with the chimpanzees. It also applies to groups among other species for which comparison to humans can be instructive. Notably, it describes societies in terms of shared group identification rather than social interactions. An expansive treatment of the topic is overdue given that the concept of a society (even the use of such synonyms as primate "troop") has fallen out of favor among biologists, resulting in a semantic mess; whereas sociologists rarely consider societies beyond nations, and social psychologists predominantly focus on ethnicities and other component groups of societies. I examine the relevance of societies across realms of inquiry, discussing the ways member recognition is achieved; how societies compare to other organizational tiers; and their permeability, territoriality (allowing for mobile territories), relation to social networks and kinship, and impermanence. We have diverged from our ancestors in generating numerous affiliations within and between societies while straining the expectation of society memberships by assimilating diverse populations. Nevertheless, if, as I propose, societies were the first, and thereafter the primary, ingroups of prehistory, how we came to register society boundaries may be foundational to all human "groupiness." A discipline-spanning approach to societies should further our understanding of what keeps societies together and what tears them apart.

1. Introduction

I broadly address societies, in the sense of *enduring territorial groups whose members recognize each other as belonging*, as warranting far greater research focus, and collaboration, across disciplines. Societies include nation states; horticultural and hunter–gatherer groups in our past; and select groups in other species. My goal, beyond first distinguishing societies from other groups, is to highlight the critical features of societies and their implications, to motivate academics to investigate why such groups exist, how they stay intact, and what causes them to fall apart. This treatment is overdue because societies are too often examined in a scattershot way or confounded with other assemblages where the associated individuals don't recognize themselves as belonging to a particular group over the long term.

Among the points raised in this article that are likely to yield fruitful discussions: (1) Societies cannot adequately be distinguished from other associations based on shared culture, political autonomy, cooperation, or functionality. (2) Societies should be understood fundamentally as *identity groups* in which membership is determined by shared perceptions of belonging, rather than as social groups held together by positive interactions, even if most scholars are primarily interested in the causes and consequences of sociality within such groups. (3) Recognition of membership in societies takes two basic forms. Many animals have *individual recognition societies*, which depend on the members' ability to keep track of every other member as a unique individual, a type of minimal group I call a "mere acceptance group." Humans are among a minority of society-dwelling vertebrates that instead employ markers of identity, such as specific gestures, rituals, and modes of dress, to establish who belongs. (4) Even though human societies remained small through prehistory, the possibility that such *anonymous societies* opened for life among strangers would prove essential to the expansion of smaller societies into nations. Indeed, humans are far from the only species that have anonymous societies, and the size of such societies need in no way be limited by brain size (i.e., Dunbar's number). (5) Although societies may have neutral or friendly relationships, they retain their separation. (6) Society members need not be related, and assessing

and keeping track of kin and assessing and keeping track of society members are likely to be cognitively distinct tasks, carried out to navigate different, if at times overlapping, challenges. (7) To better reflect the diverse means by which societies command physical space, the concept of "territory" should be treated broadly to include whatever land or stretch of sea a mobile society controls at a given time, through aggression or avoidance, and to allow for the possibility that visits from outsiders may be permitted. (8) Studied with respect to their social ramifications, the society can be one of several tiers of engagement, with other associations, such as matrilines, of secondary social importance. (9) Societies are distinct from social networks, which tend to be more fluid and extend within and between societies. (10) Societies are impermanent. I contend that their "collapse" (more often a division) generally stems from divergences in how members identify each other, a process of "turning the familiar into the foreign" that represents a critical aspect of social change.

An underlying presupposition is that people do not join societies because they assess it serves their interests; rather, membership is as central to ordinary human existence as finding a mate or rearing a child (making any exceptions especially intriguing: sect. 8). It is also imperative to understand that contrary to the concerns of some (Dunbar, 1988, p. 10; Giddens, 1984), societies can be clearly delimited even though they are not static: Societies often permit social intercourse with outsiders, can be open to transfers in membership, and in humans are permeable to goods and ideas.

Why are societies, of the sort I characterize here, important? For humans, the society is universally the most significant group for assigning duties, obligations, rights, and benefits to individuals (Searle, 2010), so their study should clarify how these properties arose. What of other species with clear-cut groups that extend beyond the workaday ties of parent(s) rearing offspring? There will always be attractive and repulsive forces when living among others of one's own kind (Krause & Ruxton, 2002). The proposed concept of "society" does not specify the advantages of societies, which vary greatly; can be an upshot of selection acting on the individual members, the group as a whole, or both; and may be difficult to work out, as MacDonald and Newman (2022) found for social badger clans that Kruuk (1989, p. 109) called "tight communit[ies] of solitary animals." It is not the job of a definition to explain the phenomenon it names. Rather, the definition has been worded to avoid preconceived notions of function, and to serve instead as a neutral framework for addressing big questions around why societies exist. Hence this article investigates the basic, proximate mechanisms of how such groups form and maintain continuity in time and space, as a jumping-off point for further studies. What is clear is that although even a facility to form fluid assemblages can furnish net benefits (Krause & Ruxton, 2002), many society-inhabiting animals no longer have an option to survive outside such discrete groups.

My contention will be that our primogenitors have always lived in societies, even as those societies have changed dramatically, which is to say that humans have never inhabited an "unbounded social landscape" (Gamble, 1998, p. 443; Ingold, 1999). Past societies, the "nations of their day" (Moffett, 2019, p. 5), trace back uninterrupted to those of a common ancestor with the chimpanzee and bonobo, or so the principle of parsimony suggests given that all three species form enduring ingroups with clear memberships.

Beyond building on that hypothesis, my objective is to express the idea of a society such that, however alien they otherwise appear to us, we can seek useful analogies with animals living in groups that share the characteristics I have laid out, if only for mechanistic reasons. A survey and detailed review of vertebrate societies is underway, but my exemplars here will be biased toward our fellow mammals, often as contrasted with social insect societies. In what ways does their identification as comembers, and relations within and between the societies, resemble or differ from the situation for *Homo sapiens*, and what might this tell us about societies as a general life strategy?

1.1 Meanings matter

A commitment to carefully articulate what is meant by "society" amounts to more than mere semantics. As Hume wrote, "The chief obstacle… to our improvement in the moral or metaphysical sciences is the obscurity of the ideas, and ambiguity of the terms"; two centuries later Austin (1975) insisted that serious thought must begin with a clear grasp of the meanings of words. My aim is to offer a definition of society (mapped out in sect. 3) that translates across academic vocabularies while conforming to a commonplace perception of societies that gives primacy to the passport-holding, national anthem-singing, territorial groups of our day over the varied institutions that compose or connect them. Admittedly, for political scientists, macrosociologists, and economists who think of societies entirely in terms of states, no wider conception than this is necessary; just a handful of social scientists are motivated to delineate societies so as to embrace pre-state peoples (e.g., Riley, 2021). Still, I hope my approach puts important concepts in play to support productive interchange and debate (Clark & Tetlock, 2022) across sociology, anthropology, psychology, biology, and, increasingly, computer science, applied mathematics, and others.

The word "society" of course has multiple common usages – *Merriam-Webster Unabridged* gives 17, starting with "companionship" and "voluntary association." There is a major difference between "companionship," or being merely social, and forming separate, enduring groups. English would benefit from a unique word for the latter, especially because no *Merriam-Webster* entry adequately covers it; closest is 4B: "a community, nation, or broad grouping of people having common traditions, institutions, and collective activities and interests." Clearly the perspective on societies taken here by no means applies to every broad grouping of people. The chance of my putting forward a novel term for the groups I have in mind that would catch on widely is slim, to say the least, so what I seek is to present a definition of "society" that stands on its own in order to open up a dialogue.

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1.2 Societies in other species

Terms whose meaning matches that of "society" in the sense employed here exist for other species: Take "community" for chimpanzees, bonobos, spider monkeys, and some bottlenose dolphins; "troop" for other primates, gorillas included; "unit" for gelada monkeys and sperm whales; "clan" for spotted hyenas, meerkats, and, again, sperm whales; "pack" for gray wolves; "core" for African savanna elephants; "coterie" for prairie dogs; "pride" for lions; "band" for horses and plains zebras; and "colony" in two mole rat species – to mention just the intensely studied mammals that come up in this article.

But should these be called societies? In the past few years, words like "troop" – let alone "society" – have fallen out of favor among biologists. The move of choice has been to replace such terms with the vague word "group," with a loss in clarity and unfortunate consequences for the study of sociality. As I have written (Moffett, 2019, p. 5), "While a troop is undeniably a group, it is a group of a very special sort, being set off from all other monkeys by a closed and stable membership that makes it… worthy of being labeled by a term of its own." This aversion to discussing societies has curious outcomes; for example, despite its title, the 760-page text *Mammal Societies* (Clutton-Brock, 2016) very seldom brings up societies in the sense employed here, presumably because the author uses the word only in the broad sense of "voluntary association" (e.g., the book describes certain groups as "stable" but nowhere specifies what this means).

I understand why some might hesitate to apply the term "society" and its synonyms to animals or even early humans. "Society," like many words, originally described living peoples before it was applied to prehistoric groups and the natural world. No analogy is perfect, and most words must embrace some range of phenomena to be of practical utility. Still, it is important not to lose sight of the fact that human societies are mediated by uniquely complex cultures and intentional behaviors, and the capacity to imagine the mental states of others (Tomasello, 2014), innovate technologies (DeFries, 2014; Henrich et al., 2016), produce art (Winner, 2019), assign symbolic values to objects (Guibernau, 2013; Moffett, 2022a), and so on. Such distinctions guarantee the impossibility of ever subsuming sociology into the hard sciences, even if insights from biology contribute to the social sciences and vice versa. Nevertheless, some of the most illuminating comparisons in science are those made between things ordinarily seen as distinct (Moffett, 2020a), in this instance including across radically unrelated species that differ markedly in the structure of their societies yet may have converged on similar solutions to how they navigate challenges of group membership.

Certainly we cannot appreciate how the human experience of societies is unique without first understanding its continuity with life strategies in other species. Thus the discussion to follow draws freely from information about other animals before narrowing its focus to people. Human societies have shifted over time along several paths from the "ethnolinguistic groups" (I prefer to call them multiband societies) of hunter–gatherers spread out in multiple wandering, generally fluid bands, to an assortment of what are loosely called tribes (the mid-range societies of settled hunter–gatherers and horticulturalists: Fowles, 2002), to chiefdoms and states. I discuss tribal and hunter–gatherer societies in the past tense, as the groups that remain are embedded within national territories, so in my parlance (sect. 3.8) should be considered ethnicities rather than societies, except for the very few that have stayed out of contact (though the word will likely still have some utility for anthropologists studying any such groups that have by and large continued to act independently). I pay recent nomadic hunter–gatherers relatively close attention as a contrast to nations in that their social organizations, while featuring derived cultural innovations, more likely reflect patterns from our past (Rodseth et al., 1991).

1.3 A note on organization

Section 2 considers common definitions of "society" already in the literature. Section 3 proposes a revised definition, then discusses its implications point by point. Once the society is understood in terms of an identification with others, we explore how it relates to varied social groups (sect. 4) and networks (sect. 5). Section 6 reviews how members assess who belongs, and the impermanence of societies. Section 7 describes how any definition, and to the point here, the one proposed for society, can fall short, giving instances of groups that might reasonably be considered societies but strain the proposed definition, whereas section 8 addresses human populations that may lack societies in the sense pursued here. The conclusion reflects on why studies of societies may be rewarding across disciplines.

2. Alternative approaches to describing societies

A common diagnosis of societies by social scientists (as in respected textbooks like Stolley, 2005) states that they consist of people sharing a culture. A single culture does not, however, accurately describe modern societies, which incorporate cultures from varied sources (sect. 3.7). Although multiculturalism is a wellspring for national character in places like the United States, on close inspection even the most uniform nations are heterogeneous; for example, the dominant ethnicity of China, the Han, encompasses what originally would have been independent peoples that have not quite merged through assimilation (sects. 3.6 and 3.7: Joniak-Lüthi, 2015). Still, this interpretation of societies may serve if by "common culture" we mean those aspects of identity (i.e., markers: sect. 3.4) that even diverse societies require of their citizens to stay intact without undue application of force (in the United States, respect for the flag, endorsement of ideals of freedom, etc.: Levinson, 1988; Orgad, 2011; Poole, 1999). In the sense of sharing one uniform culture, though, such societies only existed before sedentary peoples incorporated outsiders en masse (sect. 3.7).

Others conceive of a society as a people who share "a myth of common descent," or "an intuitive sense of the group's separate origin and evolution" (Connor, 1992, pp. 48–49), a conception that fails for hunter–gatherers, whose oral traditions centered on nature, the supernatural, or the recently deceased rather than on the group's deep history and those who founded it (Gilderhus, 2010; Wiessner, 2014).

My mentor Edward O. Wilson (1975) defined "society" broadly as "a group of individuals belonging to the same species and organized in a cooperative manner" (adding that reciprocal communication, "beyond mere sexual activity," is crucial also). Taking this perspective allowed Wilson to discuss all manner of groups under a society rubric, even what he called "elementary societies" (p. 8) of fish schools, herds of bison, and clouds of gnats. Such aggregations benefit the participants through energetic savings or safety from predators, yet although the animals in them may maintain social connections to certain individuals, they have no steadfast affiliation to the collective. This

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interpretation of societies as cooperative units has roots extending as far back as Spencer (1893, p. 244), who wrote, "A society, in the sociological sense, is formed only when, besides juxtaposition [i.e., proximity: but see section 2I] there is cooperation…. Cooperation, then, is at once that which cannot exist without a society, and that for which a society exists."

Because cooperation has often been highlighted in expositions of societies – and groups more widely considered (Moffett, 2022b) – I must emphasize that societies, in the sense that I will pursue in this article, are not necessarily natural units of cooperation, in that openness to cooperation (or, equally, to reciprocal communication, which in turn can improve cooperation: Turchin & Gavrilets, 2009) doesn't always knit society members together, a fact recognized by many in sociology. Simmel (1908) saw collaboration and conflict as inseparable "forms of sociation," each unimaginable without the other. Whatever cooperation exists may be occasional and quite opportunistic (Olson & Blumstein, 2010).[1] Arguably unanimity will matter less when societal identities are clear and uncontested, and moreover across-the-board cooperation could engender low innovation and social stasis; actually some conflict could have social utility, even at times when societies become weighed down by discord (e.g., Lea, Blumstein, Wey, & Martin, 2010; Rawlings & Friedkin, 2017).

At the same time, relations between societies can be cooperative; meanwhile individuals not identifying with a society can cooperate (sect. 5). For such reasons, even though cooperation is the feature that draws many to study societies, that does not make it the best criterion for defining, and thereby distinguishing, societies. Patterns of coordination and cooperation are often instructive only when we already have a solid representation of what the societies are, based on other information (notably, the criteria emphasized here: clear memberships, durability, and control of space).

Instead of cleanly defining, and separating, societies, cooperation, including the "socially aligned groups" (Moffett, 2022b) of Pietraszewski (2022), can shift mercurially even while the borders of a society stay intact (Barth, 1969). This is the primary reason I characterize societies in terms of "belonging" (i.e., as "identity groups," a phrase free from connotations of cooperation: sect. 3.1) rather than as social groups, which unduly centers cooperation (indispensable as it may be to forming social identities: Smaldino, 2019) in how societies should be set apart in practice. That said, it is hard to imagine a situation where cooperation between societies *exceeds* that within societies, invariably making the society itself, as recognized here, a critical unit of study. In fact, with social norms like altruistic punishment in place (Boyd, Gintis, Bowles, & Richerson, 2003; Fehr & Gächter, 2002), cooperation can flourish even in large societies, including among strangers in humans, paving the way for the members to work toward collective goals.

Lenski (2015, p. 17) points out that Wilson fails to differentiate between societies-as-wholes and families, local communities, and other associations. Lenski's definition is directed more expressly at the bounded groups I have in mind: "To the degree that an aggregation of people is politically autonomous and engaged in a broad range of cooperative activities, it can be considered a society."

Yet Lenski (p. 18) admits that "in practice, it is sometimes difficult to apply the present definition of societies, since self-governance exists in varying degrees." Consider nomadic hunter–gatherers, who could reach some decisions during occasional gatherings of the roving bands that made up each of their enduring ethnolinguistic groups (which are typically taken to represent hunter–gatherer societies and indeed were their societies in the sense espoused here). Still, these nomads lived in the day-to-day in shifting "campfire democracies," with each band acting autonomously. Further, when people left camp to hunt or gather, those smaller foraging groups would likewise have been autonomous. Hence what Weber (1978) called "legitimate power" shifted with the skills of those present at the time (Boyd & Richerson, 2022).

So, although I agree with Lenski that societies are "the primary organizational subdivisions of the human population as a whole," his criterion of political autonomy doesn't suffice to distinguish societies from many social groups, even if such autonomy takes its most exaggerated forms in nations, with their laws, social hierarchies, and (always multitier) political structures; nor is it clear how his notion of *political* autonomy can be applied to animals (that said, animal societies generally do act independently and their social machinations have been described as "political": de Waal, 1982). When human societies enlarge, political systems become increasingly intricate (Turchin et al., 2017) and act to constrain people's identities (e.g., Moffett, 2019, pp. 252–253; Nolan & Lenski, 2004). Thus, although autonomy, or its lack, can assuredly be of overriding importance, for example after a state seizes control of a neighboring people (sect. 3.7), it is more fruitful to look at societies as I have done here and then document how patterns of autonomy alter as a society elaborates.

The lack of cooperative unity, and autonomy in any sense, within each society of Argentine ants, which spread amorphously as "supercolonies" across many square kilometers (Moffett, 2012a), has been the basis to argue for societies as *functionally* independent entities, the position being that more significant units than the supercolonies themselves must exist in this species (Gordon & Heller, 2012). This conclusion derives from the observation that everything connected to the production and dispersion of resources, and the regulation of both, occurs locally (Heller, Ingram, & Gordon, 2008); and, further, that supercolonies tend to be distributed discontinuously, such that portions of them carry on in isolation. The problem with this interpretation is that this patchiness is not a product of any divisive *social* distinctions made by the ants. Rather, it is a consequence of a supercolony's vast range. A supercolony can extend across areas that, for example, undergo unsuitably dry spells, isolating subpopulations of this society that seamlessly merge again when moisture levels increase.

Functionality exists at multiple levels in living things: Cells, organs, bodies, teams, societies, allied societies, to name a few (sect. 4; e.g., bands are often depicted as the economically functional units of a nomadic hunter–gatherer society: Bettinger, 1980). So, although functionally cloistered regions can be detected within a supercolony, the ants residing across the land it occupies also act to create a truly enduring functional unit by rejecting foreigners, ensuring well-defined supercolony memberships, with mass warfare arising where supercolonies come into contact (Moffett, 2012b).

This section has critiqued competing attempts to frame much the same idea of a "society." Although almost no definition, including the one I propose, is without deficiencies (sect. 7), and though each of these alternatives undoubtedly has utility for particular research programs, they fall short in practicality as well as in fully, accurately, and unambiguously capturing the concept of a society as a bounded and lasting collective that can be broadly implemented – the intention here. Rather, criteria like cooperation, autonomy, and functionality, while essential to nations and other societies, serve equally well in describing a wide assortment of groups for our species and other animals.

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3. Building an interdisciplinary definition of societies

How to spell out the concept of a society? The brief sentence encapsulated at the start of this article will often serve. For academics, however, issues arise requiring further explanation. Let me propose a detailed exposition to capture a society's distinguishing attributes as it might appear in a scholarly dictionary, with the subsection numbers at points meriting discussion to follow.

> A society is a group (sect. 3.1) extending beyond an immediate family (sect. 3.2), capable of perpetuating its population for generations (sect. 3.3), whose members ordinarily perceive one another as belonging together (sect. 3.4) and set apart from other such groups (sect. 3.5) (notwithstanding transfers between societies, either mutually agreeable [sect. 3.6] or initially forced [sect. 3.7]) and which regulates access to part or all of the space or spaces it ultimately inhabits (sect. 3.8) across which its members travel with relative impunity (sect. 3.9).

3.1 A society is a group

The definition is worded to make clear that by "group" I mean a "real group" (Dunham, 2018) that I will call an "identity group" in contradistinction to a "social group." The latter can signify all manner of social interchanges, including many that, in aggregate, form networks that don't inevitably yield distinct groups (sect. 5). The very name also generally signals a presumption of positive interactions; indeed elaborate definitions of "group" have been presented in this journal to refine this perspective (Pietraszewski, 2022). "Identity group" applies instead to groups in which everyone has a grasp of, and respect for, membership rooted in a shared identity (a view aligning closely with Henri Tajfel and John Turner, e.g., Turner, 1984; though as used in this phrase, "identity" implies nothing about the cognition underlying group membership).

Identity groups obviously have social ramifications, the members affected by the actions of the others by virtue of their shared inclusion, prospects for cooperation ranking as a paramount advantage among those. Yet cooperation can be so varied and shifting, extending both within and across societies, that it is judicious to define societies in a way that is neutral to its existence, even if opportunities for social interactions are the principal payoff for the emergence of societies and hence come up often as a subject in this article. A shared identity might even be sufficient to keep a struggling society intact through periods of social dysfunction, particularly because, in humans, societal identities include cultural institutions that set rules for how we interact (Wiessner, 2016). That said, societies where competition swamps cooperation probably won't last; on the contrary, competition can further motivate individuals to establish ties and rules against misbehavior (Boyd et al., 2003). What minimal cooperation exists might come into play in the control of a physical space (sect. 3.8), because a single member is unlikely to defend its society entirely on its own.

Members may fall into power relationships, statuses, or roles (including role identities: Burke & Stets, 2022), but these categories aren't essential to societies and have been left out of the definition. Mutual acknowledgment (knowing *we* belong together) is common to all human groups (Marilynn Brewer, personal communication, 2020), and this perception of we-ness is likely to precede statuses or roles because they would be uninterpretable without it. Still, identity markers (sect. 3.4) made it possible for humans to interact impersonally by occupying abstract positions, as emphasized by Tönnies (1887).

3.2 A group must extend beyond a simple, immediate family to be considered a society

By "simple, immediate family" I mean one or both parents with offspring that normally become independent once they can fend for themselves. Although such a family doesn't merit the word "society," in some species overlapping generations stay with their parent(s) for most or all of their lives; these include colonies of social insects, groups of certain skinks that While, Chapple, Gardner, Uller, and Whiting (2015) call "furies," and some cooperative breeders (e.g., birds like Florida scrub jays: Woolfenden & Fitzpatrick, 1984). In a subset of these societies, older offspring protect and raise siblings, an "advanced" form of sociality, or eusociality (Foster & Ratnieks, 2005; Liao, Rong, & Queller, 2015; Wilson & Hölldobler, 2005).[2]

The kin structure of societies[3] is a product of how those groups originate or are maintained. Cases exist where no adult member is related to any other, as in horses and some bats (Berger & Cunningham, 1987; Wilkinson, Carter, Bohn, & Adams, 2016). At the opposite extreme, gray wolf packs and African savanna elephant cores can represent extended families and are often referred to simply as "family groups" on that assumption. All the same, nonkin that are not in a position to breed can permanently join a pack or core as members that are treated indistinguishably from kin (Cynthia Moss & Dan Stahler, personal communications 2015, 2018; Vonholdt et al., 2008; Wittemyer et al., 2009).

Human societies are composed of multiple family lineages. Within their societies, hunter–gatherers almost always lived in proximity to more nonkin than kin, affines included (Apicella, Marlowe, Fowler, & Christakis, 2012; Hill et al., 2011); "thus, permanent *communities* would have been more natural to humans than even kinship organization which…had to be invented," starting with the nuclear family (Abrutyn & Turner, 2022, p. 135). Evaluating and monitoring society members generally versus kin in particular involve intrinsically different facets of life that I postulate will be cognitively distinct and reflect adaptations to what can be divergent challenges, in the former case for example in accessing mates, expanding opportunities to share in tasks like child rearing, or reducing conflicts with outsiders.

3.3 A society is capable of perpetuating itself for generations

The idea that societies must be self-perpetuating traces to Parsons (1966). What's important is the *potential* to endure, given that a society may fail in unfavorable circumstances. People value this collective continuity (Sani et al., 2007); indeed, in our species and many others, societies carry on largely by families begetting families, though there are alternative strategies involving nonkin (sect. 3.2), and in species like the sperm whale, males reaching adulthood roam free or variously aggregate without participating in female-dominated societies.

3.4 A society's members perceive one another as belonging together

For Anderson (1982), societies, and especially nations, represent "imagined communities" – artifacts of contemporary life perennially forged in the mind by modern mass media. The fact is that all societies, whether Belgium, the Ju/'hoansi San, or a gorilla troop, are products of the minds of their members (Moffett, 2020b). In this sense all are imagined, regardless of whether the members' interactions are face-to-face in a small tribe or conducted over

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the geographical span of a country. At issue, ultimately, is how society memberships are expressed in the brain.

George Schaller called lion prides closed social units whose "composition…remains constant from year to year," writing that "A pride member joins others unhesitatingly, often running toward them, whereas a stranger typically crouches, advances a few steps, then turns as if to flee, and in general behaves as if uncertain of its reception" (1972, pp. 37, 46).[4] Such descriptions underscore that societies are not mere sets of individuals but members that recognize who belongs. An individual's acceptance over the long haul is contingent on the assessments of the other members, deduced by researchers like Schaller from their comprehensive understanding of how the animals interact. Below I concentrate on two contrasting approaches to membership recognition.

3.4.1 Individual recognition societies versus anonymous societies

I have proposed (Moffett, 2013) that recognition of group membership emerges by two means: Either every member comes to know all the others individually (based on appearance, scent, posture, etc.: Tibbetts & Dale, 2007), or else, as in humans, they grow to be sensitive to shared markers of identity (also called tags, labels, or symbols). Markers include behavioral or physical traits perceived either subconsciously or consciously as signals of membership (Boyd & Richerson, 1987; Cohen, 2012), often modified to amplify intersociety differences (Wobst, 1977). The markers that people share act to make strangers seem less strange (Greene, 2013, p. 51). Whether significant in distinguishing a specific individual or as a group marker, traits may have evolved as identity signals (e.g., human facial variability: Sheehan & Nachman, 2014) or become useful by chance. I've dubbed societies formed by the first approach "individual recognition societies" and those taking the second strategy "anonymous societies."

People in a small enough society might know everyone so well that individual recognition serves in everyday life even while they are also demarcated by traits that *potentially* allow them to get by without recalling all the members; these serve to confirm affiliation and reduce identification errors (Moffett, 2019, pp. 109–111) – in this sense all human societies are inherently "anonymous" (though differentiation in markers may be minimal after some societies divide, as when construction of a highway came to abruptly split one society of the Ache population into two: Kim Hill, personal communication, 2023, sect. 6). Nomadic hunter–gatherer societies grew only into the low thousands (such that men in two extant societies experience a "social universe of about a thousand": Hill, Wood, Baggio, Hurtado, & Boyd, 2014, p. 6). Yet it's possible that "more widely separated bands of a tribe have no personal knowledge of or direct contact with each other," as Schapera (1930, p. 77) reported for Bushmen societies; Coren Apicella tells me the same is true of the Hadza. Consequently foraging peoples would have shown a reliance on markers (i.e., "emblematic style," which "carries information about the existence of groups and boundaries and not about degree of interaction across or within them": Wiessner, 1983, p. 257).

Chimpanzees and bonobos, by contrast, have individual recognition societies in spite of their phylogenetic closeness to humans and the fact their communities can display cultural differences (these being the most abundant markers in humans, though of course chimpanzee cultures are far less elaborate: Whiten, 2011). These apes apparently lack the ability to register shared, distinctive behaviors as markers of group identification: Although an individual that transfers to another community (sect. 3.6) is likely to take on any cultural traits of that society (as in other group-living primates: Van de Waal & Canteloup, 2023), an individual that continues to employ a technique characteristic of a different community, say to catch termites, isn't shunned or attacked for its "deviance." In sharp contrast to humans, then, these species don't perceive strangers as fellow society members, though they can gradually accommodate the occasional newcomer.[5]

Whenever individual recognition exists, the members may differentiate not just each group mate but foreigners they have come to know, whom they respond to either as outsiders that are usually a threat, as chimpanzees do; as potential friends, as do bonobos; or even as potential trading partners, as in humans. *H. sapiens* aside, the premiere anonymous societies occur in social insects, the workers of which, unlike people, are incapable of telling apart individuals outside of certain categories like castes (with one exception: Tibbetts, Pardo-Sanchez, Ramirez-Matias, & Avarguès-Weber, 2021), let alone individualize them sensu de Waal and Tyack (2003). In ants, for example, hydrocarbons on the body surface, made consistent across the colony when its members exchange food and groom each other, serve as a "gestalt" scent that workers learn to classify others as colony mates, whether they are a few or, in Argentine ants, reach into the billions (Tsutsui, 2004). The few nonhuman vertebrates known to have anonymous societies employ socially learned markers; in two mole rat species, for example, an odor (Barker et al., 2021), while some whales learn group-specific vocalizations (Gero, Whitehead, & Rendell, 2016).

The human identification with societies goes beyond recognizing who belongs because it encompasses not just the markers associated with our behavior and bodies but things we make and treasured features of our territory, as a kind of societal extended phenotype. It takes in attributes requiring language, such as shared myths and, for many tribal groups and nations, narratives around group history (Smith, 2000). Further, a capacity to discern our society holistically generates a group consciousness and ardor for our common experiences, affections likely to have deep roots (Johnson, 1997). The conclusion of Seyfarth and Cheney (2017) that "in the mind of a baboon…social categories exist independent of their members" would allow for other primates perceiving societies as distinct, coherent entities (their identification with a society is group-based rather than purely interpersonal: Brewer, 2001), though whether they respond to them as if they have essences (e.g., Lurz, Krachun, Hopkins, & Taglialatela, 2022) hasn't been examined.[6] Because neither essentialist beliefs (Prentice & Miller, 2007) nor entitativity is required to distinguish societies, I won't pursue the subject further.

3.4.2 The simplicity, and difficulties, of anonymous societies

The fact that individual recognition societies commonly have populations of a few dozen, in chimpanzees reaching just beyond 200, is probably at least in part a reflection of the cognitive constraints on each member in keeping track of all the others.[7] When and how our ancestors came to have anonymous societies when other apes didn't remain an enigma, but adding reliable markers to what had originally been hominin societies more like those of our sister species the chimpanzee and bonobo (Samuni, Langergraber, & Surbeck, 2022), dependent on individual recognition, would eventually permit our societies to increase in size virtually ad infinitum by incorporating individuals who were strangers to one another (Moffett, 2019).

The social brain hypothesis postulates that certain vertebrates evolved big brains to handle the mental gymnastics of building

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social networks (e.g., Dunbar, 2009; but see Charvet & Finlay, 2012; DeCasien, Williams, & Higham, 2017). Yet insects' minute brain size speaks to the low cost of using markers, such that increases in overall population size (above and beyond the members' social connections) is no longer a cognitive challenge. Certainly, though, that cost goes up for people, who imbue markers with shared meaning and reduce the possibility of social confusion or identity theft by displaying an immense range of them. Some set us apart as individuals whereas others are associated with the diversity of affiliations in the modern world – from professional organizations to alma maters (sect. 4) – but many connect us to our society. Whether identities grow more elaborate as groups amplify in saliency or number, thereby attracting progressively more markers, is an open question. Cultural traits garner the most attention, among them complicated, tough, or risky rituals (Rossano, 2015; Watson-Jones & Legare, 2016). At the other end of the spectrum are subtle identity cues of which we may never be aware; for example, Americans show surprising success at distinguishing Americans from Australians at a distance by how they walk or wave a hand (Marsh, Elfenbein, & Ambady, 2003, 2007). For early hominids threatened by neighbors, detecting someone's affiliation from afar, perhaps before they could be identified personally, would have had survival value. Among hunter–gatherers, "even gestures can be misinterpreted, as winks and handshakes in one group are mere twitches or touches to the other" (Broome, 2010, p. 17). As is true for modern nations, identity clues littered the hunter–gatherer landscape: !Xõ Bushmen can pick out arrowheads left behind by another group of !Xõ "as coming from !Xõ 'who are not our people'" (Wiessner, 1983, p. 267). Differences mattered: Studying G/wi Bushmen, Silberbauer (1981, p. 2) noted the "reassurance and lessening of tension that is seen when a stranger is recognized as a fellow G/wi."

The ensemble of markers turns us into walking billboards of our identities, the combined effect often overriding assessments of any particular trait. We categorize others faster than we consciously register, prioritizing some markers over others, and sorting through ambiguous information (Dobs, Isik, Pantazis, & Kanwisher, 2019; MacLin & MacLin, 2011; Young, Sanchez, & Wilton, 2017). We accommodate varied perceptions of identity across our society yet see it as a unit. As Poole (1999, p. 16) expressed it, "What is important is not so much that everyone imagines the same nation, but that they imagine that they imagine the same nation." Dramatic variations in lifestyle can be acceptable: The Fur people of Darfur either raise cattle in settlements or turn to nomadic herding (Haaland, 1969).

We allow for such variations while seeing foreigners as distinct even if there are intersecting aspects of our cultures, such as a common language (even hunter–gatherer ethno*linguistic* societies can share their primary language with neighbors: Boyd & Richerson, 2005; Fiske, 2018). Meanwhile identities are far from stable: Markers fall from favor or transform without disrupting society boundaries (Barth, 1969). Still, societies can fragment if this elasticity falters, should extreme differentiation in member identities engender clashing perceptions of who belongs (sect. 6).

Minimal group studies reveal that the binding power of markers also holds for artificially constructed groups, united by a perceived commonality, even one as trivial and arbitrary as being told their coin toss landed heads (Dunham, 2018) (although people can nevertheless associate such markers with a meaning: Hong & Ratner, 2021). An individual recognition society stays bounded over the long term with no such shared characteristics employed for categorization or, indeed, anything beyond mutual acceptance to link its members, in what I call a "mere acceptance group" – a group that is *truly* minimal. Whether individuals of other species (and presumably most likely those with anonymous societies) can extemporaneously form minimal groups is unstudied, but the potential simplicity of markers raises the question of why many vertebrate societies depend on cognitively expensive individual recognition. Perhaps more animals use physical or behavioral markers than we realize. But the fact is that many, if not virtually all, birds and mammals recognize other individuals, if just their own offspring for a narrow time window (Wiley, 2013). Thus, individual-specific recognition would have been a readily available means of forging societies for most species. In short, anonymous societies are likely to be a derived condition among vertebrates.

3.5 A society's members set themselves apart from outsiders

Relationships between societies can be tricky. The "uncertainty of reception" Schaller describes in lions (sect. 3.4) is common even in species where societies intermingle, like the bonobo (sect. 3.8) and of course people. At the other extreme are species that almost always keep far from, or respond agonistically to, outsiders. Goodall (2010, p. 239) reflected on her studies of the Kahama and Kasekela chimpanzee communities at Gombe (societies that had recently split off from each other: sect. 6):

> [The chimpanzee] sense of group identity is strong and they clearly know who "belongs" and who does not. …And this is not simple "fear of strangers" – members of the Kahama community were familiar to the Kasekela aggressors, yet they were attacked brutally. … Moreover, some patterns of attack directed against non-group individuals have never been seen during fights between members of the same community – the twisting of limbs, the tearing off of strips of skin, the drinking of blood. The victims have thus been, to all intents and purposes, "dechimpized," since these are patterns usually seen when a chimpanzee is trying to kill an adult prey animal – an animal of another species.

The phrase "set apart from other such groups" in the definition doesn't require that societies respond to outsiders aggressively, as chimpanzees do foreign communities, but at least as different. Hence populations kept apart merely by the patchiness of favored habitat, that indiscriminately intermix should the opportunity arise, should not be regarded as societies; those individuals don't exhibit affiliations with one another – of uniquely belonging together – that can be construed as a membership. Examples include fish in different ponds and spiders weaving communal webs that smoothly combine if brought into contact (Aviles & Guevara, 2017). Asian elephant herds are similarly open-ended (though within the similarly fluid herds of African savanna elephants are close-knit "cores": De Silva & Wittemyer, 2012).

Dual "citizenship" exists only in humans. Among hunter–-gatherers, the equivalent occurred when a person willingly married into another society; newcomers were expected to assimilate but seldom lost their connections to their birth people, which often eased intersociety tensions and improved trade and defense relations (Walker, Hill, Flinn, & Ellsworth, 2011). Still, certain animals can belong to two societies at once, at least surreptitiously: The independent movements of lions in societies characterized by strong fission–fusion (sect. 3.9) explain how males can be part of two prides for months, their travels back and forth going unnoticed (Packer, 2023).

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3.6 Transfers between societies

At one point Wilson (1975, p. 582) comes close to separating groups with clear memberships from his looser conception of societies as cooperative groups (sect. 2), distinguishing casual "societies" that individuals enter and leave freely from demographic societies "stable enough through time, usually owing to [their] being relatively closed to newcomers, for the demographic processes of birth and death to play a significant role in [their] composition"; groups for which transfers are rare he designates "closed societies."

The criterion, employed here, of a defined membership doesn't exclude permanent transfers between societies. Such transfers can be necessary if only to avoid inbreeding. Many vertebrate societies contain a few dozen individuals, too few to qualify as "a true Mendelian population" (Wilson, 1975, p. 117). Although nomadic hunter–gatherer societies were sufficiently large to act as a breeding population, some exogamy was the norm (Denham, 2013; Marlowe, 2005; Wobst, 1974). Changes in allegiance can be part of the life cycle: Young female chimpanzees regularly make the switch, as do male spotted hyenas. Even so, barriers to admission can be extreme; newcomers may be repeatedly rejected.

Yet even individuals that were strong-armed into a society (sect. 3.7) may earn their place as members. In species with anonymous societies that accept transfers (e.g., ants do not), newbies must take on the society's defining markers; in pinyon jays, for instance, by learning a society-specific call that allows flocks many hundreds strong to merge in midair before returning each to their own piece of land (Marzluff & Balda, 1992). Humans too must adopt obligatory group characteristics (i.e., assimilate) as much as permitted (or even, in some polyethnic societies, encouraged) and attainable – a willing immigrant (or a formerly subjugated or enslaved individual: sect. 3.7) who walks, talks, or dresses differently than we do (sect. 3.4) may still be perceived in the day to day as not belonging despite having been granted citizenship by a government body.

What then of the requirement, put forward by some, that a society must be impermeable, that is, relatively impervious to immigration (Kerth & van Schaik, 2012; Ziller, 1965), at times to the point of barring interactions with outsiders? In theory, even high immigration rates shouldn't undermine a society if there is little ambiguity about the point when each immigrant is accepted as a member. Reciprocal communication of a cooperative nature between societies need not threaten their borders either. Nor must societies be closed from trade with – or theft from – neighbors. Throughout history, people have absorbed whatever ideas and goods they wished, often modifying them into something culturally acceptable as *our own*, all without their societies breaking down; consider the influx of western goods into China, which has remained solidly "Chinese" (Knight, 2008). This openness has existed even while the ease with which goods or ideas are adopted is influenced by social norms and the overall "tightness" of the society (Gelfand et al., 2011; Uz, 2015).

Notwithstanding the resilience of humans in the face of outside influences, in practice we expect people to rebel against whatever they perceive as an inundation of outsiders or their ways that they fear will defile their identity (e.g., Schaller & Neuberg, 2012), a resistance that can raise a high bar to entry. Although societies put limits on their permeability and on that basis are "closed" groups with "fixed" memberships, I find it impossible to place a figure on what counts as "too high an influx" or a "flood," which is why I have kept the criterion of "closure" out of the definition itself.

3.7 Outsiders can be forced into a society and at least initially not be treated as members

In addition to allowing willing foreigners to become society members (sect. 3.6), humans have a long history of forcibly inserting outsiders into their societies to benefit themselves. Nomadic hunter–gatherers seldom took slaves, not needing the extra manpower and unable to retain captives (Cameron, 2008), but incorporation of outsiders escalated after people settled down. Sedentary peoples more readily seized individual foreigners, putting them into servitude, and could also conquer entire societies, taking their land as well. These forms of domination, and not (Moffett, 2019, pp. 281–283), as Rodseth et al. (1991, p. 233) propose, a capacity for "forming intergroup alliances," led (when accompanied by other social changes beyond the scope of this article, e.g., Johnson & Earle, 2000) to the rise of chiefdoms and states. Contrary to expectations of free movement of members across the space occupied by a society (sect. 3.9), chiefdoms and states could choose to constrain subjugated populations to their original homelands or other peripheral areas (e.g., for the Inca, see Malpass, 2009; for the Chinese, Allard, 2006; Brindley, 2015).

A significant question is at what point, if ever, the vanquished could be considered *members* of the society. Assimilation was key. Depending on the whims of their subjugators, such peoples could be gradually integrated. The result was the initial emergence of ethnic groups, in which populations originally from different societies come to share a sufficiently overarching identity to be perceived as part of the same society while remaining distinct (group distinctiveness: see sect. 9).

It is worth noting that it isn't just immigrants and subjugated people who must absorb a society's markers; a society's native young must find their place in its membership as well. Berger and Luckmann (1966, p. 149) write, "The individual… is not born a member of society. He… becomes a member of society. In the life of every individual… there is a temporal sequence, in the course of which he is inducted into participation in the social dialectic." People do not come into the world walking, waving their hands or speaking "like an American" but rather adopt these characteristics in childhood; with establishment of a societal identity later in life (i.e., through assimilation) being far more arduous. The young in individual recognition societies face a different task: Like transfers, they must learn to recognize each society member, and each member must become familiar with them in turn, coming to accept them in part because of their comfortable association around society members who know them already. With both approaches the infants are given a "free pass."

The closest parallel to slavery or subjugation in nature exists in ants. Social insects, like humans, first learn and adopt their colony's identifying markers (in their case, an odor: sect. 3.4) while young. When immature ants are stolen from another nest, the "slaves" learn the scent of their captors' colony instead. But in what might be construed as the insect version of assimilation,[8] older slaves and slavemakers alike constantly adjust their perception of the colony's "national" scent, which changes as slaves are added from novel sources. The flexibility of slaves and captors in recalibrating their identity is presumably no different from what must exist in any ant, because the colony odor, while partially genetically determined, is likely to be recast as foragers ingest foods with different aromas. Still, coexistence in a slavemaker nest of what would normally be members of distinct colonies can cause social breakdowns: Slaves may eat their captors' eggs or attempt to run away (Czechowski & Godzińska, 2015). For

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humans as well, slaves taken on raids were often children whose identities could be easier to mold (Cameron, 2008).

3.8 When interacting with outsiders, a society has ultimate control over access to the circumscribed physical space, or spaces, it occupies, which can be fixed in place or mobile

A society maintains control over who enters all or part of stretch of ground its members currently occupy, with some or all of its members regulating entry or denying access to outsiders through the use of either aggression or avoidance. The situation where more than one set of individuals coinhabits a region in a sustained way describes something quite different: They may for example be networks of kin (e.g., primate matrilines: sects. 4 and 5) or, in humans, ethnic groups coexisting in a society – or, of course, all manner of other groups in today's nations, from neighboring towns to universities and chess clubs (with social media enabling more such groups to emerge in digital "spaces" online). On this basis I exclude from consideration as a "society" any diaspora living intermingled among the populations of other societies, such as the Romani (Hancock, 2002). I also exclude street gangs, as these don't control access of everyone, people who don't belong to a gang included, to their turf.

Most hunter–gatherers were nomadic, but their excursions were generally as circumscribed as those of agriculturalists (e.g., Hewlett, van de Koppel, & Cavalli-Sforza, 1986; Mulvaney, 1976; Verdu et al., 2010), with the people of each society dispersed over a common territory (Heinz, 1994; Mulvaney & White, 1987). Still, for nonhuman animals as for ancient peoples, territoriality – a word with varied meanings (Maher & Lott, 1995) involving control of a space that provides a haven within from conflict with nonmembers (Morris-Drake, Kennedy, Braga Goncalves, & Radford, 2022) and ready access to resources – seldom amounts to the geographies precisely mapped out by nations. With some exceptions (e.g., Schradin & Lamprecht, 2000), most species don't neatly demarcate group territorial boundaries or have societies populous enough to entirely repel their neighbors, making spatial overlap commonplace (Powell, 2000), though there can also be underuse or shunning of the borderlands (Wrangham, Lundy, Crofoot, & Gilby, 2007).

I portray societies as inhabiting physical *spaces* rather than specific stomping grounds because a society can migrate as a group (Dousset, 2019, calls these "explorer societies"), overlap with neighbors in their home ranges, or, in what I will call a "mobile territory," stick together while crisscrossing the same land as other societies, as baboons do. Such a group attempts to monopolize whatever site it occupies at a given time by defending that space and its resources when and if necessary, although conflict, with the possible outcome of ceding possession through forced retreat, can be reduced through spatiotemporal partitioning – proactively steering clear of nearby societies (e.g., Markham, Guttal, Alberts, & Altmann, 2013), notably when those are stronger, avoidance being another way to maintain exclusive control at least over potential mates as a resource. How much a mobile society invests in its defense can vary markedly depending on the situation (as is true for "fixed" territories, e.g., Christensen and Radford, 2018, with the loss of territorial control for sedentary humans often resulting in the dominant society engulfing what had been a separate society and its land through subjugation). Although the tradition in ethology is to view territories as set in place (Jerram Brown, personal communications, 2023, 2024; Brown & Orians, 1970; Kaufmann, 1983), the borders and overall position of territories, as conventionally defined, are typically fluid; some lion prides, for example, will completely shift in location as months or years pass (Craig Packer, personal communication, 2023) Allowing this word to encompass situations where a group can dominate whatever locale it inhabits at the moment is consistent with perspectives of territory that are ethological (a defended area, e.g., Noble, 1939) or ecological (an exclusive area, e.g., Schoener, 1968). The relative advantages of mobile versus fixed territories likely depend heavily on resource distribution (e.g., Casimir, 1992; Maher & Lott, 2000).

The option for the plural – a society can occupy *spaces* – reflects the fact that some of the members may for a time scout new terrain on their own; it also allows for situations where portions of a society come to reside elsewhere. In some cases, such as Alaska for the United States, the spatial divide does not impede full interchange between a society's populations; in others, members fall out of contact yet retain their common identity at least for a time, as occurred with Vikings outside Europe (Davis, 2009) or with disjunct populations of an Argentine ant supercolony (sect. 2).

Territoriality in the broad sense I propose is all but absent in geladas, which almost always (sect. 6) pass with indifference among the members of most other units (enduring societies composed of one or two males and a few adult females: Bergman, 2010; Roux & Bergman, 2012: sects. 4 and 7). Because having ultimate control over an area, if only when push comes to shove, is problematic for this and a few other species (sect. 7) and can be operationally difficult to support, the diagnosis of "society" could be simplified by removing this criterion, perhaps at minimum for some diasporas whose very insular structure sets them apart from the host society. Without it, however, categories like ethnicities in effect become "societies within societies" (Moffett, 2019), which is not how they are treated in common parlance; few examples of "societies within societies" exist once the stipulation of spatial control is added (e.g., sperm whales, sect. 4). I have chosen to regard control of space as more than a foundational supplement because it is close to universal and instrumental in distinguishing societies from such internal groups.

3.8.1 A society may allow nonstressful, even cordial, visits from nonmembers

Two views about territoriality have existed side by side. To the biologist, territories are exclusive, or defended, areas, meaning outsiders are barred, to the degree that the territory holders can keep them out. But as the term is employed, for example, to describe nations, a territory is a physical space under the absolute control of a society that can nevertheless be open to visitors, if in a regulated manner. I prefer to use the term in this way, given the potential benefits of intersociety tolerance (Pisor & Surbeck, 2019; Rodrigues, Barker, & Robinson, 2023). Humans, like bottlenose dolphins along the Gulf Coast (Wells & Scott, 2018) and bonobos, maintain positive connections between communities, such that their societies can amicably mix.

Restricting the concept of territoriality to compulsory expulsion of outsiders has removed from consideration all kinds of interesting "shades of gray" phenomena. Certain bonobo communities interact more aggressively (Martin Surbeck, personal communication, 2024), and even communities on good terms at times avoid each other, with initial contact sometimes characterized by frantic screams, chases, and bites by the males that can cause the visitors to retreat (Tokuyama, Sakamaki, & Furuichi, 2019). Intergroup socializing can also occur in species where amicable relations are ordinarily absent, as when the young of passing baboon troops

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briefly play together (Catherine Markham, personal communication, 2023).

As Kelly (2013, p. 154) wrote for hunter–gatherers, "No society has a truly laissez-faire attitude toward spatial boundaries." Still, an openness to outsiders is possible, for example should resources be too sparse (or too plentiful: Cashdan et al., 1983) to make defense of the land worthwhile or to bring about social exchanges between societies (sect. 3.6). Nomadic pastoralists often claimed the right to traverse adjoining territories to access seasonal foraging grounds for their herds (e.g., Barfield, 1993; Henrickson, 1985). Prairie dogs exhibit a détente among their coteries when they leave their group's territory to visit communal foraging grounds (Slobodchikoff, Perla, & Verdolin, 2009); indeed, for them, territoriality might be expressed less around food resources than scarce dwelling places.

Normally contact between societies is brief, though socializing can extend over days in bonobos (in which case the groups usually sleep well apart: Furuichi, 2011, 2020). Humans are the exception; foreign traders could remain indefinitely, for example, in some early states (McNeill, 1986).

3.9 Few impediments exist across the space occupied by a society to the movements of its members

A society's occupancy of a space doesn't mean that all its members interact or are even close enough together to ever do so. Although there are societies such as monkey troops whose members stay together, my wording notably accommodates fission–fusion, prominent in humans, chimpanzees, bonobos, and spotted hyenas, among others, wherein individuals spread widely across a common area, moving as individuals or in small subgroups that variously intermix (Aureli et al., 2008). Once membership is established, proximity is seldom required – a gray wolf can go on a long sojourn (Messier, 1985) yet return to its pack with no social stress, even while neighbor wolves in other packs are driven off. No member of a society that has remained in one place long enough to identify with its land needs to walk every inch of that territory to feel a strong connection; still, an individual or family may favor – or even lay claim to – a plot of ground within it, as is common for humans. Analogous behavior occurs in one fish species, which defends a group territory where each female has a snail shell retreat that she shares with her young (Schradin & Lamprecht, 2000).

Among hunter–gatherers, a society's overall territory could be split up among its bands (Marlowe, 2005), but the extent of this selectivity varied. Individuals from the four Ache societies switched often and fluidly between bands that moved across wide swaths of their overall territory (Hill & Hurtado, 2017), whereas many Indigenous Australians kept a long-term commitment to a band that usually camped and foraged inside a limited part of the tribal lands (Stanner, 1965).

In the context of expressing how a society used its land, "territory" is far too strong a term for the terrain within which each hunter–gatherer band largely spent its time. Typically, members from elsewhere in the society could enter each other's spaces to seek resources or meet friends or kin, much as neighbors do today. Such visits would have been far more casual and fluid than interactions across societies, where the purpose might have been to negotiate alliances for defense or trade (Wiessner, 1982). Hence "territorial exclusion within an ethnic group of foragers [e.g., between the bands in a hunter–gatherer society] was much less strict than that between ethnic groups" (Marlowe, 2010, p. 268). The bands of a !Kõ Bushmen society inhabited contiguous spaces, whereas unoccupied, or far less occupied, terrain lay between !Kõ societies (or "nexuses," Heinz, 1972), much as is the case in species whose societies can be in conflict – fire ant colonies, chimpanzee communities, and gray wolf packs.

4. Societies are generally the most salient of what can be multiple levels of sociality

Advancing now beyond questions around the definition of a society as an enduring kind of identity group, we can move on to how societies fit in with the varied *social* associations of humans and other species, and indeed the ways that identity and social behaviors, broadly speaking, interrelate. Certain animals, among them modern humans to an extraordinary degree, form multiple socially meaningful groupings, some as sharply defined as the societies themselves, others diffuse and fluid (e.g., sect. 5), that can interact in crosscutting ways and tend to nest inside each other. Such multilevel (or modular) associations are a subject of much interest (e.g., Chapais, 2011; Grueter et al., 2020; Hill, Bentley, & Dunbar, 2008; Wimmer, 2008). Each tends to have its own cognitive demands, degree of cohesion, optimal size, sometimes expressed by a scaling ratio, and often a political or economic significance (e.g., Caporael, 1997; Hamilton, Milne, Walker, Burger, & Brown, 2007; Zhou, Sornette, Hill, & Dunbar, 2005), the addition of tiers being linked to greater social integration (e.g., Johnson & Earle, 2000).

By definition societies can be picked out from other tiers by their primacy with respect to abiding *identities* (and, for humans, political autonomy, in that societies recognize no other group as having legitimate say-so about how they exercise decision-making power and claim a monopoly on the use of physical force: Weber, 1919). They don't need to be the apex social stratum, either: Bonobos will create alliances across amicable societies (Samuni & Surbeck, 2023).

And yet despite their relative salience, or centrality (Leach et al., 2008) for the overall human population above and beyond close kin, compared to many social groups the existence of societies in everyday life can be as easily overlooked as the blue tint of the sky. Still, the omnipresence of markers primes our feelings toward our society even when our minds are elsewhere, galvanizing us to act on its behalf when the need arises (Billig, 1995; Hassin, Ferguson, Shidlovski, & Gross, 2007; Kemmelmeier & Winter, 2008).

Let me first consider some animal examples evincing the primacy of societies. Intermingled in a baboon or macaque troop are matrilines – collections of females descended through different maternal lines. Primatologists treat matrilines as units of sociality. Yet these lines are not distinct groups with absolute cutoffs in who should belong where. Further, each female actually formulates her own relationships, and while many of those will be with individuals she grew up around, who indeed tend to be others in her mother's family or their offspring, in practice whom a female associates with hinges on her tastes, such that intolerable kin are left out and agreeable nonrelatives added in. Hence, although the social networks of genealogically related females overlap, they are not consistently manifested across all the females as distinct and bounded entities (sect. 5). Certainly, the females of a matriline lack any commonality that might demarcate them as a functional or collaborative unit, for example by converging en masse on occasion to groom, or by carrying out actions that serve the benefit of the collective. The only affiliation registered uniformly

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by all the baboons, male or female, is the identification to the others in the troop itself – the society.

Among geladas, the small "units" are their societies, recognizable as the preeminent tier. Although these monkeys forage in herds of hundreds, their ability to tell apart other individuals, studied so far for the males, nonetheless is so limited that they recognize just the members of their units – making them unambiguous identity groups. That's true with one exception: Geladas may still socialize with individuals in the unit that has most recently split off from their own. Two tiers have been proposed above this pairing, the band and community (Roux & Bergman, 2012; Snyder-Mackler, Beehner, & Bergman, 2012), but both are of questionable importance as either social or identity groups (though see Pappano, Snyder-Mackler, Bergman, & Beehner, 2012): The units not only fail to identify as comembers of those in the other constituent units but also share nothing with those greater collectives other than the habit of moving more or less across the same general ground. A similar lack of social significance is true for human groupings discriminated by anthropologists that are not recognized by the people in them and don't play into their personal relations, such as, in some instances, phratries, tribes, clans, subclans, and lineages (Roscoe, 2009, p. 76). Until more is known, then, such groups should not be considered tiers in a multitier *social* organization.

The social structure of our species is multilevel, though the number of levels need not be exceptional. Commonly three "archetypical tiers" (Grueter & White, 2014) are recognized for nomadic hunter–gatherers – the family, the band, and the society (called a "community" by Layton, O'Hara, & Bilsborough, 2012), with the bands often being very changeable assemblages (sect. 3.9; of course hunter–gatherers also formed intersociety collaborations). As for the astonishing number of group categories, and social strata, in existence today, "a likely scenario is that this multifarious identification spun out of the primal affiliation to the society itself to create scores of collectives of lesser urgency, stature and duration" (Moffett, 2019, p. 133). The alternative, that cognition that arose for smaller groups was extended upward to societies, is unlikely because among nomad hunter–gatherers, the only consistently manifested groupings between the family and the society were shifting bands, to which foragers like the Ache had no specific sense of identity (Kim Hill, personal communication, 2011).

That is not to deny that some people show less of a "tribal" (Clark, Liu, Winegard, & Ditto, 2019; sensu Greene, 2013) allegiance to a nation than they do to, say, an ethnicity (e.g., Citrin & Sears, 2009) or organized religion. I propose that such groups, which largely emerged in recent millennia and receive the most research attention, ensure member commitment by commandeering some of the social features (and the mental energies directed at them) that were initially employed to empower societies (e.g., offering an inspiring foundation story, powerful symbols, and a sense that the group itself is meaningful, i.e., its entitativity: Cornelissen, Haslam, & Balmer, 2007; Melewar & Karaosmanoglu, 2006; Toosi & Ambady, 2011; Werbner, 2010). Employees are not obligated to keep a lifelong connection with their firm, but insofar as a company unites them around an identity that ensures their efforts are directed at group goals, a Google or Apple instills a positive, reliable sense of belonging to create an exceptional workplace (O'Reilly, 1989; Pratt, 1998). Extremists can resort to coercive persuasion (e.g., Borum, 2004; Singer, 2003) to further hijack the psychology that may have originated to impassion people about societies. Certain street gangs demand a lifetime of loyalty (Alleyne & Wood, 2010; Pyrooz, Sweeten, & Piquero, 2013). Important here is the identity fusion arising from taking risks together (ch. 6 in Collins, 1988; Goldman, Giles, & Hogg, 2014; Whitehouse & Lanman, 2014), the expectation in groups like the mafia being that membership will pass down through the generations (Dainotto, 2015).

In describing tiers of sociality, for obvious reasons I prefer phrases like "multilevel organization" to options like "multilevel society," which employs "society" in its loosest sense to mean sociality. In fact, the wording of my definition doesn't readily allow species with a nested social organization to simultaneously possess two tiers that can be described as societies, if only because the levels, if well-defined (sect. 5), can't both identify with, and claim *exclusive* dominion over, the same space at the same time. Indeed, the ethnicities of modern states usually (but not always initially: sect. 3.7) intermix relatively freely even when some are concentrated in ethnic neighborhoods.

That said, New Guinea had (and still has) a high density of groups organized into multiple strata for which the primary level of identification – the society – can be hard to disentangle. Highland populations such as the Enga comprise tribes and clans within those tribes, both of which endure for generations and have a sense of group history (Wiessner & Tumu, 1998). Still, the clans can be identified as the societies for the Enga, as each clan claims ownership, and control, over a piece of land. Tribes can amount to long-standing military alliances between clans (Paul Roscoe, personal communication, 2023), essentially like the one among the tribes that composed the Iroquois Confederacy (Shannon, 2008).

At least one instance of "societies within societies" exists in another species. Sperm whales form units of 6–24 adult females with offspring that stay tightly together while roaming extensively (having mobile territories: sect. 3.8), each identified by unit-specific click patterns (codas). The same whales also belong to "clans" ranging over thousands of square kilometers, within which are embedded hundreds of units using both clan- and unit-specific codas. The units of each clan share a culture: A method of catching squid. Clans, like units, can be sensibly designated as societies because while two units of the same clan can team up on hunts, those of "foreign" clans absolutely avoid each other, keeping their distance even though the clans overlap in their distributions across broad regions (Cantor et al., 2015; Hersh et al., 2022).

5. A society seldom corresponds with a social network

> How is it that, despite these apparent cognitive constraints on group size, modern human societies are nonetheless able to form super-large groups (e.g., nation states)?
>
> — Dunbar (1993, p. 692)

Doubtless societies provide rich soil from which networks of social interaction can grow, in vertebrates typically based on the individual recognition of each member, and those networks can in turn reinforce the value of societies to their members. But that does not mean the societies themselves, built on identification to a group (a common-identity or collective-identity group: Prentice, Miller, & Lightdale, 1994; Van Stekelenburg, 2013), rather than on social relations (e.g., Smaldino, 2022), are reducible to social networks, notwithstanding trends among political scientists, economists, sociologists, and some social psychologists and biologists to regard them that way.

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Recognizing this is the solution to the puzzle Dunbar put forward on the relation between cognition and social group size, quoted above. There need not be a "unifying social network spanning the boundaries of social units," as claimed by Grueter et al. (2020, p. 837). No human society has ever consisted for longer than a brief moment solely of a "band of brothers." Hence the number of stable relations people can maintain, which Dunbar (1993) calculated to be 150, is much lower than the populations attained by most nomadic hunter–gatherer societies (e.g., Marlowe, 2005).

To express it another way, because societal borders needn't conform to the aggregated contacts between all its members, containing as they do disconnected components and "bridging ties" shared across societies, accurately describing a society requires going outside the logical universe of networks; similarly, portraying how networks relate to a society requires independently assessing who belongs where (Roberts, 2010). As Schaller (1972, p. 37) wrote of lions, "Companionships have no influence on pride composition." Here I encapsulate the difference between group and network:

- Membership in a society, when that group is not in danger of dividing (sect. 6), tends to be a relatively stable, yes-or-no matter, with ambiguity rare and a broad alignment in perceptions of who belongs, even if some individuals are more invested in the society than others.
- Although network analysis accommodates networks of infinite variety, social interaction networks usually have edges that differ greatly in strength from one node to the next, reflecting such matters as variable degrees of kinship, and often driven by ego-specific choices that shift readily over time.

The distinction Kappeler and van Schaik (2002) make between social *organizations* and social *structure* is significant here. The social network literature is concerned primarily with the former – the quantitative, structural aspect of social life – when in actuality, individuals may have no sense whatsoever of "belonging" to a network in the way society members see themselves as belonging together. The idea that societies consist of individuals that bond socially (say, through grooming: Dunbar & Shultz, 2010) therefore fails to accurately capture the boundaries of those groups. Most societies not only contain their share of negative – overall harmful – social ties (Offer, 2021) but also may include isolates lacking any social network. Despite their solitude, hermits, in our species, can be recognized as being connected to a society by accent, dietary preferences, and so on. In fact the widespread emphasis on network centrality (the most sociable, "key," or central, individuals, e.g., Sparrowe, Liden, Wayne, & Kraimer, 2001; Sueur, Jacob, Amblard, Petit, & King, 2011) undervalues those who are weakly connected (Granovetter, 1983), if not completely disconnected. I would argue that at minimum members must recognize that an ignored, shunned, or asocial individual is, for all that, a part of their society, however little [s]he intermingles (a viewpoint running counter to the expression "gambit of the group," which assumes that everyone in a group will associate with everyone else: Whitehead & Dufault, 1999).

Network analysis can nevertheless be used to gauge the existence of interesting groups, societies among them; for example if the number of edges between clusters, or modules, is significantly less than expected by chance (Hamilton et al., 2007; Newman, 2006). And certain societies can be mapped out precisely via social networks because every member will likely have some (positive) interactions with every other and yet never with outsiders, such as small ant colonies (at least for workers of the same age cohort: Mersch, Crespi, & Keller, 2013)[9] and some primate troops (Kasper & Voelkl, 2009). Yet social relations are typically far more complex than that, notably in humans, even for peoples who tend to conceive of ingroups in network terms (Brewer & Yuki, 2007) – and of course, indirect social connections link virtually the entire world population of our species.

For all these reasons, societies, as groups bounded by a shared and persistent sense of belonging, deserve formal study in their own right, independent of the social networks of their members.

6. Assessing who belongs and the impermanence of societies

Societies usually have clear memberships, which is to say no one is accepted as a fellow member by some and rejected by others (as contrasted with social or kin connections, which grade in intensity and are ego specific: sect. 5). Still, differences in outlook arise,[10] as when a newcomer vies for admission into a society; for instance, a female chimpanzee may be welcomed by the males but threatened by female members (Kahlenberg, Thompson, Muller, & Wrangham, 2008: sect. 3.6). The upshot for the female who wears down any opposition isn't mere tolerance but recognition as part of the community.

What this means in practice is that for most animals, membership in a robust society is all or nothing, with confusion rare – though the matter is complicated in our species (sect. 3.7), where perceptions of who *truly* belongs are influenced by factors like ethnic background (sect. 7).

For humans, variations in opinion about group membership may not matter if everyone believes agreement exists, but, as in other vertebrates, when differences become manifest, they can result in the emergence of subgroups (or "factions") that may ultimately fracture a society. I describe societies, and their memberships, as potentially enduring for generations, but that isn't to say they are permanent. I hypothesize (Moffett, 2019) that most if not all societies eventually break down, up to and including state societies (Joyce Marcus, personal communication, 2017; Feinman & Marcus, 1998; Hally, 1996). This doesn't mean that human societies "collapse" sensu Diamond (2011); far more often they split into smaller units with which the members more strongly, and uniformly, identify.[11]

Although ecological stress or intersociety conflict (the foci of Diamond) can speed this fragmentation, societies, I propose, splinter regardless as an outcome of changes in their members' collective identification. A faculty for shutting off an awareness of belonging to *our kind* becomes a mechanism by which those in a society solidify their divorce from former mates, producing independent *social* units. Given its profound significance, this metamorphosis in societal identity, which I have described as "turning the familiar into the foreign" (Moffett, 2019, p. 4), is remarkably understudied.[12]

7. Definitions gone wrong

Pressed hard, any definition, other than those from mathematics and for some abstract ideas, will break down. And some ways of framing a definition of the very same thing may be more practical or informative than others. What does this suggest, then, about how definitions for terms like "society" should most usefully be

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formulated? This is a question attended to by Moffett (2000, pp. 570–571), to wit: "Show me a car, and I might show you a pile of junk that once functioned as a car (and maybe in a mechanic's mind it still is). Show someone a star, and an astronomer points to a mass of convergent superheated dust. The hallmark of a good definition is not entirely that it tidily delimits a set of *X*s, but that it…breaks down when things get conceptually intriguing about *X*."

The influential sociologist Snow (2001) has written that it is a "sociological truism that the issue of identity becomes more problematic and unsettled as societies become more structurally differentiated, fragmented, and culturally pluralistic." But while framing societies as identity groups can sometimes be problematic, the shortcomings lead to less confusion than those encountered for alternative approaches to distinguishing societies (sect. 2) and indeed are often enlightening, for example with respect to the origins and maintenance of modern societies. And so, a nation that challenges the description of a society as a landholding group with a clear membership can illuminate the factors that keep those individuals together or tear the society apart. Consider Iran, whose government counts Kurds as citizens even though it suppresses their identity (especially that of the Sunnis, who thus have greater motivation to rise up: Tezcür & Asadzade, 2019), whereas the Kurds think of themselves as a nation occupying what should be an independent homeland (Soleimani & Mohammadpour, 2019), making them in effect a "society in suspension" (Güneş Tezcür, personal communication, 2023). Even in nomadic hunter–gatherer societies, which lack internal ethnic group distinctions, differences in identity could accrue from place to place within a territory and cause clashing opinions about who belongs, presaging a permanent rupture (sect. 6).

Having a definition of society that is both unambiguous and utilitarian allows us to pick out deviations from what we might predict and investigate why they came to be. I briefly present a few cases here, then consider extreme outliers in how human populations have been structured in section 8.

For instance, modern countries stretch the definition of society put forward here because they confront forms of identity pluralism that were weak in the distant past, including undocumented, economically integrated occupants whose existence exacerbates clashes in perception of who belongs. I have argued (Moffett, 2019) that medieval European feudalism enabled lords to suppress their subjects' solidarity with inhabitants of far broader areas – a kindred feeling that greatly simplified the later establishment of states to which people readily identified (Beaune, 1991; Gat & Yakobson, 2013; Hale, 2004; Reynolds, 1997; Weber, 1976).

For any definition, situations likely exist that force us to bend the rules imposed by its formulation. Nowadays large parts of the globe consist of nations whose borders were drawn up by outsiders, to which the people feel little affinity (e.g., Alesina & La Ferrara, 2005). Citizens in regions like Africa may retain a primary commitment to their original territory-holding tribes, making a country more of a loose confederacy than a nation. This description applies also to Switzerland, whose statehood rests on alliances between 26 local cantons speaking four languages. Each canton has a unique historical narrative and its own constitution, flag, and, for many, "national" anthem, such that Swiss citizenship "refers to *one who can vote*, and nearly nothing more" (Chollet, 2011, p. 746).

One outlier region is New Guinea, where central highland populations like the Enga are made up of multigenerational societies (clans) that form defensive alliances called tribes (sect. 4). Until recently, the Enga had no sense of belonging together as "Enga," other than feeling some closeness to those who shared their dialect. The cultural uniformity across 500,000 Enga is therefore remarkable. With almost no differences "marking" each clan (beyond certain conventions that come to the fore during marriages and rituals: Polly Wiessner, personal communication, 2024), their memberships are singularly reliant in the day-to-day on the recognition of individuals.

Modern nations present other challenges for the definition that speak to the changes that have shaped these societies over the centuries. The tendency of such groups as religions and even corporations to take advantage of identity signals of the same kind that I have argued arose originally from societies means a society is no longer the most salient identification for everyone (though saliency is an ancillary feature of societies, rather than a defining one: sect. 4). Furthermore, being multicultural, nations can be strained by the fact that few shared signals of identity are now formally required of all their citizens (sect. 2). As a result, people's perception of who truly *belongs* is no longer clear and absolute, with minorities being registered as relatively peripheral and indeed seeing themselves as such (e.g., Devos & Banaji, 2005; Yogeeswaran & Dasgupta, 2010). This must have been true in the distant past, for example for the hunter–gatherer individual who married into a neighbor society, except that present-day citizens readily distinguish entire communities within their society. And so it is that for nations, political autonomy, as it is expressed *at the level of the entire society* (sect. 2) by means of active governance in managing friction between internal groups, has become essential. That said, none of these embedded communities have ultimate control of their own group territorial space, so (even should they desire independence, as described for the Kurds) the only entity that merits the designation of *society* remains unequivocal.

What of other species? In my survey of vertebrates, carried out most thoroughly for mammals, I am surprised by how cleanly most species fit the proposed frame of reference on societies. As previously mentioned, geladas are an exception; despite their units being "probably homologous" (Bergman, 2010:3051) to baboon troops (with their mobile territories: sections 2H and 3), they do not maintain control of a physical space other than to drive off outsiders when they occupy an area with an exceptionally desirable resource, like certain seeds (a rare event for this grazer: Noah Snyder-Mackler, personal communication, 2023). Instead, all but a very few units disregard each other except to drive off outsiders when they pass across an area where they encounter something exceptionally desirable, like certain seeds (a rare event: Noah Snyder-Mackler, personal communication, 2023). Control of a group space appears inconsistent at best in a few other primates (e.g., red colobus, Graells's tamarins, and squirrel monkeys), which resemble geladas in that troops can intermix with apparent indifference, or at least not socializing in an obvious way (Thomas Strusaker, Stella De La Torre, & John Terborgh, personal communications, 2023; though this possibly doesn't apply to squirrel monkey troops, as these may draw close but still keep a short distance apart: Anita Stone, personal communication, 2023).[13] In section 3.8 I argued for retaining control of space as part of the definition despite these outliers.

An example of a group that doesn't meet our expectations of a society is a breeding congregation of green iguana, in which a male and up to eight unrelated females expel outsiders from a defended space. The groups are too temporary to be called

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societies, however, going their own way after the breeding season to inhabit new territories with largely different sets of individuals each year (Gordon Rodda, personal communication, 2023; Rodda, 1992). Horses form bands that last indefinitely, even if individuals turn over as new members join and others depart or die, so the word "society" clearly applies; whereas plains zebras often disband with the death of their stallion, with just a few bands carrying on should successive new males seize the stallion position (Severine Hex, personal communication, 2023; Ransom & Kaczensky, 2016). As with the iguana, plains zebra groups appear to primarily serve a procreative function that (in the zebra, usually) pays off by being much shorter-lived than societies.

All that said, I have left certain concerns around "what is a society" open to the discretion of others. How few individuals can be considered a society? And how many generations need to be regularly involved? There might ordinarily be little utility in applying the word "society" to four individuals, yet at least one ant species has colonies that peak at that size (Delabie, Fresneau, & Pezon, 2000), and even the very last survivor of a human society will retain the identity associated with his or her people.

8. Might some human populations not live in societies?

A few human populations may not be structured into societies in the sense described here. Great Basin Indians such as the Shoshone lived as hunter–gatherers whose interactions could suggest that the drive to control land and have a group identity can break down under extreme conditions. The meager resources of the Great Basin are often described as having made land tenure so untenable that people of varied named affiliations moved freely across the same areas (Bettinger, 2015; Steward, 1938). I find more plausible those who argue that the tribes occupied well-defined spaces and sought permission to enter neighboring lands (Gregory Smoak, personal communication, 2023; Knack, 2001; Smoak, 2006), as was a widespread expectation between friendly hunter–gatherer societies (sect. 3.9).

More problematic is the view that the Shoshone, who differed in lifestyle over a wide area (being split by anthropologists into categories the Shoshone did not themselves recognize), identified not with other Shoshone but exclusively with close kin. Even though multiple "family clusters" came together to perform tasks or socialize, they are often said to present a "family level of sociocultural integration" (Bettinger, 2015; Steward, 1955, p. 101). And yet the Shoshone traditionally referred to themselves collectively as Newe, meaning "the people" (Smoak, 2007). Indeed, despite their lack of an overall political structure (as was generally true for nomadic hunter–gatherer societies: sect. 2), Murphy and Murphy (1960, p. 292) pronounced the Shoshone to be "a *people* in the truest sense of the word," supporting the view of Lévi-Strauss (1956, pp. 277–278) that "in mankind, a family could not exist if there was no society." Not only did precontact Newe speak one primary language (with dialectical variations, as was commonplace for hunter–gatherers), but they also shared unique beliefs, stories, ceremonies, and dances, retaining these norms despite often (but not always: Steward, 1938, pp. 207–209) being at peace with non-Newe occupying adjacent areas. Thus I agree with Richerson and Boyd (2008, p. 277) that the Shoshone were "part of a multiband community" even if its utility was "rather limited" given the strength of family ties in that society. Furthermore, the tribes of the Great Basin were separate entities in that while they could establish alliances, they existed under no paramount, superordinate identity (sensu the ethnicities embedded in societies today).

I don't see the Great Basin Indians as presenting a challenge to the perspective on societies here. The peoples spread thinly across Australia's Western Desert were (and are) a more extreme outlier. Although they show numerous commonalities and a total population in the range of hunter–gatherer societies (1,500 at first contact), disagreements have existed about their sense of identity (compare the chapters in Peterson, 1976). Plainly their social networks were vast; as Tonkinson (1987, p. 206) concluded, "A certain degree of exclusiveness is essential for human social groups to maintain their sense of distinctiveness, but in areas as harsh as the Western Desert the need to assert a particular identity has to be balanced against the need to remain on good terms with neighbors."

Yet being "on good terms" doesn't translate into a sense of belonging together as a people; in fact, their only existing word to describe themselves collectively, "Mardu," came into use after colonization. Over 40 dialects exist across the region, and although the interests of individuals of the same "dialect-named group" tend to align, no such group ever acts as a unit, let alone the desert inhabitants as a whole. Wholesale aggression occurs solely with tribes beyond the desert edge and has affected only those people who perchance live near this ecological borderland; but the Western Desert is so desolate that outsiders seldom find anything worth fighting over with the "Mardu."

What anthropologists point to as the key source of identity in the Western Desert are "estates" of perhaps 30–100 or more members (Bird, Bird, Codding, & Zeanah, 2019). An inquiry about someone else's estate is the closest these people come to asking, "What is your country?" (Douglas Bird, personal communication, 2023), yet the individuals connected to these places do not constitute a corporate group. Estates are considered ancient, each claiming its own totemic founder as well as the right to artistic designs, rituals, song-words, and so on. However, these rights can be transferred elsewhere, such that what most persists are significant landmarks or objects within the core of the region most associated with an estate, to which those rituals and so on are applied. Although people may take pride in the cultural elements connected with their estate's special locations, no estate has a "territory" per se, and many individuals spend much of their lives roaming far from that area and don't maintain especially strong ties with others of their estate. In addition, estates are assigned at birth, so a person is not necessarily part of the same estate as any genealogical kin; and furthermore, people may claim membership in multiple estates, to which they show varying degrees of commitment.

Accordingly, individuals "do not belong to constituted and durable social entities that would also be landowners and descendants of the same mythical ancestor" (Dousset, 2019, p. 161). Their mode of life appears contrary to expectations from social psychology about the human drive to identify with bounded ingroups, societies, or otherwise; as well as contrary to usual ways of understanding inheritance, sense of family included: Although most hunter–gatherers classify nonrelatives as kin in establishing social relationships (i.e., they have nongenealogical, fictive kin), their biological parents nevertheless rear them; whereas at least half of Western Desert children are taken far from their biological parents to be raised by distantly related "social kin."

The Western Desert lifeways are thought to have originated in recent millennia (Smith, 2013). An enigma for ethnographers is how unusual organizational systems like theirs arose from the societies of our ancestors, and indeed what those ancestral

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societies originally looked like, recognizing that the variability of organizational forms is ultimately what we want to understand.

9. Conclusion: Why focus on societies?

In framing a society concept around "a membership recognized by its constituent individuals," I have purposefully left open what precisely the members detect in identifying who belongs, as well as the purpose such an identification might hold. This approach yields a definition encompassing both humans, with their cultures and other "markers" of identity, intricate cooperation, and systems of political autonomy, and animals that may lack such attributes, and I trust will aid us in learning, among other things, how these vital human groups emerged from simpler ones and reveal what could be enlightening commonalities with other species.

Why put societies forward in promoting a discourse between academic disciplines? Discussions of societies – even the ramifications of how we define that word to indicate lasting groups to which the members are linked over the long term – lead us to deep questions about the human condition, including how people have organized their lives through the millennia and our place among the other animals dependent on such groups. The occurrence of enduring, clearly membered fission–fusion groups in our sister species, the bonobo and chimpanzee (whose societies, aka communities, are homologous to each other: Samuni et al., 2022), supports the thesis that communities of this description extended back to our common ancestor, well before world religions, cohabiting ethnicities, and most other kinds of social groups that are important to people's lives today arose, making societies the original, and foundational, human group (sect. 4). That would mean that much of human intergroup cognition likely evolved in the context of societies. If so, once societies are distinguished generally, their boundaries identified, basic concerns about sociality, many first raised by Durkheim (1982) might be pursued as understandable principally within the societal realm; these include patterns of cooperation and conflict, management of cheaters, and the enhancement of complexity by means of reciprocal processes of integration and specialization across the membership. Even when the concept of *society* put forward here leaves something to be desired, as it does for Western Desert peoples who seem to lack a sense of collective belonging, the proposed definition serves as a reference standard for studying social change and transformation.

Many contemporary social troubles, and triumphs, may be an outcome of mental facilities adapted to tribal and hunter–gatherer groups, now repurposed (or exapted, sensu Gould & Vrba, 1982) in cobbling together multiethnic state societies that grew, step by step, from those smaller societies – nations that may function less than perfectly yet remain sufficiently sturdy to persist, and flourish, for generations. If societal memberships indeed come to be recognized as the precursors of other kinds of human groups that have grown in prominence within nations – races and ethnicities most profoundly among them – social psychologists, to name one academic discipline, will be able to better account not only for our identities and the social behavior that they engender but also for how and why these qualities emerged, expanding the potential scope of their inquiries and the applicability of their findings to fields like sociology and anthropology. Yet to date most aspects of psychology have only been investigated with respect to their expression in groups *internal to* societies.

A few psychological properties connected with group formation that have been looked at with reference to the modern nation taken as a whole[14] include entitativity (Callahan & Ledgerwood, 2016); perception of group essences (Haslam, Rothschild, & Ernst, 2000), of group membership (Devos & Banaji, 2005), and of outgroup warmth and competence (Fiske, Cuddy, & Glick, 2007); nationalism and patriotism (Smith, Oxley, Hibbing, Alford, & Hibbing, 2011); dehumanization or infrahumanization (Leyens et al., 2003); social looseness (Gelfand et al., 2011); perceptions of immigrants (Esses, Jackson, & Armstrong, 2001); development of a child's need to belong (Barrett, 2007); the emergence of ethnocentrism (Brewer & Campbell, 1976); and, of special interest given the uniqueness among the primates of anonymous societies in humans, the psychology around national symbols (Becker et al., 2017; Butz, 2009; Geisler, 2005; Hassin et al., 2007). Studies of these same subjects on hunter–gatherer societies could be especially illuminating.

One example of a trait of human psychology worth investigating at the level of whole societies was described by Brewer (1991), who proposes that people feel the greatest sense of security when they achieve an optimal level of distinctiveness from others. The societies of nomadic hunter–gatherers were small enough that membership in them was sufficient to provide people with that sense of balance between fitting in (being part of a group) and being different (in this case, from other societies); hence their members formed few more exclusive associations – they organized no circles of basket-weaving enthusiasts, for example. As societies grew, their internal complexity increased such that the members could be born into (e.g., an ethnic group) or choose from an ever-expanding array of groups and institutional entities that had no equivalent in the past, from political parties to religions, fraternities and poker clubs, multiplicitous ways of identifying with others that satisfy this need to belong yet be set apart from the crowd.[15] One result is that more groups than ever before have come to compete with the society for our sense of group identities and loyalties.

The societies themselves arguably attain a middle ground of distinctiveness, also. To be a healthy society, as to be a well-adjusted individual, is to be both alike and different. Similarities between neighboring societies encourage positive interactions; differences give each a sense of pride, reduce competition (e.g., Milton, 1991), and bestow economic opportunity should a society offer something needed elsewhere. Such differentiation may be ancient. For Indigenous Australians, "each locality tended to make certain objects with a skill or flair which was admired in other localities" (bowls, jewelry, etc.: Blainey, 1976, p. 207). Perhaps specialization became commonplace for societies coincident with, or before, becoming the norm for individuals (Moffett, 2019, p. 235).[16]

Consideration of other species may bring fresh avenues of research to light. I conclude by calling attention to the one that intrigues me most: The sensitivity of humans to physical and behavioral markers as signs of shared group identity, a responsiveness apparently absent in most vertebrates, including all other apes. When our species first developed this hyperawareness to badges of membership is a mystery, given that it was a necessary but presumably fortuitous preadaptation to the emergence of modern states. Sociologists and political scientists predominantly view identities in flexible, instrumentalist terms, yet these fields could profit from exploring in greater detail how societies function by offering members a dependable sense of belonging to an abstract group that lets strangers feel comfortable together, while granting them the freedom to recognize and construct relationships with select others. Indeed, the view I've presented is that

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the most fruitful interpretation of human societies is based not on traits like cooperation or culture, which manifest in a myriad of ways both within and between societies, but on identity, that bedrock sense of belonging.

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Notes

1. Hence even outright aggression right up to and including civil wars (e.g., Wallensteen, 2012) can run rampant inside societies, such as the feuds between villages of the Yanomami, which I interpret as belonging to a single society, though subgroups have emerged (Ferguson, 2001; Lizot, 1984).
2. A "simple, immediate family" can reasonably be viewed as expiring when the parents die, making the stipulation that a society "perpetuate its population for generations" unnecessary. I include it given the possibility that a family could be interpreted as transferring across generations as one offspring after the next reproduces.
3. Recognition of kin, like that of society membership, can occur on an individual basis or by detection of shared traits (Penn & Frommen, 2010), though of course unlike societies, with their boundaries, genealogical relationships fade with genetic distance (sect. 5).
4. Schaller's quote is focused on lionesses – the sex with the longest-term commitment to a pride.
5. Furthermore, I have seen no evidence that an unfamiliar individual is shunned or attacked by chimpanzees *because of* its alien behaviors – being a stranger to them is sufficient.
6. Rather than perceiving societies in a strictly interpersonal way, could animals dependent on individual recognition have a concept of a society as a *group*? Could something (an "essence") acting like a marker exist in their heads that our species has come to express, and recognize, with our bodies and behaviors?
7. Animals living in larger groups can show more variation in traits that signal individual identities, ameliorating the cognitive costs of individual recognition (Pollard & Blumstein, 2011). Hypothetically, a society that stays in a tight group could grow at least somewhat larger without a shared marker if its members are tethered together by being constantly sensitive to the presence of a particular animal, e.g., keeping a dominant individual's voice, as cue or an evolved signal, in earshot.
8. In the case of ant slaves, assimilation is biologically a dead end because, having been removed from the birth nest, they are unable to help their birth queen rear their genetic kin.
9. As ants are unable to distinguish between individuals, ant interaction networks are far simpler than those of vertebrates in not reflecting complex social choices – an ant can work with whatever individuals of the appropriate caste, such as workers or soldiers, are handy without having to navigate a history of personal relationships (Moffett et al., 2021).
10. Even ants often unrealistically (Moffett, 2012a) assumed to have unified colonies can show errors, or misalignments, in identity, but these probably rarely if ever escalate to cause their societies to sunder (e.g., Sanmartín-Villar, da Silva, Chiara, Cordero-Rivera, & Lorenzo-Carballa, 2022; Whitehouse & Jaffe, 1996), as they can in vertebrates.
11. This stronger identification occurs in part because social networks (which tend to include kin) stick together. Division is just one means by which new societies form (Moffett, 2019, pp. 246–248, e.g., Kowalewski, 2006).
12. The formation and division of factions has been investigated for other social groups (Sani, 2009).
13. In red colobus this obliviousness may represent an accommodation between troops that have recently divided (Colin Chapman, personal communication, 2024).
14. Most published works compare nations that differ markedly, such as Western vs. Asian countries.
15. Individualistic and collectivist societies differ in how people attain optimal distinctiveness (Triandis, 1995, p. 10).
16. Of course, nomadic hunter–gatherers recognized differences in abilities, but job specialization other than by sex or age was rare. Moffett (2019) carries these arguments further, describing the balance ethnicities in modern societies achieve between being seen as part of the greater society yet remaining culturally distinct.

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Open Peer Commentary

Multi-species societies

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Abstract

Research in community ecology, anthropology, and ethnoprimatology has identified mixed-species animal groups, and we argue that Moffett's definition of society allows these groups to qualify as societies. The existence of mixed-species society has two implications – that societies are structured by social norms, and that it may be more common to belong to multiple societies than Moffett suggests.

Moffett's definition of "society" implicitly describes societies as a species-level phenomenon. Here we test whether individuals from different species could also qualify as a society on this account.

Mixed-species animal groups range from oceanic cetaceans, fresh and saltwater fish shoals, social mammals such as ungulates and primates, and flocks of birds (Goodale et al., 2020) which can be stable over decades, occupy fixed home ranges, defend common territory (Martínez & Gomez, 2013), and which enjoy higher survival rates than single-species bird flocks (Srinivasan, 2019). Some mixed-species groups include humans, as when humans and free-ranging animals such as dolphins, honeyguide birds, wolves, and orcas hunt and gather food together (Cram et al., 2022; Fogg, Howe, & Pierotti, 2015). Dog–human groups are perhaps most obvious when we think of pets, but they include street dogs who share spaces with humans, defending their territory from unknown individuals, and relying on social cues (Nagasawa, Kikusui, Onaka, & Ohta, 2009). Dog–human communities can also include additional species, such as livestock herders living in association with sheep or goats. These working dogs recognize their flocks and defend them from wolves, other humans, and other dogs (Gompper, 2014). Mixed-species animal groups have mainly been studied from the perspectives of community ecology, anthropology, and ethnoprimatology as communities (Cormier, 2003; Fuentes, 2012; Govindrajan, 2018; Shell, 2019). Can they also qualify as societies?

Applying Moffett's criteria A–H, we find that the first three aspects are clearly met. Mixed-species animal groups are groups (A) that extend beyond an immediate family (B) and are capable of perpetuating the population for generations (C).

The other criteria require a bit more attention. There is little research on whether multi-species members perceive one another as belonging together (D). But as Moffett points out, many non-human species recognize in-group and out-group members of their own species. We hypothesize that capacity exists in multi-species groups as well. An implication of this hypothesis is that social relations and societies might not emerge only from biological or evolutionary sources, but might also be discovered in interaction, through learning. A core commitment of theoretical social science is that societies can be self-reflective, or can observe themselves (Luhmann, 1995), providing a basis for asking how new interactions emerge among multiple species.

Preliminary evidence for our hypothesis may be found in a recent study of the different human cultures working with honeyguide birds who lead humans to bee nests; humans crack open and extract the honey, leaving the wax for the birds to eat. The Hadza–honeyguide and the Yao–honeyguide societies have different communicative signals, and the birds respond to their local signal at a significantly higher rate – providing evidence that these capacities are learned (Spottiswoode & Wood, 2023).

Whether multi-species groups are set apart from other groups (E) raises the largest questions. Moffett may be underestimating, even in humans, the degree to which multiple membership is possible beyond dual citizenship. Human code-switching, originally a linguistic term, also now refers to the ability to navigate norms and forms of cultural life in different societies, often occupying the same territory (Morton, 2014). Network structure in social science has long emphasized the role of "weak ties" across groupings, suggesting forms of social belonging that help societies scale (Granovetter, 1973). It is conceivable that street dogs and humans may form one society, while the same dogs may interact with one another or smaller mammals in the same spaces, at other times. These cases cannot be explained by the mutually agreeable (F) or initially forced (G) transfer between societies that Moffett allows. It raises interesting questions about the temporal structure of belonging in a society (from moment to moment as well as over a longer period of time). We hypothesize that the key element when identifying spatially overlapping societies will be the social norms that govern the interactions in these different groups (Andrews, Fitzpatrick, & Westra, 2024; Westra et al., 2024).

We take the criterion that societies regulate access to space they control (H) to be closely related to the criterion that members perceive one another as belonging together (D). When we see a dog behave aggressively toward a newcomer dog, we gain evidence that the dog perceives the newcomer as not belonging with them *because* the dog is regulating the newcomer's access to the space. Dogs also do this on behalf of the humans they associate with. Thus, insofar as multi-species groups take up space together, and regulate proximity to group members, they are regulating access to space it controls, even if that space is just the personal spaces of the society's members. This reasoning may also help with the geladas case Moffett raised as a possible outlier to (H).

In sum, we think that Moffett's account can accommodate multi-species groups, but their existence raises two key points. First, societies rest on shared rules – social norms that allow group members to recognize who belongs together and which regulate access to group members. Second, it is common to be a part of multiple societies, and we propose that membership in multiple societies and having to coordinate between societies is an evolutionarily ancient phenomenon (Hussain, Weiss, & Kellberg Nielsen, 2022). An implication of these points is that the distinction between what is social and what is biological is poorly drawn, resting too much on species-level definitions, and not enough on shared forms of interaction, relating, recognition, and norms. While species membership is clearly relevant for reproduction, it is less relevant for social organization in a world of overlapping societies and the code-switching that entails.

Moffett's proposal is oriented to "deep questions about the human condition." However, a more just society of the future ought to address deep questions of our shared condition, not only that of the human. Future forms of social justice would include a wider range of interests, organized in the name of mutual flourishing. An over-valued human exceptionalism has been the source of much injustice in the world; it might also be the source of some intellectual confusion among humans themselves.

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Vocalizations are ideal identity signals

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Abstract

If human societies are understood as identity groups, then our psychology should include design for the production and detection of credible identity signals. We argue that vocalizations are ideal identity signals because the human auditory system is sensitive to subtle acoustic features; vocal signals are efficient; and speech and song are highly complex, enabling the embedding therein of identity signals.

Moffett argues "Societies should be understood fundamentally as *identity groups*…." If so, then social organisms require evolved mechanisms for detecting identity and advertising it by credibly signaling information concerning group membership.

Humans and other organisms form societies to obtain and maintain benefits, such as food and protection. These benefits create a selection pressure that threatens society members: They lead to social parasites, who mimic cues of society membership to exploit the resources of a society. For example, ant colonies are often exploited by species of spiders, beetles, and other ants that mimic the chemical and behavioral signals and cues of colony membership (Mclver & Stonedahl, 1993). Similarly, cuckoos exploit other bird species by tricking them into raising their young: cuckoo eggs mimic the appearance of the target host species' eggs, and cuckoo chicks mimic host chick behaviors (Davies, 2011; Yang et al., 2012).

Humans have culturally evolved similar mimicking strategies, such as duck decoys, whose analogues date to octopus lures in the Mariana Islands, from at least 1500 B.C.E. (Carson & Hung, 2021; Moser, Buckner, Sarian, & Winking, 2023). Mimicry also enables humans to pass as members of social groups to which they do not belong. Although there is cross-cultural evidence for visual and other markers of ethnic identity (McElreath, Boyd, & Richerson, 2003), these are vulnerable to parasitism. For example, hairstyle influences perceived race, such that changing one's hairstyle can change how they are grouped by others (Sims, Pirtle, & Johnson-Arnold, 2020).

Given the threat of social parasitism, reliably signaling identity to conspecifics in a society is essential, especially in large societies where individuals may not be known to all other members (Przepiorka and Diekmann, 2021).[1] Here, we argue that *vocalizations* are a widespread form of honest identity signaling – and are ideally suited to delineating societal units of the type Moffett argues for. Vocal signals, including cues present in language, music, and other, non-linguistic utterances, play an essential role in displaying shared identity in humans, because (1) human auditory perception is sensitive to subtle acoustic features that can uniquely characterize a vocal signal; (2) vocal signals are efficient, requiring minimal energy to produce; and (3) vocal signals can be complex, as in coordinated vocalizations in music, providing a rich medium in which to embed identity signals.

First, human auditory perception is specialized for the processing of speech and music (Singh & Mehr, 2023; Zatorre, Belin, & Penhune, 2002), with a high degree of sensitivity to subtle differences in the acoustic content of speech and music tokens. This makes it possible for vocalizations to function as identity signals. For example, infants and adults exhibit social preferences for unfamiliar adults whose accents are familiar (Giles & Billings, 2004; Kinzler, Dupoux, & Spelke, 2007) or who sing songs that previously have been produced by a social partner (Mehr & Spelke, 2018; Mehr, Song, & Spelke, 2016). Social inferences can also be drawn from other, non-linguistic and non-musical utterances: Listeners can

reliably detect friendship/affiliation from the sounds of co-laughter, and can reliably detect if laughs are "real" or faked, whether or not the listeners had the same native language as the vocalizers (Bryant et al., 2016; Bryant et al., 2018).

Such effects evoke similar patterns in non-human species, where vocal identity signals are common, especially in the domain of territorial signaling (Mehr, Krasnow, Bryant, & Hagen, 2021). Such vocalizations are omnipresent across species, from whales, who use group-specific vocalizations (target article); to chimpanzees, who produce individual-specific and arguably group-specific calls (Crockford, Herbinger, Vigilant, & Boesch, 2004; Desai, Fedurek, Slocombe, & Wilson, 2022); to red-winged blackbirds, where experimentally removing singing ability reduces their ability to control territory (Catchpole & Slater, 1995).

Second, the energy costs of vocal production in humans are small (Titze, 2021), certainly smaller than some other signals, such as those involving movement or physical identifiers such as elaborate clothing. The human vocal tract, including the low position of the larynx compared to other species, efficiently produces a wide range of sounds (Fitch, 2018), and humans demonstrate their proclivity for vocalization from birth, spontaneously vocalizing regularly, often in the first seconds or minutes of life (Soltis, 2004). In addition to distress signals, neonates produce protophones (non-cry, speech-like vocalizations) that may signal developmental progress to caregivers (Oller, Ramsay, Bene, Long, & Griebel, 2021).

Last, human vocalizations are highly complex, providing a broad palette with which identity signals could be painted. For example, approximately 6000 languages are presently used, far surpassing the range of vocalization in any other species – yet linguistic diversity today likely accounts for only a small fraction of linguistic diversity across human history (Fitch, 2011). Concurrently, music varies along tonal, metrical, harmonic, instrumental, and contextual dimensions, among many others (Lomax, 1968; Mehr et al., 2019), with links between its acoustical forms and behavioral functions (Hilton, Crowley-de Thierry, Yan, Martin, & Mehr, 2023; Mehr, Singh, York, Glowacki, & Krasnow, 2018; Yurdum et al., 2023), indicating that it too can function as a signal.

Both types of vocalization also vary on features that make them difficult to mimic. A given language may have only a few phonemes (e.g., 11, in Rotokas, from Papua New Guinea) or many (e.g., 144, in !Xun, from Southern Africa; Evans & Levinson, 2009). Although infants have the ability to learn any language, human audition is shaped by experience and adults have difficulty distinguishing sounds not native to their language, let alone producing them (e.g., Werker & Tees, 1984). Moreover, the style of vocal music contains complex acoustic information that can be informative in signaling contexts, as in lullabies, which may signal a parent's attentional state to infants (Mehr & Krasnow, 2017).

Evidence for the attempted parasitization signals in humans also supports the role of vocalization in identity signaling: Criminals sometimes attempt to alter voice pitch or accent to disguise age, sex, nationality, or identity (Didla, 2020). That these alterations are difficult and rare to compellingly produce suggests ongoing selection for greater abilities to produce and discriminate complex vocalizations. Indeed, aspects of linguistic and musical diversity may have evolved as an anti-parasite strategy in an arms race with hominin social parasites, given the putative role of these vocalizations in identity signaling.

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Note

1. A complementary idea is that signaling could establish common knowledge of group identity, facilitating group coordination (Chwe, 2013).

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Why societies are important and grow so large: Tribes, nations, and teams

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Abstract

Moffett's definition of societies could be augmented by recognizing society's organizing systems that coordinate diverse individuals' behavior for collective good. Viewing humans as cultural animals indicates three reasons for ever larger societies: More shared information, bigger and better marketplace for exchange, and military superiority in numbers. Sports teams are societies offering a promising venue for empirical work.

Although many social scientists often refer vaguely to "society," such as in invoking its beneficial or oppressive aspects, few have taken as much trouble as Moffett (this issue) to ponder carefully what are a society's defining characteristics. Fewer still have his biological, interspecies perspective. We appreciate his effort and offer some suggestions for extending his analysis and collecting data. Regarding the definition itself, we tend to think of a human society as a cultural system plus the people living within it, and so we respectfully suggest that Moffett's definition could give more emphasis to the organizing system aspect. There are perhaps animal societies that have no organization at all, but many have one, from ant colonies to mammal dominance hierarchies.

Moffett asserts that societies are the "most salient level" of social life (see his sect. 3 title). Families are obviously important in human (and many animals') social life, but they are insufficient to ensure enough survival and reproduction to sustain the species. This is particularly true of humankind, given the long dependency of human children. Cultural animal theory (Baumeister, 2005) suggests some reasons for the life-sustaining benefits of large human societies. This theory proposes that culture is humankind's biological strategy, so that the distinctively human traits are mostly the result of evolutionary adaptations to make culture possible. By advanced cooperation, facilitated by communication and group planning, and by building a collectively validated stock of shared information, cultural societies can master the environment and thereby amass more resources to sustain life than simpler systems.

Moffett emphasizes that human societies have grown to be much larger than other kinds of mammal societies. We suggest three main advantages of larger populations for cultural societies (as a means to increase population flourishing). First, cultures rely on shared information, and larger groups can obviously acquire and share more information than small groups, thereby facilitating the collective mastery of the environment. Second, economic trade, which dates back far into prehistory (Ridley, 2020), is facilitated by larger groups, improving what economists call the efficiency of the social system. Larger marketplaces work better, thereby increasing overall benefits. (Hence the modern globalization of the economy.) Third, when intergroup conflict and competition took the form of primitive warfare, battles were generally won by the side having more guys with spears.

The first two of those directly invoke the system aspect of society. The third does indirectly: Even in recent centuries, wars are usually won by the side with the larger economy, which enables it to put more warriors and weapons on the battlefield (Bernstein, 2004).

Moffett's carefully crafted definition opens new avenues for research into societies. In that context, we suggest more study of professional sports teams. They fit most aspects of Moffett's definition. They are clearly more than families (though sometimes fond of "we are family" rhetoric). They endure for multiple generations. Everyone knows who is on the team and who is not. Like other instances of what Moffett calls "anonymous societies" they rely on strong identity markers, starting with matching team uniforms. They maintain control over territory, identified with their home playing field, which during the game is apportioned between them and their opponent du jour. The jewel of their territory is the goal they defend, often with elaborately planned cooperative strategies and intense collective exertion. (To be sure, they do not usually dwell in the stadium.) Most teams are part of a larger organization such as a league, but we strongly suspect that players identify much more with their team than with the league. Players do move among teams, sometimes not by their own choice, and the team roster is entirely replaced much more rapidly than in other kinds of societies – which offers advantages for empirical study of societal continuity amid membership turnover. The importance of the team identity was made especially salient during America's professional football strikes. In 1982, the players asserted that "we are the game" and arranged pickup games among themselves, so that fans might come and pay to watch the athletic display, but these were a flop. In contrast, in 1987, when the owners hired replacement athletes to play the officially scheduled games, fans did pay to attend, indicating that they cared more about the abstract society-team as an official entity than about the individuals belonging to it (e.g., Chicago Tribune, 1987). Comedian Jerry Seinfeld quipped that fans root for the uniforms, regardless of the individuals who wear them.

We note further that the push toward larger group sizes is evident in sports teams, even despite strict rules limiting the number of players who can take part in the game at any given time. Like the efficiency of economic markets, the effectiveness of sports teams increases with specialization. To illustrate, football games allow 11 players on each side, and early teams had about that many in total. But teams have grown larger. By 1960, most professional teams had separate 11-man rosters for offense and defense, and soon after there were others for so-called special

teams (e.g., punting plays). Further specialization brought players who only entered the game for particular situations, such as short-yardage plays. Coaching staffs likewise ballooned in size, to capitalize on the benefits of shared information as well as division of labor.

Social psychology has focused on individual mental processes and dyadic interactions, only occasionally moving even to larger (but still small) groups. A heightened understanding of how whole societies operate would strengthen the field. Moffett's analysis is a big step in the right direction. Further steps might elaborate the system aspect of societies, elucidate the advantages of ever larger sizes, and consider sports teams as a useful laboratory with which to test hypotheses.

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Philosophy or science of societies?

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Abstract

While ambitious, interesting, and generally corresponding to usage in archaeology history, and anthropology, Moffett's paper seems more philosophy of science (conceptual analysis) than science (their use in explanations). It avoids explanations of how "markers of identity" and "their recognition" are acquired (e.g., by biological evolution, individual learning, social learning, or sociocultural evolution) and what the concept of "a society" explains.

It is worth noting first how "society" is used in everyday language today. There are only two ways really. The broad one includes the citizens of a nation state, an "anonymous" society in Moffett's terminology. The narrow one is members of some formal organization, which may be anonymous if national, for example, or "individual" in Moffett's terminology if a local branch say. These formal organizations generally fall into four broad categories although the second and third of these may overlap in their activities. The four are academic organizations (e.g., the Society for the Study of Evolution or the Society for the Social Studies of Science); organizations promoting some cause (e.g., the Society for the Prevention of Cruelty to Animals); charitable organizations (e.g., the Arthritis Society of x); and professional associations (e.g., the Law Society of x), for example.

But everyday usage is not what Moffett's article is after. Rather it is an ambitious and interesting effort to establish a definition of societies in the service of cross-disciplinary study of such. On the one hand, in that context the article may be more *philosophy* of science than brain and behavioral *science*. Do not misunderstand me; I agree that "meanings matter" so that the kind of conceptual analyses philosophers of science engage are important to be sure. Ultimately however, in science, the point is their use in explanations so my comments will ultimately focus on those. On the other hand, the short and long definitions offered and the expansion and qualifications offered for each point through the subsequent sections such as occupying territory, persisting through generations, and so on might be seen as a scientific theory of properties of societies that are associated, and hence constitute a scientific theory of societies. They are interesting and useful and seem to me that they pretty much coincide with how contemporary archaeologists, historians, and even anthropologists use the term (e.g., Riris et al., 2024). However throughout, beyond casual mentions of "minds," "brains," that they "absorb," "grow to be sensitive," and so on, the article actually disavows proposing answers to the scientific questions of how members' "markers of identity" and "their recognition" are acquired or what the concept of "a society" explains.

According to current knowledge, there really are only a few possible answers to those questions. Although "selection acting on the individual members, the group as a whole, or both" is also casually referred to, the article does not go further down that road. Members of a society are first and foremost members of the same species, whether human or otherwise. Despite having had E. O. Wilson as a mentor, while the word "evolution" or variants of it such as "evolutionary" appear in the document 50 times, only one of those is in the text, one in the acknowledgements, and 48 are in the references! Acquisition of those species-specific components of identities and their recognition have obviously evolved biologically – at least in the modern new or extended evolutionary synthesis sense which includes development and ecological interactions with development, physiology, and behavior as well as evolution and genetics (e.g., Blute, 2017). Of course all members of a species are never all members of a single society, except possibly at the point of speciation in some cases, so a further narrowing beyond that is required.

Then we turn to learning whether by individual or social mechanisms. Individual learning including sensitization, habituation, classical and instrumental, or operant conditioning can be seen as aspects of a single selection-type process analogous to the new or extended evolutionary synthesis (Blute, 2001, 2016). Then there is also social learning, whether by observation in any sensory modality or by linguistic instruction. The former is widespread in other species as well (for a review, see Whiten, 2022), but the latter, to the best of our current knowledge, is confined to humans, although questions about that are arising (Kershenbaum, 2024). And thirdly, the commonness of social learning, especially but not exclusively in humans, makes a sociocultural evolutionary process inevitable (for overviews in humans, see Blute, 2024; Blute & Jordan, 2018). But why completely reject sociological concepts such as interaction and social networks as well as culture from the definitions rather than including them in a restricted form – for example, some of whom interact, who participate in some of the same social networks, who share some common culture, and so on?

And finally, we move on from what makes societies to what they explain. Thankfully, Moffett does not get caught up in the

cooperation within societies, conflict between them stereotype. In fact, he agrees with Simmel that the two are inseparable. Most social relationships are a mixture of the two. If a relationship begins with cooperation, conflict over the benefits of the cooperation is commonly added. If it begins with conflict, cooperation is commonly added as individuals gang up on either side (Blute, 2011). In any case, I am looking forward to reading the study on vertebrates that Moffett has underway as well as works by others, influenced by this article, hopefully works on the science as well as on the philosophy of societies.

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Beyond biology: A sociological stance on what is society

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Abstract

We discuss some of the most central problems and concepts elaborated within the social sciences, especially sociology, which are not or only tangentially exposed by Moffett. Then, we will exemplify of how identity, which is a central constituent of Moffett's definition of society, cannot be opposed to interaction despite his claims. Rather it is to be studied as interactional achievement.

Moffett's article is an exciting attempt to define the concept of society from the perspective of biology. By initiating a conversation between natural and social scientific disciplines, he wishes to promote cooperation between different sciences whose subject pertains to understanding humans as living in society, a peculiar type of social arrangement. We eagerly join this important endeavor. Conceptualizing society is centrally relevant for the social sciences and biology alike. Moffett focuses mostly on the similarities and parallels between the forms of living in groups, both in animals and humans. While doing this he gathers a lot of examples supporting his thesis, according to which his definition for the concept of society is valid for both humans and animals. However, a possible meaningful exchange between the disciplines requires reflecting not only similarities but differences as well. Below we will refer to some of the most central problems and concepts elaborated within the social sciences, especially sociology, which are not or only tangentially exposed by Moffett. While doing so we build upon common knowledge originating from its classical authors. Then, we will exemplify of how identity, which is a central constituent of Moffett's definition of society, cannot be opposed to interaction despite his claims. Rather it is to be studied as interactional achievement.

We propose to differentiate between three major layers of meaning of "society." The narrowest refers to human *groups* specialized for certain activity – for example, "Royal Society." This usage seems to be the closest one to the author's proposal. A second originates from a contrastive use, already present in the eighteenth century, serves as a *counter-concept of the state* – think of "civil society." The third one is the most abstract version marking the emergence of sociology from the nineteenth century on. This usage extends beyond specific human groups and encompasses *all the human – and more*. Note that this use is frequently constrained metonymically to certain nominal groups such as nation states.

This latter, most general meaning of "society" is used mostly by social scientists. Society in this sense is the genuine subject of *sociological investigation*, whose main purpose is to account for emergent social phenomena. This level of reality can be considered as genuinely social, that is, not reducible and often opposed to natural. Human societies create structures detached from unmediated human conduct, which, by overarching ever wider circles of human coexistence, provide the coordination of social order. Society, in this sense includes *structural and functional constituents of large-scale human coexistence* (i.e., institutions, collectively shared norms and beliefs, material and symbolic systems of artefacts) which have emergent properties that makes it necessary to distinguish them from and impossible to reduce them to the level of individual human conduct. We will shortly refer to some central features of society that, in our view, cannot be reduced to exclusively natural or individual processes: *Institutionalization*, *material production*, and *meaning formation*.

The *institutionalization* of the mechanisms of societal coordination, responsible for the large-scale organization of society, has been investigated from several perspectives in professional sociology. Durkheim (1982) proposed to uncover "social facts," macro-level constituents of social order determining but not reducible to micro-scale social phenomena. Weber (1978) favored an approach where the investigation of the institutions of societal coordination starts from the level of individual action. Simmel (2009) exposed the dialectical relationship between individuals and society. Marx (1867–1894) underlined the significance of the factors of *material production*. Besides the role of material production (Marx) and the organization of the forms of power (Weber), common

norms, beliefs, and moral sentiments also play an important role (Durkheim) in sociology.

According to modern sociology, social integration rests on two pillars. System-integration, as exposed by the proponents of cybernetically informed theorists (Luhmann, 1984; Parsons, 1951), is realized through the interplay of social subsystems, becoming independent from the spheres of human action and public discourse (Habermas, 1981). Social integration is the integrative performance realized by human interaction and communication, resting on the foundations of *meaning formation* and symbolic relations (Mead, 1934). The significance of these factors has been uncovered by the movement of "interpretative sociology." An adequate definition of society applicable to humans requires taking account of these and similar factors.

Identity is central in Moffett's definition: "Societies should be understood fundamentally as identity groups in which membership is determined by shared perceptions of belonging, rather than as social groups held together by positive interactions" (target article, sect. 1, para. 2). It clearly favors identity over interaction. We agree on the importance of identity but contest the idea that it is more fundamental than interaction. The role of interaction in identity formation shows their interconnectedness. A very significant kind of meaning establishment pertains to ourselves: What we are is partly created by us and partly by other members of the society. We claim that human identity is an outcome of discursive processes. Human social identity is not a black or white matter of presence or absence of an "identity marker." It can be *ambivalent* as judging national and supranational, that is, European identity as schizophrenic testify (Bodor, 2013). It can be *negotiated*, where own-group, out-group, and the person's own stance all play formative roles, for example, in wearing and not-wearing hijab (Aytar & Bodor, 2019). And it is multi-layered where *situationally attributed* ethnic, religious, and national identities may even have lethal outcomes as survivors of the 1943–1947 Ukrainian-Polish conflict attest (Barker & Galasinski, 2001).

The intricate dynamics of identity partly depends on the actor's deliberate choice, and partly on the involved in-groups and out-groups. Human identity is a social construction, it is no less and not more real than something natural. This feature of identity is not articulated properly in Moffett.

We believe that humans are citizens of two worlds: As living beings, citizens of nature, and as members of the human community, citizens of society. Even if we cannot solve the involved antinomies, we cannot leave them unattended, either. As Gadamer (1992, p. 219) writes: "The science of humans in their complete diversity becomes a moral and philosophical task for us all."

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Societies, identities, and macrodemes

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Abstract

We examine the similarities and differences between Moffett's conceptualization of society and the core configuration model of social groupings. Anonymous societies correspond to the macrodeme level of coordination in the core configuration model, and recognizing that identity-based groups are defined by shared distinctiveness rather than territory encourages a more organic understanding of social groups.

We respond to Moffett's thesis through the lens of the core configuration model of human groupings (Brewer & Caporael, 2006; Caporael, 1997). The model postulates that there are four fundamental and universal ways in which humans come together in coordinated groups that vary in size, function, and mechanism of coordination. These four configurations are the dyad, the task group, the deme (or band), and the macrodeme (macroband) (see Caporael & Garvey, 2014, for a concise elaboration of this basic structure). A core configuration is a joint function of group size and activity such that each configuration affords functional possibilities and coordination mechanisms that do not exist at the other levels. Critically, as the term "configuration" implies, the model holds that individuals move fluidly among these groupings both within and between levels.

Of most relevance here is the distinction between demes (moderate-sized coordinating groups based on face-to-face interaction and interpersonal relationships), and macrodemes (large-scale symbolic groups held together by common identity). From this core configuration perspective, Moffett's definition of "society" is at once too broad and too narrow.

In his effort to seek continuity across species, Moffett's definition of "society" subsumes both individual recognition groups (for which examples among nonhuman vertebrates abound) and anonymous identity groups (which are unique to humans among vertebrates), thereby conflating demes and macrodemes under the same umbrella. The basic premises of the core configuration model hold that these two forms are distinct and non-interchangeable. Most specifically, the deme level of grouping is

not sufficient for reproductive diversity and one critical function of the macrodeme is providing a defined pool for mate selection. We see Moffett's description of "anonymous societies" as equivalent to the macrodeme level of coordination and herein refer to this form as *identity groups*. We share Moffett's recognition of the significance of such groups that are based on shared understandings independent of individual recognition.

Do identity groups require territory?

Whereas Moffett overextends the concept of society when he subsumes two distinct basic forms, he unnecessarily narrows the concept of identity groups when he insists on incorporating territory and control of physical space as a foundational element of his definition of society.

Groups defined by shared understandings and symbols not only free collectives from limits of group size but also limits of distance and even time. Although groups in interaction necessarily require occupation of some physical (or virtual?) space, it is not necessary that the group be defined or bounded by that space. To limit our understanding of identity groups to territorially defined groupings cuts the enterprise short. It fails to appreciate the enormous diversity of collective coordination that is made possible by the development of identity groups and the role they play in human social life.

Boundaries, distinctiveness, and permeability

Identity groups not only free collectives from size and spatial limits but also exist independent of the composition of membership at any one point in time. Enduring groups exist across time, generations, and turnover of individual members. All identity groups have provisions for movement of individuals into and out of the group, so do not require impermeability at the level of individuals. Identity groups are not constrained by the number or identity of its members but by factors that allow for the preservation of shared meaning.

As Moffitt emphasizes, groups require boundedness, and the boundaries of identity groups lie in mutual belief in shared distinctiveness. Membership in large distinctive groups satisfies human needs for both inclusion and differentiation (Brewer, 1991). Members are motivated to maintain and defend group distinctiveness (even though the basis for distinction may shift over time and social context). However, it is not sufficient that shared identity exists in the minds of individual members. Instantiation of group identity requires recurring materialized manifestations in the form of practices, rituals, gatherings, and symbolic displays that reinforce the reality of the group as an entity. In other words, individuals have to *experience* group identity, not just believe in it.

Nested versus cross-cutting identity groups

Moffett acknowledges that humans form multiple meaningful social groups but states that "societies can be picked out from other tiers by their primacy with respect to abiding identities." Despite his intent to define society broadly, it is clear that his definition is heavily influenced by the nation-state as a prototypic example. He implies that other identity groups are essentially nested within this "primal" version. We would argue in contrast that there are many variants of identity groups and individuals recognize membership in many such groups on an equal par with national identities. Scientific disciplines, global religions, ethnic identity groups have all the properties of shared identity groups that cross-cut national identity.

Movement across identity groups is fluid. Just as participation in task groups or communities is specific to time and place, activation and enactment of specific identity group memberships is similarly situated. We may be aware of our membership in a particular identity group on a daily basis or only occasionally, depending on what role that group plays in coordinating our actions with others for specific purposes. Moffett's focus on one form of collective organization fails to capture the functional fluidity of social identity groups.

To conclude, while we fully appreciate Moffett's agenda to inspire cross-disciplinary attention to the nature of both human and nonhuman social grouping, we would encourage a more organic understanding of life in groups.

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Revisiting the spaces of societies and the cooperation that sustains them

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Abstract

We embrace Moffett's call for more rigorous definitions of social organizations but raise two intersecting critiques: (1) The spaces controlled by societies are not exclusively physical, and (2) cooperation is required to maintain control over spaces, physical or otherwise. We discuss examples of non-physical societal spaces across species and highlight the top-down group cooperation challenge that is maintaining them.

Defining what constitutes a society is instrumental to understanding how social entities form, how they endure, and the mechanisms that allow them to thrive. With increasing research attention to collectives of all kinds, it is crucial to refine our

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language and develop specific constructs that can be shared across disciplines. Moffett introduces a welcome and thorough framework for the study of societies, calling for increased definitional clarity in building a taxonomy of social organizations. We thoroughly embrace many of Moffett's arguments, but raise two critical questions: (1) Can the spaces controlled by societies go beyond physical territory? (2) Can we really ignore cooperation as a foundational component of societies?

Moffett highlights the importance of spaces to societies, arguing that one distinguishing attribute of a society is that it regulates access to the physical space(s) it ultimately controls. Incorporating spaces as a definitional component of societies highlights the functional benefit that separates societies from other forms of social aggregations, but must these spaces necessarily be physical territory? We bring forward the idea that societies in humans and other species can also maintain control of social, reproductive, or even conceptual spaces. For example, although bonobo (*Pan paniscus*) groups are discussed as a society in the target article, there is little evidence that they maintain exclusive access or compete over territory (Furuichi, 2011; Samuni & Surbeck, 2023). Bonobo groups do have distinct home ranges, but these overlap extensively with neighbouring groups and there is no evidence for defence or monopolizability of any patch of territory from neighbours. Instead, bonobo societies are better characterized through control over access to *social* spaces manifested through distinct group membership and ingroup/outgroup identities (Samuni, Langergraber, & Surbeck, 2022). Similarly, groups of western lowland gorillas (*Gorilla gorilla gorilla*) often range in the same physical spaces, and can have intergroup interactions ranging from hostile to tolerant and even affiliative (Cooksey *et al*., 2020; Forcina *et al*., 2019). Although Moffett touches on intersecting home ranges by introducing the notion of "mobile territory" in which a group "attempts to monopolize whatever site it occupies at a given time by defending that space and its resources when necessary," this does not seem applicable to associations where members of different gorilla groups may meet, feed, and even play together. Specifically, *bais*, where "groups commingle while feeding on grasses rich in salts" (Forcina *et al*., 2019) are difficult to understand as any group's mobile territory. In this species, we may consider whether control over access to *reproductive* spaces regardless of temporary spatial association and even affiliation between groups may be a more accurate description of their societal organization. Finally, in our own species, there are social entities such as academic societies and online communities that are disparately spread across the globe and have no consistent or permanent physical spaces, yet otherwise resemble, and even call themselves, societies. These types of human societies are instead structured around *conceptual* and *digital* spaces where, for example, members of academic societies may inhabit a theoretical niche and forage for research topics within their society's conceptual territory. We suggest that maintaining the centrality of societal space in Moffett's definition, while allowing for the relevant societal space to shift from physical to social, reproductive, or otherwise, provides a more holistic framework for the study of diverse societies.

Relatedly, maintaining control over a space of any kind is itself a group cooperation challenge. In arguing that "cooperation can be so varied and shifting…that it is judicious to define societies in a way that is neutral to its existence," Moffett lumps together the diversity of cooperation and rejects their importance in one motion. Although we agree that networks of positive interactions and reciprocal pairwise cooperation are neither necessary nor sufficient to define societies, we draw particular attention to the plurality of cooperation and emphasize the distinction between bottom-up and top-down group cooperation (Brooks & Yamamoto, 2022). Bottom-up group cooperation refers to the apparent group cooperation arising from several cooperating pairs, and is the target of much of Moffett's discussion around cooperation, but top-down group cooperation refers to forms of cooperation that are irreducible to the sum of dyadic interactions. Without a space there is no society, and we therefore highlight the role of collective cooperation and coordination in maintaining spaces that are indispensable to any society. Control over access to a space necessarily implies that societal outsiders could face conflict or consequence for unsanctioned use. However, any consequences must come from the society, which inherently requires risk or effort. Maintenance and defence of the space is therefore a costly endeavour, and each member must decide whether or not they themselves are willing to pay such a cost for the society or instead attempt to freeride on the efforts of other members. This is a top-down group cooperation challenge that must be solved for any societal space, and therefore society, to endure over time. Chimpanzees go on risky border patrols to protect their territory, bonobos sustain *social group* (but not territorial) boundaries despite incredible tolerance and bottom-up cooperation between members of different societies, gorillas fight violently against younger males attempting to invade their reproductive space, and human academics write cutting takedowns against outsiders breaching their conceptual domain.

The perspective argued here gives rise to a more plural and intersectional notion of societies than that defended by Moffett. It explicitly endorses the potential for multiple societal memberships by individuals exclusively controlling and identifying with multiple spaces and allows for the inclusion of displaced and dispersed societies as true societies. We believe that broadening the definition of societal spaces in this way offers a more parsimonious framing of our own and other species' societal cognition, including non-territorial species and those with multi-level organizations. Further, by explicitly focusing on the top-down group cooperation challenge of defending and coordinating these diverse spaces, the biological and evolutionary importance of societies comes into clearer focus. We believe these points can help form a more robust foundation for organizing and understanding the varied forms of social collectives.

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A nation by any other name: A failure to focus on function

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Abstract

Moffett's interdisciplinary definition of society seeks to distinguish itself from the prevalent, political understanding of the term. Through engagement with international relations literature, we outline how Moffett's proposed "society" results in a recapitulation of the definition of a nation-state. We suggest that this tension could be addressed by adopting a functional, rather than identity-based, approach.

Moffett proposes a definition of "society" resting on two main pillars: a shared sense of "belonging" amongst members, and control over the territory in which those members live. In offering this definition, he seeks to stimulate an interdisciplinary examination of society through an appeal to scholars from sociology, biology, philosophy, politics, and more. By engaging with literature from the field of international relations (IR), we seek to show that the maintenance and external independence of a "society" does not coincide with or follow from the existence of a group with shared identity.

For our purposes, we will refer to a group that understands itself as having a collective identity as a nation (Anderson, 1990). Separately, a state is a territorially bound group boasting internal supremacy (total authority over its members) and external independence (freedom from outside authority) (Bull, 1977). When combined, these two form the conceptual "nation-state," understood as a "community of sentiment" in which members feature a specific sense of solidarity toward each other while exercising exclusive dominion over the territory they occupy (Gerth & Mills, 2014).

Moffett's proposed "society" as an "enduring territorial group whose members recognize each other as belonging" is thus a replication of the "nation-state" (target article, sect. 1, para. 1). By reifying an existing IR term, Moffett fails to counter what he terms as the prevalent and reductionist understanding of society as "passport-holding, national anthem-singing territorial groups" (target article, sect. 1.1, para. 1).

The issue inherent to this reification is that the nation-state does not exist. A true, stable polity in which the identity-based belonging of a nation coincides with the territorial boundaries of a state is unknown to history (Walby, 2003). Broadly, the association between nation and state is manufactured by the post-World War I international system, in which the state has become the basal unit of political power. A nation wishing to protect itself, further develop, or conduct its own foreign policy is obliged to become, create, or join an existing state (Hurrell, 2007). In practice, the resultant states have always been multinational endeavors. This is partially due to the inherited nature of political geography: The 1884 Berlin Conference, for example, drew boundaries agnostic to national identity across the African continent, dividing some groups and lumping others together haphazardly (Griffiths, 1986). The existence of multiple nations within a state, however, need not have a historical precedent. By virtue of existing within a state, a population will develop majorities and minorities that could themselves grow to form new nations (Walby, 2003). By defining society as a nation-state in IR terms, Moffett renders his own criterion of "belonging" meaningless. If the state is the only unit by which exclusive territorial domain can be secured, only a state can be a society – regardless of whether all the members of that state see themselves as a nation.

Further, the assumption that a state has what Moffett calls "identity markers" follows from the confounding of the power-wielding entity of a state and the cultural entity of a nation. The understanding of identity associated with a state is not a characteristic of the state itself, but of a nation within said state (Reus-Smit, 2017). Great Britain here provides a fitting example, as a state featuring four distinct nations bound within a single territory. There is no "identity marker" for being British beyond a state-issued passport. What one may think of as "being British" – be it an accent, a mannerism, a religion – is likely a marker of one of its constituent nations.

While we agree with Moffett's intent to separate a notion or definition of society from a strictly political one, we believe that his current definition instead recapitulates it. Some of this failing can be traced to the attempt to engage with philosophers and biologists; namely, the metaphysical appeal to "shared perception of belonging" which seeks to include animals, namely vertebrates, but falls prey to the same criticisms (Dennett, 1993) as Nagel, and later Peter Godfrey-Smith's, consciousness requirements of animal minds. Particularly, that there is something that it *is like* to be a bat (Nagel, 1974) or more broadly something it *is* to be conscious (Godfrey-Smith, 2021). For Moffett, there is something that it *is* to be a society, most importantly a shared perception of belonging. By envoking perception, there is the additional worry that one seeking to call something a society must also furnish an account of an individual's "perception" which seems unneeded.

We propose that instead of the metaphysical requirement for constituents to perceive belonging, the argument might benefit from considering a functional definition of society, looking at the aggregate. Namely, a society is the kind of thing that does "x, y, z" where "x, y, z" might consist of persisting for generations, declaring war, possessing a metric separating internal from external, and so on. This allows for a discussion about the kinds of societies in which Moffett is interested, namely mammals, without sacrificing the broad, cooperation-based definition of E.O. Wilson. For example, much of what makes ant societies so fascinating is their lack of "steadfast affiliation to the collective" (target article, sect. 2, para. 3); instead, they boast a dynamic ruleset governing local links that results in a collective. Here, we see that the end result looks an awful lot like a collaborative collective of individuals who seem to have a shared perception of belonging. In reality, they do not, but they are still a society. Working from

the functional rather than the form may provide a better opportunity for interdisciplinary collaboration.

Taking an IR lens to Moffett's definition highlights its weakness. The inclusion of a territorial control criterion means that, in its application to modern humanity, a society can only be a state. This unfortunately undercuts his claim that a "society" is the primary unit defining "groupiness" throughout human history. Looking beyond form toward function may be key to formulating a more widely applicable and interdisciplinary understanding of society.

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Do boundaries matter so much for societies?

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Abstract

Moffett's definition of society is broadly applicable to all group-living animals from insects to nation states. Presenting examples from primates, I illustrate difficulties in defining boundaries between societies and even what societies defend to demonstrate the complexity of using an understanding of the processes effecting primate societies to understand those effecting human societies. However, finding similarities and differences in processes shaping societies is intriguing and Moffett's definition provides an excellent starting point.

Moffett elegantly expresses the need to understand what keeps societies together and what tears them apart. This need is very clear as several nation states are fighting over territories and arguing over who belongs to what society. Meeting this requires a clear, interdisciplinary understanding of what is a society. This is what the paper provides. I applaud the breadth of Moffett's effort as he presents information from insects to nation states. In trying to bridge between humans and other animals, he relies heavily on primate examples. I will follow this lead.

Moffett places considerable emphasis on territories, using the term 37 times. In the first sentence of the introduction, he states "I broadly address societies, in the sense of enduring territorial groups whose members recognize each other as belonging." In his formal definition, he drops the term territory, and states a society "regulates access to a space or spaces it ultimately controls." Thus, he uses the term territoriality in a very broad sense to include any area the society controls access over through either aggression or avoidance, allows for extensive spatial overlap, and mobile territories that simply involve groups defending the space they occupy at a specific moment and avoidance-based spacing, which has been well described for baboons. The definition even allows for cordial visits of non-members. What the definition does not allow for is a set of individuals coinhabiting a physical location to be considered societies; for example, primate matrilines with a social group, religious groups, and any diasporas living in a larger society. This definition is considerably more general than that traditionally used in ethology (Brown & Orians, 1970) and differs from classical dictionary definitions. For example, the Oxford dictionary defines a territory as "an area that one person, group, animal, etc. considers as their own and defends against others." The broader definition is valuable, but the repeated use of the term territoriality is potentially damaging as it emphasizes the defense of space which many readers will view in a traditional sense as a demarcated geographical area. Considering the current actions of human nation states this is undesirable.

In this commentary, I would like to focus on the regulation of access to space as it is central to distinguishing one society from another. However, boundaries can be blurry both with respect to space and time. Blurry spatial boundaries are well known as many species do not have areas of exclusive use. Gorillas and red colobus monkeys provide illustrative examples with respect to boundaries changing over time. Gorillas (*Gorilla gorilla* and *G. beringei*) are considered to be non-territorial due to the high degree of spatial overlap among groups, limited inter-group aggression, and large home ranges (Morrison, Dunn, Illera, Walsh, & Bermejo, 2020a), however there is avoidance-based spacing (Seiler & Robbins, 2020) and aggression increases toward the group's core area (Morrison et al., 2020b). Thus, a single group would be considered a society based on Moffett's definition. However, groups that have previously split exhibit affiliative behavior when they encounter each other within the peripheral areas of their home ranges (Morrison et al., 2020b). This affiliation blurs the definition of a society, as the dividing groups are one society and gradually become two. Thus, at what point are they considered separate societies?

Similarly, while red colobus monkey groups (*Piliocolobus tephrosceles)* (Kalbitzer, Golooba, & Chapman, 2023) and would be considered by Moffett to be societies. A large group of red colobus that overlapped ranges with approximately 10 other groups and interacted aggressively with them gradually split into two groups (Chapman unpublished data). These new groups interacted amiable for the next eight years before starting to exhibit intergroup

aggression. These amiable interactions involved grooming, play, mating, and extended visits (weeks) by members of the other group. The behavior of gorillas and red colobus could be viewed as the process of forming new societies; however, defining a realistic cut-off point, which would be similarly appropriate for human societies, would be extremely difficult.

Moffett considers nation states to be societies, yet the creation of the boundaries of these societies has little in common with the gradual division of a single primate group into two groups/societies. For example, many European borders were demarcated following World War II by the victors of the war (WorldEconomicForum, 2021) and the size and shapes of African states were largely determined by colonial power (Green, 2012). This has resulted in extensive informal cross-border trade, as borders have little relevance to local people (Golub, 2015) and in Asia (Abd Hair Awang, Bakar, Abdullah, & Liu, 2013) and Africa (Titeca, 2020) and cross-border traders have family and friends on both sides of the border. I question whether understanding how the formation of new primate groups will help us understand the formation of nation states.

The black and white colobus monkeys (*Colobus guereza*) challenge our understanding of what is being defended. Groups have extensive home range overlap, exhibit intense inter-group aggression, and use loud calls to facilitate avoidance-based spacing (Harris & Chapman, 2007). I have seen an encounter where two groups were aggressively interacting and a female left her group, traveled to the neighboring group, mated, and returned. If the defense is not over space, food, or mating, what is its function? Similarly, one could ask what is the function of national borders? Possibly, the establishment of the European Union offers a good discussion point for understanding their function.

What I view as the beauty of Moffett's contribution is that it provides a starting point for debate over what are the differences between societies, how are societies created and fall apart, what makes societal dissolution peaceful or not, and so on. Moffett does not pay much attention to elements within societies (e.g., primate matrilines, religious groups). Yet, these elements show many of the characteristics of a society, thus understanding how these elements form, organize, disband, and will also be an exciting area for research that could shed light on the process operating at a societal level.

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Society: An anthropological perspective

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Abstract

Moffett's paper is an important contribution to the multidisciplinary discussion of the notion of "society." This comment aims to clarify and nuance some points considered important from an anthropological perspective. In particular, it stresses the importance of controlled social interaction and historical dynamics.

As an anthropologist specializing in Australian hunter-gatherers and Melanesian horticulturalists, I need to underline that the hidden endeavour of my discipline rests precisely in the attempt to grasp the idea of "society." However, most of my colleagues (including myself) would generally simply accept the existence of the black-box "society" without further discussion, coining it as a thing in which something fundamental happens: The socialization of individuals into persons believing and understanding that they are indeed a part of something superior to their individual characteristics and relationships. It is the fabric of providing these individuals with roles, statuses, tastes… ultimately shared and recognizable ways of doing and of thinking and a sense of belonging… that anthropologists label "society" often without defining it in sufficiently general terms. Moffett has done a welcome but difficult job in clarifying important aspects of the concept while bridging disciplinary divides. Ongoing semantic and conceptual discussions and clarifications are testimonies of intellectual and scientific progress, and Moffett's paper is a significant contribution in this endeavour.

Not sufficiently knowledgeable in other disciplines to hope for valid extrapolations, I would like to nevertheless underline a few anthropological points which I trust are significant for grasping "human society." As often in the social sciences, the validity or usefulness of a definition is a function of the quantity and quality of variation or deviation one is willing to accept. While human existence as collectives is incredibly diverse, such a variation

does not constrain to stretch Moffett's definition into unrecognizable confines. Despite the few points mentioned below, I therefore believe Moffett's framework to remain applicable and useful, in particular as a heuristic device.

1) Moffett suggests that societies are determined by shared perceptions of belonging rather than as social groups held together by positive interactions. This perspective needs to be somewhat nuanced. Indeed, humans are not born with perceptions of belonging to a "society," but acquire such faculty during socialization processes (active and passive education, mimesis, social control, etc.) which are tributary to positive interactions. Therefore, while not all interactions produce an enduring sense of belonging, such a sense only emerges if interactions have indeed taken place and are more or less continually reproduced. In large-scale societies, such as modern nation states (whether they are indeed societies needs to be further discussed), the perception of belonging is reproduced (sometimes with constraints and difficulties) through an interaction with the society's materialized representations (administration, schools, police, language, etc.). Further, while one therefore also happily agrees with Moffett that society is the product of its members' minds – whether we follow the old French and British sociological schools for which society is "more than the sum of its individuals," or the new pragmatic school for which society is the smallest common denominator (Dousset, 2022) – we also need to recognize that shared institutions, which are independent of individual minds and imagination, are the locus producing and reproducing the necessary sense of belonging.
2) This leads me to the second point, one that I missed in Moffett's discussion but which I believe needs to be somehow integrated in his definition of society. Whether we are concerned with egalitarian hunter-gatherers of the Australian Western Desert or with Melanesian horticulturalists that highly value forms of socio-political hierarchies, belonging is inseparable, and sometimes even indistinguishable from legitimate social control. The latter may be represented by institutions with expectations, forms of domination, expressions of authority and power, socio-political hierarchies, legitimate violence, and so on. Being a member of a society is also accepting (or having learned or being forced to accept, or understanding the benefits of accepting) specific legitimate forms of domination. A society is, among others, an envelope controlling territory, but this always also means controlling its members. Consequently, the existence of systems of social control that are reproduced over time and space is one non-negligible aspect of all societies.
3) While control of space is indeed an important aspect of society, my experience among Australian Western Desert communities, but also among Pacific societies, has led me to reconsider the notion of "territory," in particular if one understands it as a more or less continuous surface and its resources delimited by more or less recognized even though dynamic markers. Western Desert communities, even though having a strong sense of belonging, do not identify a delimited surface as territory, but perceive space as chains of isolated sites that crisscross each other and in which the in-between is simply unnamed time of travel. Moreover, communities do not express exclusive relationships with these chains of sites. Among Pacific societies, on the other hand, which are territorial but that for some experienced significant diasporic movements, their "land" goes beyond classic societal occupation to integrate places in host islands or countries without "official" colonization. No need nor place to recall here that such diasporic movements and partial migrations are not limited to the modern context, but have been an integral aspect of the social dynamics for centuries in the Pacific and elsewhere. It could thus be useful to consider Appadurai's (1995, p. 209) suggestion to distinguish "neighbourhood," which he defines as a "context, or set of contexts within which meaningful social action can be both generated and interpreted," from what he calls "ethnoscape," a neologism for collective identities (aka society) that transcend place.
4) Last but not least, it is likely that the forms of collective belonging, and thus the nature of society, not only know their contemporary diversity, but have also changed and evolved during human history. For example, it appears that the perception of kin or space must have been significantly different for those human groups that initially populated formerly unexplored areas (Dousset, 2019). If you are the only person on an island, the notion of ownership itself is irrelevant, since ownership does not describe relationships *with* things, but relationships with others *about* the thing. It is the coexistence of, and the relationship between multiple human groups that provided "society" as Moffett defines it a reason to be.

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Collective memories and understandings of human societies

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Abstract

Moffett's article asserts that human societies are distinct from other social groups because they must maintain control over specific territories. In our commentary, we challenge this argument, aiming to enrich it by highlighting the pivotal role of history and collective memories and their underestimated significance in shaping societies across time and beyond territorial ownership and resource control.

Moffett's article opens with an interesting comparison between human societies and those of other animals, asserting that societies are often defined by control and access to specific territories, whether fixed or mobile, and their associated ownership. Although the author acknowledges that humans value the sense of collective continuity (Sani et al., 2007), he reduces this complex socio-psychological concept (Smeekes & Verkuyten, 2016) to cycles of generating new offspring over generations within specific territories under human control.

Although history is rife with conflicts over territorial and resources' control perpetuated for generations, we contend that Moffett's argument overlooks a crucial element allowing human societies to endure even in the absence of control over land or resources, namely, collective memories. Collective memory (Halbwachs, 1950) is a multidimensional concept addressed through different disciplines and perspectives, with various definitions. The working conceptualization we use here focuses on the four common aspects that different definitions agree upon, posing that collective memories are: (a) A shared understanding of the past based on belonging to a common group sharing a social identity (Licata & Klein, 2010, p. 243); (b) serve different functions through which a group or society construct a collective narrative about its past, present, and future (Wang, 2008); (c) can be strategically (re)constructed over time to meet the evolving needs and goals of a group or society (Liu & Hilton, 2005); and (d) are communicated and disseminated within a group or society through various means. These include informal practices, such as the intergenerational transmission of narratives, symbols, language, and cultural rituals and artifacts, as well as formal practices like education (Psaltis, Carretero, & Čehajić-Clancy, 2017).

We acknowledge that other animal species can also engage in social learning, maintain traditions (such as bird migration patterns passed down through generations), and utilize complex forms of communication and collective knowledge (as seen in ants). However, we argue that collective memories create a multifaceted framework unique to humans. This framework enables human societies to transcend territorial ownership and resource control through a series of complex socio-psychological processes (Hannerz, 1996). These processes include, but are not limited to, a sense of shared remembering that incorporates symbolic and narrative elements (Halbwachs, 1950); feelings of group belonging overriding individual-vested interests (Ellemers, Spears, & Doosje, 2002); and collective identities persisting over time and generations (Smeekes & Verkuyten, 2016).

Still today, in various contexts around the world, we observe different social groups that, in our opinion, should be fully recognized as human societies based on this multifaceted collective memory framework. These societies maintain complex connections with the places where they reside or wish to live but have no formal territorial ownership or control over resources. In our current historical context, one of the most poignant examples is Palestinian society. The "Nakba" in 1948, signifying "The Catastrophe" in Arabic, forcibly displaced around 50% of the Palestinian population, scattering them across the Middle East, North and South America, and beyond. Despite the United Nations General Assembly Resolution 3236 (1974) affirming their right to return, many Palestinians have never set foot on their ancestral lands or had control over them. Nevertheless, Palestinian society persisted, anchored by the transmission of collective memories, cultural practices, and a shared identity, irrespective of territorial control (Penić, Vollhardt, Donnay, Albzour, & Bhavnani, 2024). This resilience, echoed in other cases like the Kurds (Coşkan & Şen, 2024), starkly challenges Moffett's assertion that the conquered are eventually assimilated by the conqueror.

Even after centuries of conflicts, forced assimilation, cultural extermination, and interbreeding, populations with roots in ancient societies – such as indigenous communities in the Americas, Africa, or New Zealand and Australia – can preserve and transmit memories of their past. They continue to assert themselves as bearers of collective and cultural rights, beyond territorial control. For example, the Mapuche indigenous people in Chile have lost most access to and control over their ancestral land due to the forced occupation by colonizers of European descendance (Bengoa, 2008). Still, they define themselves as a "people's nation" and identify as a societal group with a shared history and culture. This history is transmitted across generations, connecting their culture, past, present, and future to their ancestral land, despite having little to no control over the territory, and no hope of reclaiming it in the future (Di Giminiani, 2015). Thus, they demonstrate resilience and maintain a strong identification as a cohesive society without land. Can we really deny the Mapuche's self-determination by claiming they are not a society but merely an ethnicity, just because they have extremely limited territorial ownership and resource control?

Therefore, we argue that the struggle for autonomy from occupying powers and the recognition of fundamental rights can transcend territorial disputes. Superordinate societal projects, derived from higher levels of identification (Dovidio, Gaertner, & Kafaty, 2000), such as Pan-Africanism (Young, 2010), with its unique history, hopes, and demands, exemplify how collective memories of past events – such as slavery, colonialism, and imperialism – can be mobilized to construct imagined communities, beyond specific geographical demarcations or national borders (Cabecinhas et al., 2011; Gordon, 2023). This political project aims to foster collaboration across territories and countries in defense of collective human rights and cultural plurality, without necessarily having control over specific resources or claiming ownership of particular territories.

In conclusion, although Moffett's article offers thought-provoking ideas into reintroducing the concept of society into scientific inquiry, we contend that societies do not need control over resources and territory to be considered as such. Moffett's proposal may limit our understanding of how humans construct and use collective memories to interpret the past, navigate the present, and envision the future. We also emphasize that collective memories can be harnessed to foster more inclusive, fluid, and open societies. Limiting the concept of society to those that control territory and resources legitimizes a neocolonial power

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structure, reducing societies striving for self-determination to mere ethnic groups rather than recognizing them as full-fledged societies. Our framework underscores an enduring sense of societal belonging, which transcends geographical boundaries and even challenges the notion of territorial land ownership and resource control as a necessary condition for social groups to be considered as societies.

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What is a society in the case of multilevel societies?

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Abstract

We expand on Moffett's discussion of societies in the context of multilevel social systems, for which Moffett proposes the core unit to constitute a society. Moffett's definition of a society, however, suggests that it is more parsimonious to assign this label to the upper (band) level. An understanding of multilevel systems is critical for informing discussions about what a society is.

We appreciate Moffett's call for an over-arching definition of society. However, we are not entirely convinced that his more human-focused definition can be neatly extrapolated to other primate/animal species. We will comment on how exactly the components of Moffett's definition of a society are reconcilable with multilevel societies, in which smaller social entities ("core units") are embedded within multiple levels of higher-level entities ("intermediate levels," "upper levels," and "apex levels," sensu Grueter et al., 2020). This is especially important considering the relevance of multilevel societies to hominin/human social evolution (Chapais, 2013; Grueter, Chapais, & Zinner, 2012; Swedell & Plummer, 2012, 2019), the very societies upon which Moffett bases his arguments.

First, Moffett makes it clear that his definition of a society does not generally accommodate multilevel societies and he does not think species can "simultaneously possess two tiers that can be described as societies" except under restricted circumstances. However, this multiple membership phenomenon is precisely the point of multilevel societies, that is, we could in fact view them as "societies within societies" due to the perceived shared membership in these multiple levels (e.g., Schreier & Swedell, 2009, 2012).

Second, it is not entirely clear what main criterion should define a society in the case of multilevel systems. If it is individual recognition to be part of an "identity group" or "perceive one another as belonging together," then, as Moffett states, the core unit of a multilevel society – that is, the socially bonded breeding unit – may indeed be equivalent to a society, but only in those multilevel societies wherein the degree of individual recognition abilities beyond the confines of the core unit is unclear. For example, Bergman (2010) has shown that gelada males do not show

vocalization-based recognition of individual males outside their core unit. However, only males were tested in this playback experiment, and it is possible that females recognize a wider range of individuals in this or other multilevel systems (Mac Carron & Dunbar, 2016). It is also possible that males do have the ability to recognize extra-unit individuals but are not motivated to so in the experimental setting, or are able to recognize one another by sight even if not by vocalizations. Moreover, in the multilevel system of hamadryas baboons, individual recognition extends to multiple layers of society, far beyond the core unit (e.g., Sigg, Stolba, Abegglen, & Dasser, 1982). Other examples where vocal recognition beyond a single social tier has been documented include African elephants (McComb, Moss, Sayialel, & Baker, 2000), bottlenose dolphins (King et al., 2018), and vervet monkeys (Cheney & Seyfarth, 1982).

Third, if we use shared identity to define a society then we must also look beyond the core unit. In hamadryas baboons, for example, multiple core unit males negotiate a common direction of departure from their sleeping cliffs (Kummer, 1968). Such collective decision making and coordination of activities across core units are common in multilevel systems and contribute to their stability (Maeda, Sueur, Hirata, & Yamamoto, 2021; Wu et al., 2023). Moffett writes that in case of geladas "units share nothing with those greater collectives other than the habit of moving more or less across the same general ground," However, they do seem to have a vested interest in keeping intruders at bay: Leader males of the core units sometimes join forces in warding off bachelors (Wrangham, 1976). These cooperative interactions can also extend to higher levels of society, for example, in hamadryas baboons (Abegglen, 1984; Kummer, 1968; Sigg et al., 1982). Another revealing observation is that core unit males in hamadryas baboons show "respect for possession" of females, an inhibition of competition that prevents them from stealing females from other males (Kummer, Götz, & Angst, 1974). Such respect would easily slide into more frequent aggressive competition over females if the core units represented the society.

Fourth, if, as Moffett states, a group "must extend beyond a simple, immediate family to be considered a society," then we must define a society at a higher level of organization than the core unit. This element of the definition of a society is incongruent with the designation of the core unit as a society in multilevel systems because core units are reproductive units and can thus be construed as polygynous "families" *sensu lato*.

Fifth, another component of Moffett's definition of a society revolves around exclusive dominion over the same space at a given time and concern for minimizing encroachment by outsiders. If we apply this spatial criterion to multilevel systems, then we must define the society as the upper level, that is, the "band" in many species, as it is this level that largely maintains a shared activity space to the exclusion of other such units.

Given his comments about geladas, Moffett seems to favor considering the core unit to constitute a society in multilevel systems. While individual units do have some of the hallmarks of a mini-society, they are in fact just a constituent of a larger society. Therefore, if one must make a choice of just one level, then we feel it is currently more parsimonious to ascribe the upper level, that is, the band, as equivalent to a society in most multilevel societies. That said, in the case of geladas the society could also lie at an intermediate level between the core unit and the band, the "team," a set of two to three core units (Mac Carron & Dunbar, 2016).

As an additional point, Moffett uses what we know about geladas to apparently argue that the higher tiers are of questionable social significance in all multilevel systems. We disagree. While the very highest level (apex level) is typically an aggregation resulting from shared attraction to localized resources and not a genuine social entity, the upper level, just below the apex level, is usually cohesive, longitudinally stable, and individualized (Grueter et al., 2020, 2021).

In sum, our commentary reveals how a proper understanding of the intricacies of multilevel societies is critical for informing and enriching discussions about what constitutes a society.

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The family as the primary social group

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Abstract

Moffett contends that societies should be considered the "primary" group with respect to their social ramifications. Although intriguing, this claim suffers from insufficient clarity and evidence. Rather, if any group is to be crowned supreme it should surely be the family, with its unique capacity to encourage pro-group behavior, shape other groups, and provide meaning.

Moffett's thought-provoking article proposes that, among other things, societies should be considered the "primary" group among humans with respect to their social ramifications. Although plausible in some narrow sense, the rub lies in the details, with it unclear as to exactly which (and why) social ramifications elevate society to this lofty position. I instead suggest that – with respect to its capacity to motivate pro-group behavior, influence on other social groups, and centrality – perhaps the family should reign supreme.

First, it is worth considering whether societies are adept at eliciting the "ultimate" social ramification; a willingness to fight and die for the group. Here, the primacy of society is surprisingly lacking. When 2,438 people from 11 countries were asked which group they were most willing to die for, the resounding response was family (86.54%), not country (3.21%; Swann et al., 2014). Research on identity fusion – a powerful form of group alignment that promotes pro-group behavior (Swann & Buhrmester, 2015; Swann, Klein, & Gómez, 2024) – has proven particularly enlightening. For instance, soldiers actively fighting in a war overwhelmingly reported greater identity fusion with their family, as well as other frontline soldiers, than to the members of the society they were ostensibly fighting for (Whitehouse, McQuinn, Buhrmester, & Swann, 2014). Although societies surely play a key role in coercing conflict at scale, such as in the context of war and policing, the family is a far more potent psychological motivator of violence.

Moffett also raises the primacy of society in terms of its propensity to influence "downstream" groups, such as clubs, bands, or gangs, which he suggests may have highjacked societal features. I contend that the family has been at least equally co-opted. Members of tightly bound groups routinely describe one another as part of a large family, adopting terms such as "brotherhood" (Gómez et al., 2024). Moffett's example of a Mafia family passing membership down through generations hints at this idea, reflecting the continuation of an imagined bloodline. These pseudo-familial groups act as a "secure base" for their members and resemble the role of a parent in infanthood (Klein & Bastian, 2023; Klein, Greenaway, & Bastian, 2024). Moreover, research suggests that the perception of "familial ties" mediates the relationship between identity fusion and acts of empathy toward other ingroup members (Buhrmester, Fraser, Lanman, Whitehouse, & Swann, 2015). Ironically, familial ties also mediate the relationship between fusion with one's country and a willingness to fight and die for it (Swann et al., 2014), suggesting that people are willing to fight for societies insofar as they resemble families. Altogether, this implies that key aspects of the family flow "upstream" and shape the dynamics of other groups, even at the level of society.

Finally, Moffett argues that societies are high in "centrality." This concept is borrowed from the social identity approach, describing an identity that is chronically salient and subjectively important to a person's self-concept (Leach et al., 2008). However, the existing literature does not support this account. For instance, when people are asked for their most important group, they almost never offer their nation (Klein et al., 2024). Indeed, when 18,850 people from 17 countries were asked what most gives their life meaning the top answer in 14 countries was family, with the median percentage of answers mentioning family (38%) exceeding those mentioning society (14%; Pew Research Centre, 2021). Overall, this evidence suggests that societies are not particularly salient or subjectively important, undermining the case for its centrality. To be fair, Moffett does acknowledge that society is often missed as the "blue tint of the sky," suggesting he may have adopted an idiosyncratic definition of centrality. Unfortunately, this makes it difficult to precisely understand, or test, what he is claiming.

To be clear, I certainly agree that societies are immensely important groups that play a crucial role in socialization, influencing everything from accent to dress. Moffett correctly notes that societies provide an abstraction to identify with, and that they can dictate the manner of our political expression. Nevertheless, it is not clear why this makes society the *primary* group, with the far-ranging social ramifications of the family similarly obvious. For instance, attachment theory – one of the most influential psychological theories of all time – demonstrates how family experiences influence everything from romantic relationships to psychopathology (Sutton, 2019). Cross-cultural research suggests that people value their family's well-being over their own (Krys et al., 2021). Even in terms of identity needs, affiliative groups (e.g., friends and family) overshadow social categories (including, but not limited to, one's nationality; Johnson et al., 2006). If Moffett believes that society is the primary group, then he must articulate how its accumulated effect trumps the well-documented impact of the family.

In sum, I emphatically agree that societies are powerful shapers of behavior and must remain on the radar of anyone interested in understanding human psychology. However, I am skeptical that, in the absence of compelling evidence, societies should occupy a privileged position above all other social groups. On the contrary, the weight of the present research suggests that perhaps the family – not society – could be the group of primary social importance.

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Psychological mechanisms for individual recognition- and anonymous-societies in humans and other animals

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Abstract

To understand the nature and evolution of different kinds of societies, we must characterize the psychological mechanisms members use to identify who belongs. Across both individual recognition- and anonymous-societies, these range from physiological responses to individuals up to powerful conceptual representations of the group that license generalization and novel predictions. Sketching these mechanisms helps us understand the transition from the individual recognition societies of our ape ancestors to uniquely human forms of anonymous society.

We commend Moffett's effort to generate a definition of "society" that can fuel comparative study across not only human groups but also those of other species. In doing so, Moffett lays out two broad classes of societies that differ principally in how its members determine who belongs: Individual recognition societies, like those of most animals, wherein members "keep track of every other member as a unique individual," and anonymous societies, like those of humans and some eusocial insects, in which members "employ markers of identity, such as specific gestures, rituals, and modes of dress, to establish who belongs." There is, however, limited discussion of the psychological mechanisms that could support a species' ability to identify its members, in each type of society. Characterizing such mechanisms is critical to elucidating the nature and evolution of different kinds of societies, since these mechanisms constrain possible evolutionary transitions (based on phylogenetic inertia) and may also yield qualitatively and phylogenetically distinct sub-types of each kind of society. It is not hard to imagine, for example, that the anonymous societies of ants and humans are likely supported by rather different mechanisms. Our goal here is, first, to enrich this classification of societies by outlining hypotheses about the multiple psychological mechanisms that would allow members of each type of society to represent their groups and identify who belongs. Second, we consider how uniquely human forms of anonymous society could emerge from the individual recognition societies and social cognitive foundations we share with other apes.

On the lean end, basic physiological mechanisms may trigger tolerant responses to individuals perceived to be familiar or remembered (in the case of many individual recognition societies) or who broadcast perceptual markers of the group (as is likely the case for the simpler anonymous societies of insects) (Peso & Richards, 2010; Tsutsui, 2004; Tibbetts & Dale, 2007). In some species, these mechanisms also activate intolerant responses toward others. Individual or group markers can include faces, vocalizations, or chemical odor cues (Carlson, Kelly, & Couzin, 2020). Thus, fundamental physiological mechanisms, plus some social memory in the case of individual recognition, could subserve social recognition in societies of both types. Critically, however, this way of recognizing who belongs only requires animals to distinguish *individuals* as belonging or not; it does not require animals to group these individuals in their mind, or generate a conceptual representation of an "identity group" that would allow them to classify or mentally represent the members of their society as belonging to a group. Yet, determining who belongs in human societies depends fundamentally on such conceptual representations of the identity group. These representations are powerful because they license novel predictions. For example, as soon as someone is identified as a member of a group, we already expect them to abide by a set of social norms, even if we have never observed them previously engaging in those norms. Where present, conceptual representations could also shape individual recognition societies – potentially allowing mental representation of group boundaries or identity but even more fundamentally classification of *individuals*, as dominant,

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as allies, as mothers, and so on. Such conceptual representations would again license novel predictions that help animals to navigate the complexities of their societies. Thus, individual recognition and anonymous societies can each be further subdivided by their underlying psychology: Whether members distinguish one another via basic physiological responses only as familiar versus unfamiliar, ingroup versus outgroup, or whether they *also* represent a group concept.

We think these distinctions can help explain how uniquely human anonymous societies could evolve from the individual recognition societies of the ancestors we share with chimpanzees and bonobos. Although humans share apes' capacities for individual recognition, human anonymous societies additionally require abilities to: (A) Hold in mind a conception of one's identity group, (B) bind abstract physical and behavioral identity markers to that conception, and (C) use those markers to distinguish one's group from others. Research is needed into each of these capacities in nonhuman animals.

Although apes live in bounded societies (Samuni, Langergraber, & Surbeck, 2022) and clearly distinguish familiar from unfamiliar conspecifics (Keenan et al., 2016; Lewis et al., 2023), we do not yet know whether they mentally represent their groups as social units. That said, there is evidence hinting that primates may have the requisite cognitive machinery: A capacity for conceptual representation of social categories, like dominance, that enables generalization and licenses novel predictions. Touchscreen tasks in rhesus macaques show that subjects can categorize unfamiliar conspecifics in videos as dominant or subordinate, and spontaneously generalize these categories to untrained dominance contexts (Bovet & Washburn, 2003; Paxton et al., 2010). However, follow-up studies eliminating perceptual explanations for generalization (e.g., Penn, Holyoak, & Povinelli, 2008) are needed to definitively show that primates succeed based on predictively powerful conceptual representations of social categories like dominance. An important further follow-up question is whether primates apply that conceptual lens to representing their groups. Although we suspect that apes do have cognitive machinery that could be harnessed for a basic group concept, language and more elaborate theory of mind may also be necessary for the socially constructed identity concepts we see in humans.

With regard to markers of identity, apes exhibit socially learned traditions (e.g., tool use) that differ between groups (e.g., Whiten et al., 1999) and there is a growing call for research into the possibility that some behaviors could constitute social norms (e.g., Westra et al., 2024). Critically, however, although apes can predict others' behavior (e.g., Krupenye, Kano, Hirata, Call, & Tomasello, 2016) likely in part by identifying social regularities, we do not yet know whether they expect groupmates to adhere to norms, or whether they use norms as abstract markers of identity to distinguish members of groups.

Additional research is needed to test these intermediate accounts. This work may reveal that, despite their individual recognition societies, apes already possess several key cognitive precursors of a human-like anonymous society (social concepts and perhaps normative expectations). Even with this latent cognition, intergroup competition and group sizes exceeding capacities for individual recognition were likely necessary conditions to motivate humans' use of markers, like norms, to *distinguish* groups.

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Understanding the jaggedness in social complexity is more important

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Abstract

A clear definition of society helps prevent conceptual misunderstanding. When making practical measurement of societies, it is worth noting that social complexity is actually a jagged concept that encompasses multiple weakly correlated dimensions. Understanding such jaggedness assists interpretation of the divergence between anonymous societies and the social brain hypothesis.

Ants in *anonymous societies* (Moffett, 2012) do not need to recognise other members individually. Despite of lacking complex

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cognition, ants can form billion-sized societies comparable to those of humans. Anonymous societies also exist in mammals. Spotted hyenas live in societies with the same complexity and size as baboons (Holekamp, 2007), and they can also recognise individuals anonymously (Moffett, 2019, p. 72). However, their behaviours are far less flexible than those of baboons (Holekamp, 2007). These seem to challenge the *social brain hypothesis* (Dunbar, 1993), one of the evolutionary hypotheses that link sociality with cognition (Bergman & Beehner, 2015), because social complexity is no longer a good predictor of cognitive complexity.

Some scholars consider anonymous societies as exceptions or opposite to the social brain hypothesis. Dunbar and Shultz (2023) argued that species living in large and anonymous societies are off-point in considering social–brain relationships. O'Donnell et al. (2015) proposed the *distributed cognition hypothesis* as an alternative to the social brain hypothesis, in which individual wasps reduce rather than increase their cognitive investment in response to social challenges, drawing on collective intelligence. Instead, Bergman and Beehner (2015) claimed that measuring social complexity should take into account "actual" social interactions, which is the opposite of the definition of society by Moffett. That is, it was referred to as the number of *differentiated relationships*, "the number of consistently different interactions that are seen. If members of a species treat all conspecifics exactly the same, the number of differentiated relationships is 0" (Bergman & Beehner, 2015, p. 205). On this account, insect colonies can be considered as extended phenotypes of the reproductives (O'Donnell et al., 2015). This suggests that the complexity in super colonies of billions (Moffett, 2012) may not be far comparable to that of other primates.

This solution proposed by Bergman and Beehner (2015) emphasises actual cognitive participation in social interactions, or real social skills involved (Dunbar & Shultz, 2023). We agree with Moffett that "societies are distinct from social networks" (introduction, para. 2). We hereby provide three examples that more clearly illustrate how this solution reveals the hidden social complexity masked under superficial social networks.

First, the social cognition of corvids may be comparable to that of primates, but most of them live in monogamous interaction networks. While their social complexity may be seemly simple, maintaining long-term pair bonds is thought to require complex *relationship intelligence* (Emery, Seed, Von Bayern, & Clayton, 2007).

Second, we consider a modification of the social brain hypothesis, the *social complexity hypothesis for communication* (Freeberg, Dunbar, & Ord, 2012), which states that complex societies lead to more complex communication systems. Most cetaceans are thought to support the hypothesis (Marino, 2022), and humpback whales are a special case. Although male humpback whales live in individual-based societies, they exhibit complex hierarchical song structures. Dunlop (2022) revealed the hidden complexity of their communication networks. Despite of the apparent simplicity of their social networks, their intricate communication networks may help shape their complex vocal systems. Sexual pressure could be a primary reason for this complexity. Male humpback whales need to accurately send acoustic signals to females in an ever-changing environment in order to prevent competitors from eavesdropping.

Third, this hidden complexity can be more profound. The social brain hypothesis, originated from primate data (Dunbar, 1993), does not adequately explain why great apes, which do not exhibit a high degree of social complexity, possess a significant level of encephalisation. The *cultural intelligence hypothesis* proposed by Whiten and van de Waal (2017) suggests that the brain expansion of great apes can be better understood if their cultural complexity is taken into consideration. This hypothesis underscores the importance of social learning in shaping social complexity. By the same token, the *ecological intelligence hypothesis*, emphasising the importance of foraging complexity for cognitive complexity, should be treated as a complementary rather than competing hypothesis to the social brain hypothesis. This is because some seemingly foraging skills may possess important social functions, and vice versa (Rosati, 2017).

Previous studies have declared the difficulty of measuring social complexity (e.g., Hobson, Ferdinand, Kolchinsky, & Garland, 2019; Kappeler, 2019), and for the first time, we introduce a concept of jaggedness in measuring social complexity. Rose (2016, p. 80) proposed the *jaggedness principle* to explain the human tendency to simplify jagged phenomena. For example (Rose, 2016, pp. 89–90), participants who achieve the same score on an IQ test can have vastly different scores on specific ability tests (e.g., jigsaw puzzles, number memory and vocabulary). This principle highlights huge variances in scores of different and weakly correlated sub-variables among individuals. Such a jaggedness principle in individual sciences also applies to social complexity studies.

To illustrate this principle more intuitively, we provide a modified version based on the social complexity in Figure 1. Simply put, two species assumed to have considerable cognitive capabilities cannot be described unidimensionally (e.g., group size) in terms of whether their societies are more or less complex when

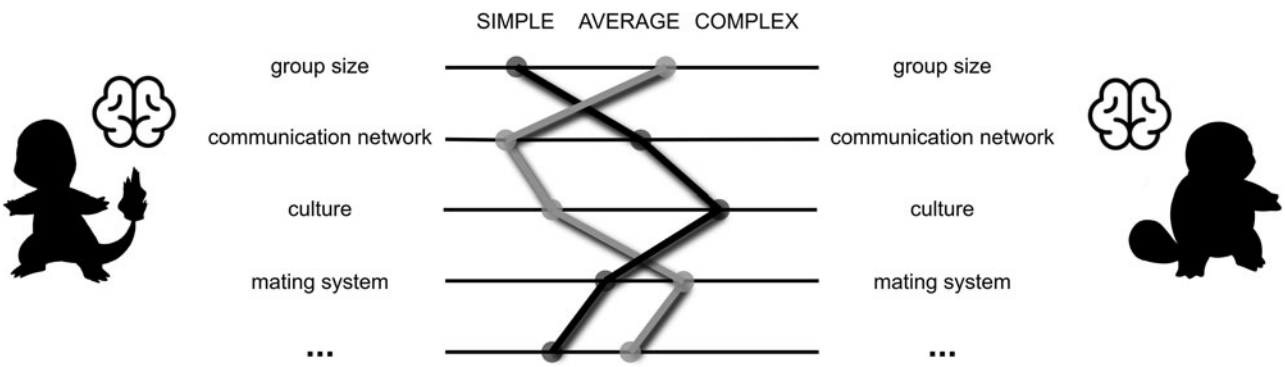

Figure 1 (Lei and Gong). Jagged profiles for social complexity suggest that any social feature alone is difficult to be as an indicator (adapted from Rose, 2016, p. 81).

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breaking down social complexity into multiple sub-variables, and vice versa. This suggests that social complexity research may yield opposite results due merely to differences in descriptive methods.

Some recent work (Raviv, Peckre, & Boeckx, 2022) has recognised that the jaggedness in communicative complexity can cause conceptual misunderstanding, leading to inconsistent conclusions between human and non-human communication. This is due to the inconsistencies in the analysis units of communicative complexity (i.e., sub-variables), such as repertoire sizes versus compositionality. The distributed cognition hypothesis may be a confusion of cognitive complexity (see Traniello & Avarguès-Weber, 2023).

Finally, it is also important to discover local configurations that could reveal the hidden social complexity in line with the jaggedness principle. A similar approach has been applied to investigate the sociolinguistic paradigm shift (Eckert, 2012). The second wave of sociolinguistics demonstrated the importance of local configurations over macro-social features. For example, students' social affiliations appear to be better predictors of linguistic variation than their social classes. This causal and dynamic perspective helps recognise the jaggedness of social complexity and refine Moffett's definition of society. Nonetheless, we need more evidence to (dis)prove the social brain hypothesis.

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How an interdisciplinary study of societies can develop a comprehensive understanding of the function of deceptive behavior

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Abstract

Moffett presents a robust proposal for a comparative study of societies as the basis for studying the human condition and behavior. This theoretical framework has implications for the study of deceptive behavior. I discuss how this framework might describe the adaptation of deceptive behavior within human societies and shed light on the dynamics of collaborative deceptive behavior through interpersonal commitment.

Moffett's proposal "to establish a comparative study of societies" is notable for its comprehensive definition of societies, which includes shared group identification and group social interactions. This definition involves psychological and social processes, cognitive and emotional elements, through which individuals align themselves with a group, adopting norms, values, beliefs, and behaviors. Inspired by Durkheim (1912), Moffett emphasizes that "…much of human intergroup cognition likely evolved in the context of societies" and discusses how patterns of cooperation and conflict could help understand deceptive behavior and its management, something essential for maintaining social cohesion and collective action. Furthermore, Moffett mentions, albeit briefly, psychological properties related to group formation, such as perceptions of belongingness, pertinent for comprehending how

individuals identify with and regulate behavior within social groups, including processes related to deceptive behavior.

There are two aspects of deceptive behavior that can be facilitated by Moffett's framework; first, how does deceptive behavior (Mitkidis et al., 2023) arise and evolve within societies (human groups) where opportunities for cooperation or signs of conflict appear? Second, could collaborative deceptive behavior, alias collaborative corruption (Karg, Kim, Mitkidis, & Young, 2023; Weisel & Shalvi, 2015) be explained by a comparative study of societies, where interpersonal commitment (Michael & Sebanz, 2016; Zickfeld et al., 2024) and a sense of belonging (Baumeister & Leary, 1995) take place?

Regarding the rise and evolution of deceptive behavior within groups with (1) clearly recognized memberships (2) capable of lasting generations, and (3) maintaining primary control over defined spaces, one aspect to consider is strategic deception within the context of cooperation or competition, which suggests that deceptive strategies may have conferred fitness and selective advantages in ancestral environments (McNally & Jackson, 2013; Sarkadi, Rutherford, McBurney, Parsons, & Rahwan, 2021). In early human societies, characterized by resource scarcity and intense competition for survival (Allen, Bettinger, Codding, Jones, & Schwitalla, 2016), deception would have been beneficial for groups of individuals to gain resources and social status, cultivate alliances, and navigate complex social interactions. Furthermore, social and ethical norms, as well as power dynamics within societies, may have influenced deceptive behavior and its adaptation. For example, cross-cultural differences in deceptive practices (Dorrough, Köbis, Irlenbusch, Shalvi, & Glöckner, 2023; Gächter & Schulz, 2016; Pascual-Ezama et al., 2015) could be attributed to these diverse social dynamics. Leaders using deception to maintain control (Holan, 2015; Mearsheimer, 2011), and marginalized individuals or subgroups engaging in deceptive or other antisocial or self-destructive behaviors to increase survival and maintain their identity within the societal framework (Belmi, Barragan, Neale, & Cohen, 2015; Factor, Kawachi, & Williams, 2011), may also be influenced by varying social norms. Historical examples of economic fraud, political intrigue, and social manipulation, such as the Enron scandal, Machiavelian tactics, or propaganda of totalitarian regimes (Nazi Germany or Stalinist Russia) can provide insights and demonstrate the adaptive nature of deceptive behavior within human societies.

A comparative study of societies can also investigate how the dynamics of interpersonal relationships and commitment, group cohesion, and power structures affect collaborative deceptive behavior. Prior research has shown that an individual's commitment to other individuals (the group) influences their willingness to engage in deceptive behavior (Zickfeld et al., 2024). Prior research has also hypothesized about the need to belong "as a fundamental human motivation" (Baumeister & Leary, 1995). These perceptions of inclusion, acceptance, and loyalty to the group might influence attitudes and behaviors toward honesty, transparency, and accountability (Galak & Critcher, 2023; Thielmann, Böhm, & Hilbig, 2021; Zickfeld et al., 2024). For instance, historical cases such as political alliances in monarchies (i.e., the Medici family of Florence in Renaissance) or corporate collusion (i.e., the Libor rate manipulation scandal in the early 2010s, see Vaughan & Finch, 2017) reveal how shared goals (Mitkidis, Sørensen, Nielbo, Andersen, & Lienard, 2013), verbal communication (Tønnesen, Elbæk, Pfattheicher, & Mitkidis, 2024), and a strong sense of belonging can drive collaborative deceptive practices to maintain power or competitive advantage of one group over another, within controlled spaces, sometimes enduring for generations. Such a holistic view about society is necessary to analyze how different societal structures, cultural norms, and historical contexts shape patterns of deceptive behavior, interpersonal commitment, and group cohesion across diverse groups.

Finally, the interconnections between deceptive societal contexts and individual deceptive behavior can be investigated using Moffett's framework, by studying individuals within their societal contexts. For example, earlier work has shown that deceptive environments, that is, societal settings where "an individual might be deceived," do not negatively affect individual deceptive behavior, but when such behavior is visible, deception decreases (Mitkidis et al., 2023). I believe that exploring the evolutionary and psychological mechanisms underlying deceptive behavior within the social realm, using cross-disciplinary methods from psychology, sociology, anthropology, and economics, might be the only way to provide a deeper understanding of the factors influencing such behavior, grasp how individual deceptive behavior intersects with societal dynamics, and inform strategies for mitigating such practices, addressing ethical dilemmas, and promoting future research, ethical conduct, and social cooperation.

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Identity is probably too complicated to serve as a useful criterion for defining society

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Abstract

Identity formation and maintenance is a complex process operating at many levels, with identity markers and affiliations often contested, negotiated, rejected, revised, and replaced, both within and between groups, by parties with competing interests. This needs to be considered if identity is to serve as a useful criterion for defining society.

Moffett's goal of facilitating cross-disciplinary research by providing a definition of society that will translate across academic disciplines, as well as species, is both laudable and illuminating. However, the definition he provides has several fundamental problems based on an insufficient consideration of properties and processes of identity as explored by anthropologists and others over time, and so, I believe, will require refinement.

First, Moffett argues that societies should be thought of as identity groups rather than as groups based on shared culture (non-genetic information). However, as he discusses, people typically mark group identity via cultural markers – language, rituals, dress, food, and so on. Therefore, his concept of society is in many respects redundant, as simply using participants' perception of shared culture as the defining characteristic of (at least human) social groups will suffice. Moffett might object to this point because he notes that societies often "incorporate cultures from various sources," but all social groups incorporate cultural traits from many sources, and even in the most homogenous contexts, individuals are differentially members of several cultural (or if you prefer, subcultural) groups simultaneously. What matters is which culture traits are selected to be used to signal group identity, irrespective of source or, for that matter, authenticity. Thus, for example, musical markers may be based on purportedly authentic history that is factually incorrect (e.g., Manuel, 1994), and traditions can be invented to serve identity-related purposes (e.g., Hanson, 1989). Markers are arbitrary, meaningful only to the extent they are agreed upon as legitimate, and people routinely debate their legitimacy (Qirko, 2014). And although they are most commonly thought of in the context of the social construction of ethnicity, race, and nationalism, markers are fundamental to any form of social group identity. Much of this Moffett discusses, but in a way that underestimates the degree to which identity markers and affiliations are contested, negotiated, revised, rejected, and replaced, both within and between groups, by parties with competing interests (e.g., De Fina, 2010; Nagel, 1994; Tajfel, 1978). Instead, he argues that societies as he defines them have clear membership, comprised of people who see themselves as belonging together, where "no one is accepted as a fellow member by some and rejected by others." But only under temporary conditions of instability and disruption (e.g., facing an enemy in war – Coles, 2002), if at all, is such a simple and monolithic agreement about group identity likely to be found.

Moffett also defines societies as necessarily controlling some sort of territory, but while he is right to describe many social groups as "imagined communities" (Anderson, 1982), he pays less attention to the fact that many (and more every day) are also deterritorialized, where the ties between identity and space are weak (e.g., Appadurai, 1990). So what to do, for example, about members of diasporic and other immigrant groups who hold dual identities? Moffett excludes them from membership in a society unless "there is little ambiguity about the point when each immigrant is accepted as a member." Here, too, his view of how identity works could use further exploration, as his definition of society leaves out too much of the complex nature of human group identity formation, where maintaining both local and global, multiple, situational, and hybrid identities (as well as identity confusion) are all possibilities (e.g., Eriksen & Schober, 2016; Friedman, 1994). Any definition of society must take this variability and flexibility into account.

Further, there is an inherent contradiction in defining society on the one hand as based on perception (shared identity) and on the other as objectively established (physical territory, "land or stretch of sea" that is under "absolute control"). If identity can be symbolically marked, then why cannot resources held by a society be symbolic as well, as in the case of ancestral homelands or pilgrimage sites not under groups' control, or otherwise disputed territory? Cultural knowledge too is a resource that, when shared, reinforces group identity, as for example knowledge of the properties of medicinal plants (Menendez-Baceta et al., 2015). Thus, perhaps "resources perceived to be held in common," of which physical territory is one example, would be a better definitional criterion.

Finally, it is theoretically problematic to discuss group membership identification as either arrived at through genetic and psychological adaptations related to appearance, scent, and so on ("individual recognition societies") or by means of culture and symbols ("anonymous societies"), with humans relying on the latter. In fact, there is a complex relationship between the two, and both can operate simultaneously in the same social group. For example, individual kinship recognition cues are routinely manipulated to reinforce ties among anonymous non-kin in institutional and other contexts (Qirko, 2013).

In short, identity is complicated: Individuals may adopt multiple, even conflicting identities, and "a shared identity does not have the same meaning for everyone who embraces it" (Sökefeld, 1999, p. 423). Moffett's wide-ranging paper is valuable in many respects, and particularly as regards the current "semantic mess" in operationalizations of social groups across species, but I believe his definition of a society requires more work before it will be fully useful.

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Group identity without social interactions?

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Abstract

We present several arguments for the preeminence of social interactions in determining and giving shape to societies. In our view, a society can emerge from social interaction and relationship patterns without the need for establishing an *a priori* limit on who actually belongs to it. Markers of group identity are one element among many that allow societies to persist.

It may not be the job of a definition to explain the phenomenon it names. Societies have been named in various ways since before the dawn of sociology as a discipline, with emphasis placed either on shared cultural values or structural components (e.g., Conerly, Holmes, & Tamang, 2021). Yet, our comprehension of social phenomena has proceeded. What we find problematic about Moffett's proposed definition of societies is the irrelevant role ascribed to social interactions, which in our view set the stage for social identity to arise. We present several arguments supporting this position.

The interdependence of the units comprising any collective is a basic condition of its existence and permanence. Even the boundaries of systems as simple as cell aggregations are established not by an overarching, *a priori* collective identity but by the possibilities they have for exchanging information about their states and the environment (Levin, 2019). Similarly, constraints on how many social relationships can be maintained by an individual (Dunbar, 1993) and on how a group can maintain its coherence over time are determined by the type of interactions that occur within it (Henzi et al., 2007).

Social interactions are the crucial link between societies and the mind of individuals, which we agree with Moffett is an important mechanism underlying group life. But it is precisely research into the social minds of animals that has yielded the best support for the idea that it is relationships, not simply group membership, that animals pay attention to (Aureli & Schino, 2019). The "social categories" in the mind of baboons, for example, are about matrilineal affiliation or relative dominance rank, independently of the particular individuals involved in these relationships (as has been shown by field playback experiments, e.g., Bergman, Beehner, Cheney, & Seyfarth, 2003).

To us, social identity is a result, and not a precursor, of social structure (although we acknowledge that the two concepts are interrelated). Emerging from the overall pattern of social interactions and relationships, the structure of a group is often invariant over generations, because of the fact that there are top-down influences on the types of interactions individuals can engage in as they develop. Dominance hierarchies, assortment patterns between the sexes, kinship effects, and (in humans) cultural

norms and values transcend the particular individuals that compose the group at any given time, constraining social interactions and providing a degree of temporal stability to the resulting social structure (Flack, 2017; Hinde, 1976). Social identity is one of those individual-level features that is influenced by the social structure in a top-down fashion and reinforces, in most cases, the social structure. For example, group-level features, such as dialects (Cantor et al., 2015; Henry, Barbu, Lemasson, & Hausberger, 2015), behavioral traditions (Laland & Evans, 2017), or even more elusive ones like the "social microbiome" (Archie & Tung, 2015; Sarkar et al., 2020), are all mediated by social interactions and effectively serve as identity markers. Thus, the social structure based on the social interactions between group members allows dynamic and shared group identities to emerge, rather than some pre-existing and somehow abstract identity being a "soil" for the growth of societies.

We consider networks to be models of societies, not a separate organizational level. Since social interactions are fundamental to societies, networks are preeminent tools for understanding societies. Although one-dimensional networks are too limited to capture what a society is, better representations can be achieved by multiplex network models, which can be constructed in a variety of ways, with weighted links, suprastructures, and modules, and most importantly, with various types of links (representing various types of social interactions) into the same structure (Smith Aguilar, Aureli, Busia, Schaffner, & Ramos-Fernandez, 2019). Furthermore, addressing the question of how groups form and maintain continuity in time and space, theoretical explorations of the dynamic features of networks show that their structure can be invariant over long temporal scales in spite of the addition or deletion of nodes (e.g., Moore, Goshai, & Newman, 2006; Murase, Jo, Török, Kertész, & Kaski, 2015).

The way in which Moffett considers social identity seems not to allow for those cases in which an individual might have more than one sense of identity, on different levels of social organization. People, for example, have a sense of belonging to the neighborhood, in addition to the state, and to the country they live in. Dolphins could have strategies for interacting not only with their close allies but also with the second- or third-order units in which their alliances participate (Connor, 2007). If we force the existence of one important level (society) based on a feature that we believe is only related to that level (identity sense), then we lose sight of the relevance of the other levels and the potential mechanisms that allow them to exist. These multiple levels of organization are not purely casual groupings which mean nothing in social terms for the animals. There is clear evidence of consistent subgroup memberships in various species of mammals (Cantor et al., 2015; Ramos-Fernandez et al., 2018; Wittemyer, Douglas-Hamilton, & Getz, 2005) and birds (Papageorgiou & Farine, 2021). We should thus consider that an individual may actually have multiple identity senses, one for each level of organization to which in reality it belongs.

Social identity is certainly an important component of culture, and we humans obviously devote plenty of resources to signaling and maintaining our identity, which allows us to collaborate and coordinate our actions in complex cultural settings through the signaling of norms, values, and group traditions (Smaldino, 2019). But even here, whether the very nature of societies is built around their social identity begs the question of what is the role of social interactions in these collaborations and coordinations. We contend that membership is not the crucial aspect of ordinary human existence, it is the social interactions at the heart of societies, based on collaboration and coordination, which underlie our various senses of belonging.

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Identity groups, perceived group continuity, and schism

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Abstract

Moffett's outstanding paper offers a thought-provoking definition of a human society as an identity group. This commentary reflects on the centrality of shared group identification in societies, and discusses two important phenomena related to group identity, that is (i) the perceived temporal persistence of the group, and (ii) the processes leading to group fragmentation and schism.

Moffett's outstanding paper includes an ambitious call for establishing a comparative study of societies, and it offers a theoretically convincing and thought-provoking definition of a human society as a starting point. I will begin by reflecting upon a crucial aspect of this definition, namely that societies are, in essence, *identity* groups. Then I will dig into two phenomena related to group identity, that is (i) the perceived temporal persistence of the group, and (ii) group schism.

By defining societies as identity groups, Moffett aligns with the social identity approach to group processes and intergroup relations (Reicher, Spears, & Haslam, 2010). According to this approach, people mentally represent the social world in terms of relatively distinct human groups standing in power and status relationships with one another, and include themselves cognitively in some of these groups. Furthermore, a collection of individuals who see themselves as members of the same group may develop shared feelings of *identification* with the group. Group identification implies a subjective sense of belonging and attachment to the group (a sense of we-ness), and a commitment to embrace the group norms (values, beliefs, rituals, rules). Shared group identification facilitates cooperation, mutual support, and coordination of activities within the group (Ellemers, 2012).

Importantly, social identity theorists link the process of shared identification to two important and interrelated group phenomena. One is concerned with the perceived temporal continuity of the group. The other regards the process of group fragmentation and schism. It is worthwhile discussing these two aspects of identity groups, which are only briefly mentioned by Moffett.

Moffett's definition of a society includes the fact of being capable to perpetuate its population for generations. However, there is an important subjective dimension to this, namely the fact that groups tend to be perceived by their members as entities that move through time (Sani et al., 2007). There are two main aspects to perceived group continuity. First, members of a group see the cultural group norms as having been trans-generationally transmitted. Obviously, members are aware that the group is not monolithic and that aspects of the group have changed across history. However, the group is believed to possess some core, deeply ingrained cultural elements that remain essentially the same and are not eroded by the passage of time. Second, seeing a group as a temporally persistent entity typically implies the perception that different events and periods in the group's history are causally interconnected and form a coherent narrative. In other words, the group members see the main stages in the group history as parts of an unbroken stream. Importantly, a group that is perceived as having a high degree of persistence through time appears in some ways to be more like an entity, to have a higher degree of "reality," than those with less or no persistence at all (Lickel et al., 2000). In turn, this enhances the perceived validity of the group norms and affords the group members with meaning, structure, identity, and positive self-regard (Sani, Bowe, & Herrera, 2008). For all these reasons, people tend to promote and protect the temporal continuity of the groups with which they identify, and feel threatened when thinking that this is in jeopardy. Furthermore, a perceived threat to the temporal endurance of the group is typically at the basis of group fragmentation and schism.

Social groups tend to be very dynamic wholes. Members of a group engage in a constant and incessant process of discussion and argumentation about the group norms. Complete uniformity is rarely achieved, and some differences are accepted as inevitable and therefore tolerated. However, there may be circumstances in which members of a subgroup consider a new norm that has become predominant in the group, or that has been officially ratified by the group establishment, as denying the group history and tradition, and therefore as breaking the temporal continuity of the group. Members holding these perceptions sense that the group has been transformed beyond recognition, which typically lead to dis-identification. These members may therefore decide to join a schismatic group that, in their own eyes, holds to the values that the parent group has lost. This allows these members to maintain a sense of group temporal continuity and identity integrity (Sani, 2005). On the other hand, those group members who fully endorse a new norm obviously deny that the norm radically transforms the group identity. In fact, they typically claim that, not only is the new norm consistent with the group history and tradition, but it reinforces the group identity and makes it stronger vis-à-vis the new challenges imposed by larger contextual transformations.

As a concrete example of a schismatic process within an identity group, consider what happened within the Church of England when its synod voted in favour of the ordination of women to priesthood, in 1994. A substantial minority of members saw that vote as going against tradition and as transforming the Church of England into a completely different entity, that is, into a protestant sect. They felt betrayed, disillusioned, and detached, and as a result many of them left the Church of England to join another church. The supporters of the new legislation, however, claimed that women priesthood, far from changing the nature of the Church of England, made explicit some values, such as equality of men and women before God, which had always been implicit in the Church of England (Sani, 2005; Sani & Reicher, 1999).

To conclude, I think we should be grateful to Moffett for his exceptionally thorough and insightful theoretical proposal. I fully endorse Moffett's definition of human societies as first and foremost identity groups. A human aggregate cannot be a society if its members do not share a subjective feeling of identification with the aggregate itself. This definition has great heuristic

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value and may represent the beginning of a fruitful intellectual endeavour. I suggest that further developments of this theory pay close attention to the ways in which two important phenomena such as perceived group continuity and group schism manifest themselves in societies.

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Societies have functions for individuals and collectives

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Abstract

The definition of society as identity group is most likely to be useful when combined with the instrumental functions of identity groupings. These take two key forms, with important differences. First, identity groupings are useful for individual decision making. Second, societies can be units of collective behavior and information processing. Disentanglement of these forms is needed.

There is a lot to commend in this piece. Moffett offers a broad, interdisciplinary perspective on human societies that spans not only the various human social sciences, but is coherent with research from evolutionary biology and the study of non-human animals. Such perspectives are sorely needed in the social sciences (see also Nettle, 2018). Moffett defines a society as a form of identity group. This strikes me as an acceptable definition, and potentially a useful one. However, I worry that, on its own, it is not a definition with any special explanatory or predictive power. Rather, it is probably most useful rhetorically when combined with the instrumental functions of identity groupings. I argue these take two key forms, which have very different scientific uses.

First, identity groupings are useful for individual decision making. They form the social categories with which individuals parse salience or trustworthiness of information or individuals, and their related propensities for cooperation, exploitation, or violence. As Moffett notes, the transition to anonymous societies in our evolutionary past allowed us to make decisions based on signals or markers of identity rather than on specific knowledge of individuals, which dramatically increased the potential scope of our cultural products. Identity information can be signaled overtly or covertly, allowing strangers with shared commitments, norms, and backgrounds to preferentially assort for coordination and cooperation (Barth, 1969; McElreath, Boyd, & Richerson, 2003; Smaldino, 2019; Smaldino, Flamson, & McElreath, 2018). Identity categories shape our perceptions of the likely relation between ourselves and others, and thus are targets for strategic manipulation (Donath, 1999; Goffman, 1956; Smaldino & Turner, 2022). As Vonnegut (1962) noted in *Mother Night*, "We are what we pretend to be, so we must be careful about what we pretend to be." Identity signals also allow individuals to target specific individuals for social learning, while ignoring or discounting information obtained from those belongs to other groups (Smaldino & Pérez Velilla, in press; Steiglechner, Smaldino, Moser, & Merico, 2023). The tagging of information sources as stemming from ingroup or outgroup sources may be adaptive under many conditions, but is also associated with the polarization and dehumanization that is becoming increasingly common in our world (Dias & Lelkes, 2022).

All of these facets occur at the level of individual decision making. The aggregate of many people behaving thusly shapes the nature of our societies, while the cultural and structural groupings of that society shape the categories and decisions being made. As such, it is unclear to what degree a society is a causal force for explanation and to what extent it is the thing being explained. Moreover, it is unclear to what extent societies should play a special role for the social science of individual behavior, without a functional theory of how societies and individuals influence one another.

Second, societies can be seen as units for collective behavior and information processing. That is, the society as an emergent entity (or "crude superorganism" in the words of Richerson & Boyd, 1999) may be usefully studied in terms of how it adapts to its own needs and competition with other societies (Galesic et al., 2023; Smaldino, 2014). In this sense, understanding the nature of a society and its boundaries probably *can* help us to better understand the behavior of the collective. However, it also seems critical to delineate the characteristics of a society that would allow us to distinguish one society from another, and in this way predict their behavior as collective entities both independently and in interaction with other societies of similar or different character. Such a delineation is largely absent from the target article, and is surely beyond the scope of a short commentary. Nevertheless, it is hard to resist the temptation to offer suggestions. Characterization of societal traits may include coarse

grain features such as population size and geographical distribution of constituents, structural features such as inequalities of wealth and decision-making power, institutional features such as higher education and electoral policies, economic features such as urbanization and sectoral diversity, and normative features such as cultural tightness and parochialism. A more thorough consideration of these traits is surely warranted.

Separating out these two ways of seeing societies is important. Moreover, the complexity of identity topologies makes delineating the boundaries of a society difficult in the modern world, highlighting another limitation of Moffett's approach. Individuals belong to multiple groups, which can be nested and are usually context-dependent (Roccas & Brewer, 2002; Smaldino, 2019). Moffett notes this, but seems to imply that these identity categories are simply subordinate to one's societal identity. This does not acknowledge the fuzzy nature of a society in a cosmopolitan world. For example, the nation of France is nested within the European Union, and while the French have a distinct national identity and language, they also often speak other languages with non-French inhabitants and visitors to their nation, and regularly cross borders into neighboring nations with relative impunity. Is France a society? Is the EU? Do the inhabitants of Tarascon-sur-Ariège, a small French town at the base of the Pyrenees, constitute a society? If I make an extended visit to these places and learn the language, do I become a member of their society despite retaining my US citizenship and home residence?

What sorts of societies are there, and how do their differences matter? I sympathize with the difficulty of answering this question, having faced similar challenges to my own target article (Smaldino, 2014) in which I attempted to define the term "group." Despite my best efforts, that piece suffered from an imprecision of scope, helpfully discussed by Gerkey and Cronk (2014). I believe that Moffett is charting important and underexplored territory in his article, but more work – and particularly more attention to the problems for which his perspective adds value – is similarly needed to elevate *society* as a useful category in the way proposed.

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Belonging to a community of moral values as a key criterion of society

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Abstract

One of the key features of society is a sense of belonging to the same thing. But what should "what is the same" be? The article points out that categories, social roles, and place in power structures are primary to the sense of belonging, not secondary. And the criterion for belonging in society should be shared moral values.

In my paper, I point out that the definition and theory of society cannot disregard the moral component, which we can call a moral community. If we assume, following Moffett, that the essence of society is a sense of belonging to the same and recognizing each other as "we," then this sense of belonging must be moral in nature. In turn, for it to include a moral component, it cannot be abstract. The theory of society according to Moffett is abstract, as it does not refer to categories such as gender and race, which makes it a-moral. What I am pointing out is that after decades of developing knowledge about the mechanisms of discrimination and social exclusion running around these two categories – however there are more such categories – we should not propose a way of understanding and studying society that ignores the existence of oppression and discrimination, and therefore that is devoid of a moral criterion. Moffett proposes a genderless and raceless theory of society, in which members of society are understood as individuals who recognize each other and maintain control over physical space; however, the author adds that this sense of belonging may extend beyond the boundaries of a territorial community.

The biggest flaw in the way of understanding society proposed by Moffett is the exclusion of "power relationships, statuses, or roles" from the definition of society. According to the author, these categories are not relevant. However, the exact opposite is

true. In the first place, we are a person of a particular gender, not simply a person or an individual or an element of society (de Beauvoir, Borde, & Malovany-Chevallier, 2010). Moffett seems to assume precisely the abstractness of human being understood as an individual without properties and without categories, forming a society, who only then obtains categories of one kind or another within that society. The sense of belonging is primary. This understanding of society may seem correct at first glance, but it becomes troublesome when we look at the case of unequal treatment of individual members of society on the basis of their categories, for instance gender. Should we consider, according to Moffett's understanding, a society created by privileged men and subordinated women as the primary sense of belonging for women treated in an oppressive and subordinate manner? Or rather, assume that the primary and dominant sense of belonging for an oppressed woman will be the society of oppressed women? If the former, it is not clear why the strength of the sense of belonging to the same with oppressive women men would be stronger or more important for the scientific definition of society, than with other women. If, on the other hand, we assume that for an oppressed woman "we" means her and other oppressed women, then what is primary is the social category and position in power structures, not the sense of belonging. The category as primary determines the sense of belonging, not the sense of belonging determines or at least precedes the category, as Moffett suggests. Moffett somewhat like Rawls (1971) in his famous thought experiment known as the veil of ignorance seems to imply that we are, as members of society, devoid of all categories, those, after all, he considers irrelevant to the definition of society. So who are we and what do we have in common as a society? If we exclude the all-encompassing influence of categories, social roles, and place in power structures, we are left with pre-feminist categories such as language, race, ethnicity, and territory; that is, categories that are a-moral and that do not provide the tools to understand this individual's understanding of belonging. These categories simply ignore an authentic sense of belonging.

The way of understanding society proposed by Moffett is anachronistic, as it does not withstand contemporary criticism, which is rooted in feminism and postcolonial studies (Khader, 2019). Taking inspiration from this perspective, we can say that the understanding of society should not be a-moral, but include a moral component as a necessary element. It is this moral component that makes an oppressed woman feel that she belongs to a virtual, abstract society of all the (oppressed) women of the world, rather than members of society in the classical sense understood by Moffett, which, it seems, would mean her compatriots, the inhabitants of a region, people of the same nationality, and so on.

It is this moral component, absent from Moffett, that makes the definition of society today go far beyond the understanding he proposed. A society cannot be immoral, it cannot deprive certain categories of people, such as women and others discriminated against because of their gender identity, people with disabilities, or racialized minorities, of equal moral status. Such an immoral society deprives itself of the right to use the term society as a collection of people who recognize each other and have a sense of belonging. In this moral understanding of society, society is oppressed women, but not oppressed women and oppressor men, even if the latter have many characteristics that allow them to recognize their common belonging (origin, history, location, language, and many other characteristics). Similarly, for those who respect and defend the rights of LGBTQIA + people, society – according to the criterion of a sense of belonging and recognition – is no other individuals with whom they are accidentally linked by history and location, but all those who respect and defend the rights of LGBTQIA + people. We may share a common belonging with a hypothetical extraterrestrial intelligence, but not with many of our compatriots. This moral understanding of belonging is determined by a category, in this case gender, and respecting and defending the right of individuals to recognize their own gender – or lack thereof. This moral understanding of society, or belonging to the same moral value that seems to inform who we are, to a much stronger and more significant degree than language, ancestry, skin color, or region inhabited, also applies to attitudes toward the environment, climate change, respect for animals, immigration.

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Societal inferences from the physical world

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Abstract

Moffett points to humans' use of physical markers to signal group identity as crucial to human society. We characterize the developmental and cognitive bases of this capacity, arguing that it is part of an early-emerging, intuitive *socio-physical interface* which allows the inanimate world to encode rich social meaning about individuals' identities, and the values of the society as a whole.

Moffett proposes that a critical feature of human society is our ability to use physical markers as signals of shared group identity. We agree this is a notable feature of human cognition, and here argue that the use of physical markers to signal group identity is part of a broader human capacity to use the inanimate world as a rich source of social information. This reasoning, which we

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term the *socio-physical interface*, allows the inanimate world to encode social meaning, and is key to human social intelligence (Jara-Ettinger & Schachner, 2024). This supports our ability to detect and signal societal membership by using "things we make as a kind of societal extended phenotype" (target article, sect. 3.4.1, para 5).

A key question in the target article is the extent to which the ability to use physical markers as signs of group identity is early-emerging and intuitive for humans. Developmental research provides evidence of this: Children attend to physical markers of group membership from early in life, demonstrating a mental theory of intuitive sociology (Liberman, Woodward, & Kinzler, 2016; Shutts & Kalish, 2021). Young children use group membership to predict others' external behaviors and internal mental states (Kinzler, 2021; Shutts & Kalish, 2021; Tompkins, Vasquez, Gerdin, Dunham, & Liberman, 2023). Children also use physical attributes as markers of power structures, inferring who is "in charge" and which group holds higher status (Brey & Shutts, 2015; Dukler & Liberman, 2022; Shutts & Kalish, 2021).

Humans intuitively use physical markers to make a wide variety of social inferences, and reasoning about societal identity from these markers may be understood as part of this broader reasoning capacity. To link physical cues with social meaning, we at times rely on perceptual processes, which support quick perception of objects' recent history, and detection of objects shaped by agents (Chen & Scholl, 2016; Lopez-Brau, Colombatto, Jara-Ettinger, & Scholl, 2021). Perceptual features also support inferences about group identity. For example, children can use attributes like clothing color to track group identity, particularly if clothing color previously predicted cooperative behavior (Shutts & Kalish, 2021).

People also use high-level causal reasoning to infer social information from physical markers, using mental theories of physics and psychology (Spelke, 2022). The resulting integrated causal theory allows for rational inferences about others' behavior, mental states, traits, and potentially societal identity, from physical cues alone. From static physical objects (e.g., a block tower; a dresser with some drawers open and others closed), even young children can infer others' goals, levels of skill, and knowledge states in a way that is well-predicted by Bayesian causal inference (Gweon, Asaba, & Bennett-Pierre, 2017; Lopez-Brau, Kwon, & Jara-Ettinger, 2022; Pelz, Schulz, & Jara-Ettinger, 2020). From childhood, humans can engage in *event reconstruction,* inferring the particular past behaviors that shaped inanimate features (Lopez-Brau et al., 2022; Pesowski, Quy, Lee, & Schachner, 2020). For example, people can reconstruct an agent's actions from cookie crumbs left behind, or a small object left to communicate that a spot is taken (Lopez-Brau & Jara-Ettinger, 2023; Lopez-Brau et al., 2022). When viewing multiple objects, children and adults can use event reconstruction to infer when a design was copied, and thus trace social transmission of ideas (Hurwitz, Brady, & Schachner, 2019; Pesowski et al., 2020). Engaging in this complex causal inference may be cognitively slow and computationally expensive. However, people create shortcuts: We store the results as simple associations, and avoid constant use of complex reasoning by substituting heuristics in future similar situations (Lopez-Brau & Jara-Ettinger, 2023). In this way, both simple heuristics and theory-based causal reasoning link the social and physical world in the human mind, creating a rich socio-physical interface.

Societal identities directly shape which objects people create or possess, by motivating particular choices (of culturally valued goods), or by determining their knowledge (of culturally specific technologies or styles). Thus, the socio-physical interface may also support early-emerging inferences about societal identities from physical markers through causal reasoning about how objects or design ideas were created or obtained.

To be diagnostic of societal identity, physical markers should be difficult-to-fake, honest signals of a person's socio-cultural past (their social connections and cultural exposure). For example, linguistic accents vary by group and are notoriously hard to modify, and serve as informative social cues from infancy (Kinzler, 2021).

By this principle, objects that require specific, learned knowledge to create should be more diagnostic of one's social identity than other objects. Such design ideas are unlikely to be generated the same way twice independently, and therefore imply that learning via socio-cultural contact has occurred. This can involve unique functional designs, as in complex, passed-down cultural knowledge of tool design (Henrich, 2015). It can also involve unique style: Things like art, music, cuisine, and dress should be particularly diagnostic of societal identity, because their styles are highly variable and learned (Soley & Spelke, 2016).

Children are sensitive to this: They can trace social transmission of design ideas person-to-person by detecting suspicious coincidences in the features of objects they create (Pesowski et al., 2020). Children also use knowledge of culturally specific objects like food and musical instruments (and not general world knowledge) to infer others' social affiliations and cultural groups (Öner & Soley, 2023). Similarly, infants and children use clothing as markers of group-specific social preferences and knowledge (Bian & Baillargeon, 2022; Weatherhead et al., 2022).

Physical markers in urban design also provide information about societies at large, allowing for rich, inductive inferences. The placement of a religious building, library, or social gathering place at a prominent location may signal the relative value that society places on different activities (Gehl, 2013). People intuitively view physical markers as having social messages: This understanding motivates action to remove Confederate monuments in the American South (Booth & Kizzire, 2016). These monuments in particular hold nuanced, tragic information about societal history. The number of lynchings of Black people in the historic record can be predicted by the number of Confederate memorials in that area (Henderson et al., 2021). People may infer endorsement, or at least tolerance, of nuanced political and moral views by the current society from its monuments. Interventions to change physical markers like monuments may powerfully change social values, by changing members' understanding of societal norms.

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Societies of the open ocean without territories

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Abstract

Shared group identifications can significantly subdivide populations. However, groups with mutual recognition may not be territorial. In the deep ocean, territoriality is absent but some species have important groups based upon shared identification. Control over access to physical space should be dropped from the definition of "society," although "territorial society" could be retained as an important subcategory.

We welcome Moffett's linkage of shared group identification to the term "society." The division of a population/species into groups within which there is mutual recognition has important ramifications for genetic and cultural structure, for population dynamics, ecological effects, and psychology. "Society" has largely been an amorphous term, sometimes synonymous with social structure or community, but more often undefined. Calling mutual recognition groups "societies" should bring them important attention, and increase rigour in their description and study.

Moffett requires that mutual recognition societies "maintain control over access to a physical space." This has the intentional result that societies cannot overlap in membership, and individuals can only be a member of one society. We argue that this "territoriality" constraint is counterproductive as it excludes some situations where mutual recognition is an important element of social and population structure but there is no territoriality, and in others where overlapping or nested "societies" may be important factors in social and population structure. We particularly consider societies of the deep ocean.

Moffett notes that gelada baboons are problematic for his definition of society: Their "units" do have mutual recognition, but there is no control of physical space. However, he argues "for retaining control of space as part of the definition [of 'society'] despite these outliers." Among free-swimming social species of the deep ocean, the gelada scenario is not an outlier, it is the norm and perhaps universal. The deep ocean is fluid as well as three-dimensional, and resources are typically very patchy and often unpredictable (Inchausti & Halley, 2002). The fluidity and increased dimensionality of the deep ocean mean that it is either impossible or uneconomical to defend anything (except possibly a mate), leading to scramble competition rather than contest competition for resources (Gowans, Würsig, & Karczmarski, 2007; Whitehead & Rendell, 2015, p. 55). With extreme patchiness, there are often enough resources for everyone in a given patch, reducing competition. In a few cases, ocean animals may actively recruit conspecifics to join them to feed on resources (blue whales; Cade et al., 2021). Thus, territorial or resource defence is not an important feature of the deep ocean. The shallower continental shelves, and even much shallower coastal and estuarine waters, have less extreme versions of these same characteristics (Whitehead & Rendell, 2015, p. 56). However, the benthos, the bottom of the ocean, is more two-dimensional and solid, so benthic animals may be territorial (e.g., Roberts & Ormond, 1992).

Despite this lack of territoriality, shared group identification is a well-documented attribute of a few deep-ocean animals and it may be quite common. Sperm whales, mostly open ocean nomads, have two primary social tiers: Stable communal matrilineally based family "units" with about 10 females and young, and "clans" which typically contain thousands of social units, and are distinguished by vocal dialects and distinctive culturally

transmitted behaviour (Whitehead, 2024). Units form temporary groups only with other units from their own clan, even though several clans often use the same waters (Whitehead, 2024). The dialects seem to symbolically mark clan membership as the vocal repertoires of clans that use the same waters are less similar than those of clans that overlap little (Hersh et al., 2022). Thus, the sperm whale clans have the key attributes of Moffett's "anonymous societies" (except territoriality).

Killer whales exhibit multi-tiered social organization. Membership in the groups at each tier is usually stable, and different groups have different culturally inherited characteristic behaviour, including dialects (Ford, Ellis, & Balcomb, 2000; Riesch, Barrett-Lennard, Ellis, Ford, & Deecke, 2012). Group identification at the lower tiers (such as matrilines and pods with less than about thirty members in each) is likely often based on individual recognition, while the higher levels (communities, or ecotypes with hundreds or thousands of members in each) likely constitute anonymous societies (minus territoriality), with vocal dialect being the most probable marker.

Moffett dilutes the notion of territoriality to "include whatever land or stretch of sea a mobile society controls access to at a given time, through aggression or avoidance, and to allow for the possibility that visits from outsiders may be permitted." However, the suggestion that sperm whales similarly rely on "mobile territories" (target article, sect. 3, para. 10) does not hold up to scrutiny. Though sperm whale units travel cohesively in the same areas, there is no evidence that they attempt to monopolize the space they travel through. Furthermore, if taken literally, this dilution undoes the purpose of adding territoriality to the definition of society. Nomadic groups that avoid one another in real time may include nested or overlapping societies, as in ethnically or religiously based identifiable groups of humans (or even symbolically marked supporters of different sports teams) wandering in an urban setting. Killer whales show avoidance at the level of both the community and ecotype but there is no indication of territoriality.

Nested and overlapping societies are quite common and important on both land and sea. While nation-states are the exemplar human societies, mutually recognizable religious, class, and ethnic divisions within or between nation-states, not based on territoriality, can have major impacts on mating patterns, cultural diffusion, and resource use. The tiers of killer whale society influence population biology: "resident" killer whales mate between but not within "clans," while xenophobia separates "communities" and "ecotypes" (Barrett-Lennard, 2011). We believe that such groups which are based on mutual recognition should be considered societies.

Crucially, the extent to which a society controls space seems to have little impact on the key distinction between societies and other groups, that is, a "bedrock sense of belonging." For example, most of the social processes and psychological traits that Moffett links to a reliance on identity groups are unrelated to spatial exclusion.

We therefore propose that the definition of "society" not include territoriality, thus allowing for societies among non-territorial populations and species, as well as for overlapping and nested societies. However, space-use is important in how some societies function. We suggest that "territorial society" join other modifications such as "anonymous society" and "society in suspension" as important subcategories of "society."

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Definitions and cultural dynamics in understanding "societies"

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Abstract

Moffett's definition of societies and fascinating comparisons will help us understand some aspects of societies that apply across species, however, both definitions and the dynamics of deeply rooted cultural institutions that so transformed human communities will be critical to understanding "societies."

Moffett undertakes a bold and rewarding exploration of "what is a society" through a definition that will allow for comparative work across species. His definition centers on identity, continuity, and spatial boundaries, departing from approaches that define societies by interaction, cooperation, and culture. Why this effort? Moffett proposes that his definition of society serves as a reference standard for studying "social change and transformation in that many social troubles, and triumphs, may be an outcome of mental facilities adapted to tribal and hunter-gatherer groups." Definitions based on traits can indeed facilitate cross-species analogies, but also have their limits requiring many qualifications: Exceptions brought about by networks, multiple levels of sociality, the impermanence of societies, and populations without societies. This is because a reference standard does little to clarify the

mechanisms behind the extraordinary variation, permutations, and malleability of identity in human societies that occupy much of Moffett's venture. Missing is an understanding of what makes human societies more dynamic and varied than those of other species: Cultural institutions that, together with material and social technology, allowed for the transformation of societies. These are the drivers for the development and expansion of social identities beyond mere individual recognition and the mechanisms that are employed to transform existing societies and build ones that are larger in scale.

What are the fundamental cultural institutions that originated deep in our evolutionary history that allowed human societies depart from the societal configurations of other species, making it difficult to build a standard definition of society that might extend back to a common ancestor or the original foundational human group? One if the first is "the release from proximity" (Gamble, 1998; Rodseth et al., 1991), the ability to sustain social relations in absentia, and extend a sense of community beyond groups that are contiguous in space. This development is produced or evidenced by a number of institutions. First, institutions of kinship and marriage which recognize paternal and affinal kin allow spheres of kinship, identity, and corresponding rights and obligations to be extended to a much wider number of individuals. Indications of their deep roots lie in limited number of forms that kinship and marriage systems take in human societies (Chapais, 2010, 2011; Jones, 2003; Walker, Hill, Flinn, & Ellsworth, 2011). Like in all other overarching institutions, norms and obligations within kinship institutions are constantly pushed by agents resulting in modifications. For example, the kinship system of the !Kung foragers of the Kalahari is modified by a name relationship that allows for considerable play with kin terms (Lee, 1986).

Second, institutionalized rituals coalesce and bond individuals and groups in performances that build a sense of a broader cooperative society with shared identity and values (Durkheim, 1912). Powerful new identities are formed by rituals that may fuse identities to form a unique collective group identity (Atran, 2016; Whitehouse, 2021), for instance rituals to unite warriors or age groupings of pastoralists of east African bond men from different communities. There is ample evidence for the deep roots of ritual in the spectacular cave paintings from southern Europe to east Asia some 40,000–60,000 years ago and most likely much earlier.

Third, networks linking groups over great distances, as discussed by Moffett, form dense configurations of ties that are often the basis for collaboration in the face of the need for greater cooperation or defense. Information flow on networks broadens perspective, reduces in-group orientations and xenophobia, and opens access to the territories, resources, ideas, and practices of others, facilitating the formation of larger communities. For example, !Kung Bushmen (Ju/'hoansi) spend an average of 3.3 months a year living in the bands of others, most within 75 km but some up to 200 km away (Wiessner, 1986). Evidence for networks from the flow of raw materials and items of personal decoration extends back to the Middle Stone age (Brooks et al., 2018; Pearce & Moutsiou, 2014) and intensifies in the Upper Paleolithic (Bar-Yosef, 2007; Gamble, 1999).

Fourth, the origin of symbolic behavior possibly some 100,000 years ago (d'Errico, Henshilwood, Vanhaeren, & Van Niekerk, 2005; Tylén et al., 2020), together with technology allowed for material expressions of identityso critical for forging larger "societies" as groups from small communities based on individual recognition built "imaginary" societies that share identity but are not contiguous in space (Hegmon, 1992; Wiessner, 1983; Wobst, 1977). With the evolution of language, identity was further strengthened by oral traditions at all levels of human societies (Sijilmassi, Safra, & Baumard, 2024; Vansina, 1985; Wiessner, 2014).

In summary, Moffett's definition of societies and fascinating comparisons will serve to help us understand some aspects of societies that apply across species such as preferences for group living, xenophobia, and territoriality. However, his definition of society falls short as a reference standard for understanding "deep questions about the human condition including how people have organized their lives through the millennia and our place among the other animals dependent on such groups." Both definitions and the deeply rooted dynamics cultural institutions that so transformed human communities will be critical to understanding "societies."

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Author's Response

A society as a clearly membered, enduring, territory-holding group

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Abstract

I have attempted to provide a concept of societies that will foster productive cross-disciplinary discussions, namely one incorporating these three elements: (1) A mechanism for group identification, by which members distinguish those who belong from those who do not; (2) the potential for this membership to last for generations; and (3) control over a shared physical space. Herein, I respond to thoughtful commentaries from academics across the social and biological sciences, addressing their insights on the importance of identity in determining society boundaries, how institutions and nations relate to identity, the complications of territoriality as a definition component, how societies fragment, the workings of multitier sociality, and the significance of cooperation.

R1. Introduction

I have presented what I hope is a broadly constructive concept for the term "society," one that does not specify some diffuse sense of sociality but rather a group entity, or unit, of a particular kind. While it has become obvious to me that the word "society" has considerable cachet, such that there can be pushback when the option to adopt it for a favored purpose is cast in doubt, the fact is that the term has such a wide range of usages that academics can employ it virtually however they wish provided their intent is made clear. My interest is in the concept, not semantics; it just so happens that the most suitable word for describing that concept in English is a "society." Still, as I wrote in the introduction of the target article, the present interpretation of a society is sufficiently widespread, and consequential, that it is unfortunate no separate word for it exists; and I encourage the perspective it offers as a promising source of productive interdisciplinary dialogue. The subject of territorial control sparked the most debate, including its possible inapplicability to pelagic species, and hence as I anticipated this criterion might be expendable for some purposes.

Objections to my approach on two other fronts run deep enough to warrant preliminary mention. To be clear, the exclusion from the proposed definition of cooperation and the broader picture of multitier organization in no way implies those features are inconsequential; what I don't see is how using either as criteria for *defining* a society brings any improvement in clarity. To the contrary, I reasoned in section 1 that the definition is all the stronger for leaving such matters out, in the interest of achieving "a neutral framework for addressing big questions around why societies exist," among those questions being the role of cooperation and how societies fit into multilevel systems.

Creating that "neutral framework" was my singular goal as I developed my definition. **Smaldino** sees my concept of society as lacking "any special explanatory or predictive power," a concern **Blute** likewise brings to the fore. Exactly. As stated in my introduction, "It is not the job of a definition to explain the phenomenon it names." Adequate conceptualization is a precondition of satisfactory explanation, and, in fact, prediction as well. By rigorously eschewing preconceived notions of function, the definition is intended to leave others the space to explain and predict. I include among the "big questions" to be addressed working out the psychological mechanisms underlying member identification (**Krupenye, Carvajal, & Bastos [Krupenye et al.]**); building "a functional theory of how societies and individuals influence one another" (Smaldino); and, in a compelling example proposed by **Mitkidis**, fashioning a comprehensive analysis of deception.

Some of the biggest questions concern the benefits of societies. I chose to avoid making this subject a theme of the target article, but in brief I see the advantages of society life as broadly categorizable with respect to how the members provide for, or protect, one another, as well as share information and pool their talents, to the extent that the success derived from being in a society can outweigh the potential competition among its members (Moffett, 2019, p. 29). How those members fare better as constituents of societies than they would have done on their own or as part of more transient groups will be a rich area for future discussion.

Many pressing enigmas about societies come to mind with respect to their evolution, as **Blute** astutely anticipates. One of my passionate interests is in how humans initially evolved to employ traits to recognize their societal identity. In Moffett (2019) I hypothesized that a likely route was through the emergence of a *group coordination signal* conveyed to mobilize members in response to other societies (e.g., for bats, Boughman & Wilkinson, 1998). Perhaps our predecessors transformed such a signal into a password denoting membership (as **Barry, Hagen, & Mehr [Barry et al.]** would predict, almost certainly a vocalization) that individuals gave as an assurance on approaching their fellows (Fitch, 2000; Moffett, 2013, p. 238). Such a socially learned trait could be modified by the members of each society to be distinct (something chimpanzees fail to do, contrary to what was once thought: Desai et al., 2022). I argued in Moffett (2019) that the first signals of group identity could have been adopted at little cognitive cost, without affecting ingroup–outgroup boundaries or, at least initially, the social dynamics of societies that had originally depended on the residents' ability to recognize one another as individuals, thereby (to follow my terminology in the target article) transforming an "individual recognition society" into an "anonymous society" in which individuals detect "markers of identity" to register who belongs. **Brewer & Caporael** describe these as "group configurations" ("demes" and "macrodemes," respectively; see below) that are noninterchangeable, but transitions between them could be simple.

What of other approaches to defining the concept of "a society"? **Smaldino** details characteristics of societies in a list it seems could be extended indefinitely; yet a definition is different from a broad-scale description, in that it allows us to understand what is included under a term without comprehensively inventorying its attributes (although a thorough discussion of a definition such as that undertaken in the target article or scholarly

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dictionaries can proffer an encyclopedic analysis of the conceptual underpinnings of the subject being defined). Moreover, ideally a definition will succinctly distinguish not just Xs from non-Xs but, in cases where X is a discrete entity, one X from any other. Indeed, I treat societies much like other "biological individuals," that is, as well delineated and "countable" (e.g., Godfrey-Smith, 2009).[1] Which is to say a definition of "society" that hinges on identity, and the acceptance or rejection of others as members, illuminates how observers may usefully distinguish one society from another. None of the traits Smaldino brings up (e.g., population sizes, inequalities, electoral policies) can serve to set societies apart. Nor does applying all his characteristics in combination improve clarity: This would provide not so much a definition applicable to any and all societies as a treatise on the diversity of human sociality. I foresee a similar problem with the preference of **Cerbone & Turilli** for defining "society" as "the kind of thing that does 'x, y, z.'" **Szocik** narrows the focus to inequities (here, between genders), yet studying such widely variable biases, and such important components of societies as their internal social structure, presumes we can identify empirically those "societies" and who actually is *in* them. **Lei & Gong** associate societies with complexity, but one interesting feature of societies is how they vary from simple to labyrinthine; for instance, Bergman and Beehner (2015), whom these authors cite as promoting "the opposite… definition of society" from mine, in point of fact give a rundown of species showing a tremendous range of social complexity across all kinds of weak to strong associations without singling out which of those groups they see as "societies."

In addressing the commentaries, the relevant section of the target article was given in parentheses.

R2. Identity

I am pursuing the suitability of defining "a society" based on membership with regard to an enduring, territory-holding group. **Grueter & Swedell** see me as describing the capacity for individual recognition as integral to "perceiv[ing] one another as belonging together"; but the alternative of displaying identity markers, and detecting them in others, serves equally well (if not better, since it is less cognitively demanding, as evidenced by the high-functioning societies of tiny-brained ants). Further, it is possible to recognize individual foreigners, even coordinate with them, yet categorize them as foreign (i.e., as members of other societies): "The fact is human minds have likely evolved to respond to strangers and foreigners differently, and foreign strangers most strongly of all," such that even when society members don't personally recognize one another, "markers of identity make the stranger seem less strange" (Moffett, 2019, p. 171). (Beyond that, of course, humans, among other species, can pick out groups other than societies [see examples from multitier sociality: sect. R7].)

According to many philosophers, calling any set of individuals a "group" would be sufficient to fulfill my first criterion for a society, namely of having a mechanism for group identification, in that "the difference between a set of individuals and a group is that the individuals recognize themselves as belonging to the group" (Noyes & Dunham, 2020, p. 105). Mere categorization by the members, say through extended direct association, could fulfill that criterion. Yet social psychologists ever since Tajfel have assumed that "minimal groups" require some commonality to maintain a group identity, even if it is trivial, and even when (in experimental situations) the members have never met before (the ultimate anonymous situation: all are strangers to each other). On this basis it seems that **Brewer & Caporael** would apply the phrase "identity group" only to societies whose members are bonded by "experiencing" markers of group identity (rituals, symbolic displays, etc.). Contrary to this view, in section 3.4 I proposed that individual recognition societies are just as much identity groups as the anonymous societies found in humans and certain other vertebrates, in that they "depend on the members' ability to keep track of every other member as a unique individual." This group identification involving no shared traits, which I designate a "mere acceptance group," could have been modified, and reinforced, during human evolution with the introduction of the first identity markers.

It is possible that individuals who recognize and accept each other don't share a sense of belonging to a group; their identifications could be purely interpersonal rather than categorical (Brewer, 2001). This seems unlikely, as the problem becomes how the members' perceptions as to who belongs stay in alignment.[2] Hence Seyfarth and Cheney's (2017, p. 83) conclusion that baboons conceive of social categories as independent of their members is what I'd anticipate; this would "allow for other primates perceiving societies as distinct, coherent entities," as I wrote in section 3.4.1. Still, I thank **Krupenye et al.** for showing I overstepped by assuming societies in other species are *necessarily* perceived as categories (i.e., "imagined communities").

Krupenye et al. hope for more research on whether other primates assess memberships using markers such as cultural differences (e.g., Kerjean, van de Waal, & Canteloup, 2024). My conclusion at present is they do not, since while chimpanzees transferring between communities generally take on the cultural traits of their adopted society, "an individual that continues to employ a technique characteristic of a different community, say to catch termites, isn't shunned or attacked [or corrected] for its 'deviance'" (sect. 3.4.1; Westra et al., 2024).

As for humans, most of what I call markers are cultural, as **Qirko** recognizes. However, any trait that members consciously or subconsciously register as informative regarding affiliations – be it genetically based or not (a topic I never discuss); socially learned or not; arbitrary, intrinsically meaningful, authentic or not – falls under my intentionally broad umbrella for "markers."

Ramos-Fernandez, Smith Aguilar, Pietrangeli, Jasso-del Toro, Nicolás-Carlock, Boyer, Pinacho-Guendulain, Montiel Castro, & Aureli (Ramos-Fernandez et al.) are correct that people have multiple perceptions of identity, culturally rooted or otherwise, a subject that has been the gold mine for social psychologists and biologists studying animals with intricate identities. People aren't stamped from a cookie cutter, and yet if they are to be respected members of their society, the traits associated with their varied personal and group identities, from social cliques to political affiliations, must fall within permissible boundaries; "outliers poorly matching expectations are ostracized, stigmatized, pressured to change, or treated as foreign, depending on the kind and extent of their aberrance" (Bos, Pryor, Reeder, & Stutterheim, 2013; Marques, Yzerbyt, & Lyons, 1988; Moffett, 2019, p. 88). Despite this complexity, we have much to learn by selectively focusing on the societies themselves, which form an important slice of human self-definitions and the context in which many of our other affiliations play out.

I concur with **Qirko** that "identity formation and maintenance…needs to be considered if identity is to serve as a useful criterion for defining [a] society." Qirko correctly notes too that "all [human] social groups incorporate cultural traits from

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many sources." Even societies, which I pick out for their durable memberships, are open to shifting the traits by which members recognize one another, including adopting desirable traits from other societies to "make them their own" (Moffett, 2019, p. 349); as I say in section 3.4.2, "Markers fall from favor or transform without disrupting society boundaries" (see Barth, 1969). The "authenticity" of a trait, brought up by Qirko, is therefore not something I think important. Despite their changeability, people perceive that persistent groups "possess some core, deeply ingrained cultural elements that… are not eroded by the passage of time," or so **Sani** tells us. Still, George Washington would find the US a foreign place today.

Qirko describes society members as becoming especially monolithic in their collective identities during periods of external conflict. While writers from the Marquis de Sade to William Sumner have observed how clashes with outsiders can draw a society together, it is not that our identities become unified but rather that differences are likely to be put aside or overlooked. In any case people may disagree on all manner of issues including the advisability of war and yet, like it or not, recognize one another as fellow citizens, up to the point when a dissenter is rejected as a "black sheep" (Marques, Abrams, Paez, & Hogg, 2000),[3] or such a perspective spreads across a subset of members that finds those views acceptable (Butera, Falomir-Pichastor, Mugny, & Quiamzade, 2017; Sani, 2008), thereby potentially contributing to the eventual division of the society (see sect. R6).

Tompkins, Jara-Ettinger, & Schachner (Tompkins et al.) opine on markers of identity that relate to the physical world, a category ranging from clothing to national monuments, quoting my description of "things we make as a kind of extended phenotype." These authors apprehend the inanimate world as a source of social information they term the "socio-physical interface." My only comment is it isn't necessary for markers to be "difficult to fake" (even if the most important likely will be), given that what we assess in one another is an "ensemble of markers [that] turn us into walking billboards of our identities, the combined effect often overriding assessments of any particular trait" (sect. 3.4.2). So, while **Barry et al.** argue that vocalizations are ideal identity signals, a "rich combination of markers enables people to unmask those who don't belong without hearing them speak a word" (Moffett, 2019, p. 86).

Collective memory, pursued by **Figueiredo et al.** as unique to our species, is a subject I have investigated under the heading "Remembering, forgetting, meaning, and stories" in Moffett (2019, pp. 179–183). As **Sani** reports, the social construction of the coherent and positive narratives from which these arise is a compelling aspect of societal identities. Our historical narratives are subject to revision such that, as Renan (1882) put it, "Forgetfulness, and I would even say historical error, are essential in the creation of a nation." An example par excellence of narratives concerning the landscape are songlines "marking" the terrain with such detailed information of importance to Indigenous Australian identities as to create a mental map (Fernandez-Velasco & Spiers, 2024).[4]

For **Brewer & Caporael** societies are a kind of "macrodeme," described as groups sharing cultural elements, notably a common vocabulary; they associate the earliest of these with hunter-gatherer ethnolinguistic groups (which I prefer to call multiband societies). Yet their examples of modern macrodemes include people identifying with academic fields or other special interests whose members oftentimes meet only periodically (as hunter-gatherer bands once did: Brewer & Caporael, 2006; Caporael, 2015). I agree that macrodemes add to "the enormous diversity of collective coordination" for humans. However, in their conception of the term, macrodemes are populous, usually at least in the hundreds, in contrast to intimate groups in, say, classrooms, which they call demes (their "core configurations" of human sociality, in descending order of "group size and activity," are macrodemes, demes, task groups, and dyads: Brewer & Caporael, 2006, p. 137).

By contrast, societies, as conceived of here, are not restricted in size, some functioning with just a few members and others growing into the millions (sect. 7 leaves the lower limit to the discretion of others, noting that "even the very last survivor of a human society will retain the identity associated with his or her people"). Hence for species employing group identity markers, "a small society can be anonymous if it is demarcated through the use of labels that *potentially* allow some members not to know others" (Moffett, 2019, p. 372). Consider also that members of small hunter-gatherer societies may well have the "interpersonal relations" with every other that **Brewer & Caporael** attribute to demes yet still bond through markers that simultaneously reaffirm belonging while bestowing a sense of distinctiveness and lowering the cost of social surveillance, reducing identification errors (sect. 3.4.1). In contrast to what **Krupenye et al.** propose in their final paragraph, such functions could have rendered markers invaluable long before human societies expanded beyond the point where every member could recognize all their comrades individually.

Brewer & Caporael assert that "One critical function of the macrodeme is providing a defined pool for mate selection," and that certainly can be true for some of these groups; but between societies there can be considerable outbreeding up to and including absolute exogamy, with across-the-board spousal interchanges between tribes speaking different languages in some areas of the Amazon and New Guinea (Aikhenvald, 2008, p. 47; Moffett, 2019, p. 349).

The diverse and often cross-cutting "macrodemes" that extend both within *and* between societies, like the societies themselves, allow for membership changes (sect. 3.6); and yet, while movements in or out of many such collectivities can be fluid, as **Brewer & Caporael** emphasize, that is hardly true for those entrenched groups treated here as societies: Consider the controversies arising around immigrants. Membership transfer to a new society is seldom effortless, in our species entailing expectations that the newcomers sufficiently conform to the local identity (assimilate: sect. 3.7), even in those cases of absolute exogamy. What is fluid for humans, as these authors expertly describe, is how particular collective identities can come to the fore at different times. Hence "compared to many social groups the existence of societies in everyday life can be as easily overlooked as the blue tint of the sky" (sect. 4); even so, exposure to identity markers constantly primes us to our society's existence (Billig, 1995).

Group identities therefore occur in many forms for humans and on close inspection, examples exist throughout nature. **Ramos-Fernandez et al.** assert that "even the boundaries of systems as simple as cell aggregations are established not by an overarching, *a priori* collective identity." However, the cells in a body are identified "by the chemicals on their surfaces, with the immune system killing foreign cells bearing the wrong signals. On this basis your body, with its trillions of member cells, represents a society of a microbial sort" (Moffett, 2019, p. 89).[5] In fact, some definitions of an "organism" correspond closely to the one proposed here for a society.[6]

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Finally, the issue of group identity comes up when we consider whether multiple species can be treated as members of one society, the subject taken on by **Andrews, Kelty, & Suryawanshi**. That would require those species to conform to the same framework being applied here to single species. Most examples that come to mind fail to meet the requirement that individuals distinguish those who belong from those who do not; hence, any dog can be adopted by people in any nation. The only example that holds up is the relationship between certain leafcutter ants and their fungal cultivars. The ants ordinarily accept only the fungal strain they have raised since their colony was founded, attacking strains originating from different colonies much as they attack foreign ants (Ivens, Nash, Poulsen, & Boomsma, 2008).

R3. Identities with respect to institutions and nations

Concerned as she is with clarifying the mechanisms behind the extraordinary malleability in human identities, **Wiessner** examines social institutions, defined as "the humanly and historically devised rules of the game" (Wiessner, 2002, p. 234, a reasonable match to how I characterized them in sect. 3.1). Her focus therefore deviates from the intent of proposing a concept of "society" and, more specifically, as kind of group entity. While it may be that, as **Dousset** writes, "belonging is inseparable and sometimes even undistinguishable from legitimate social control" in our species, inserting institutions into the concept doesn't seem to improve its accuracy, or utility, in identifying which groups are societies; furthermore, doing so excludes nonhumans. This is not to deny that social institutions are crucial for (as Dousset puts it) "producing and reproducing the necessary sense of belonging" to a myriad of human collectives, from families and religious denominations to international consortia, with societies – a word whose definition Wiessner leaves open – being a cornerstone. Indeed, most of the markers that people associate with these manifold groups are doubtless instilled by "formal rules [and] informal constraints (norms of behavior, conventions and self-imposed codes of conduct)" (North, 1992, p. 9) that social institutions represent.

Wiessner mentions "release from proximity" (Rodseth et al., 1991) as one of the "fundamental cultural institutions that originated deep in our evolutionary history that allowed human societies [to] depart from the societal configurations of other species." However, chimpanzees maintain complex social ties that include a sense of a shared group membership despite not living contiguously in space, even after extended periods apart. The principle of parsimony would therefore suggest that not only our societies (sect. 1), but the release from proximity of their members, trace back to the common ancestor of *Homo* and *Pan* (though of course any subsequently emerging cultural institutions, constructed to accommodate this release, would be unique to humans). Also, social networks can sometimes be "released" beyond societal borders to allow cooperation among communities or their members, as I describe. This opens opportunities for chain transfers of goods or ideas (e.g., rituals: Mulvaney, 1976), promoting societal enrichment and diversification (e.g., de Pablo et al., 2022), though one must not forget that these may spread through theft as well as trade; illustrative is how Chinese pottery switched hands, and societies, before ending up in the heart of Borneo (Dove, 2011). Ancient societies within regions of extensive trade and historical connectedness, such as Mesopotamia or Mesoamerica or the Aurignacian hunter-gatherers in what is now Europe (e.g., Baker, Rigaud, Pereira, Courtenay, & d'Errico, 2024; Vanhaeren & d'Errico, 2006), who would have been members of numerous multiband societies, can be hard to distinguish from the archaeological evidence, making it expedient (and in some instances, necessary) to expound only on these broad regional categories.

I see the fundamental shift from our "foundational" ancestors as instead being the "release from familiarity" (Moffett, 2019, p. 152): A capacity to live comfortably among individuals we do not know or fail to recall – strangers.

Cerbone & Turilli take issue with my equating today's societies with "nation states," a phrase combining two concepts (the "state" being a "territorially bound group": see sect. R4). They consider the one-to-one convergence of nation and state (or in the more general terms I use, ethnicity and society) to be "unknown in history." That certainly has been true since some societies became sedentary. My preference has been to follow the widely understood definition of a nation as a country (e.g., Connor, 1978), writing that "nations – in the sense many scholars think about them, as independent groups of people sharing the same cultural identity and history – really existed only in [nomadic] hunter-gatherer days, when societies were far more uniform" (Moffett, 2019, p. 317). As the sociologist Anthony Smith wrote me in June 2012, "Not that there is any reason why there should not be some form of nationhood among hunter-gatherers (size being a highly variable criterion), but it would be of a form rather different from that common in the ancient world and the form of citizen nation with which we are familiar in the modern world."

Once people lived in settlements, some societies began incorporating outsiders en masse, laying the foundations of nations (sensu "countries") that, even when their populations in the passage of time came to appear uniform, "on close inspection … are heterogeneous" (e.g., the Han Chinese: sect. 2), the members registering their remaining differences as having varied degrees of importance (a trajectory undeniably making each state, following the terminology of **Cerbone & Turilli**, a "multinational endeavor"). Which is to say that human societies have long been made up of peoples originating from different sources that rarely if ever "coincide with the territorial boundaries of a state," as these authors recognize. For more overtly multicultural populations, the interpretation of a society as a people sharing an identity applies when we mean a superordinate identity stripped down to those minimal points of reference "that even diverse societies require of their citizens to stay intact without undue application of force (in the U.S., respect for the flag, endorsement of ideals of freedom, etc.…)" (sect. 2), expected commonalities that can be tailored to ease, or discourage, the acceptance of particular groups (Guimond, De La Sablonnière, & Nugier, 2014; sect. 3.7; Hahn, Judd, & Park, 2010).

Despite such complications, then, I conclude that group identities are "the best [which is not to say perfect] criterion for defining, and thereby distinguishing, societies" (sect. 2); what fascinates is that perceptions around collective identities render human categories less ambiguous than they objectively are (e.g., Levin & Banaji, 2006; MacLin & Maclin, 2011), such that people's sense of being in harmony with how others identify with their society can be more imagined than real.

R4. "Control of space" as a problematic criterion

Whitehead & Walmsley prefer a definition that leaves out territoriality. Societies would thereby encompass groups such as ethnicities, which English speakers do not normally describe using

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the word "society" and which I have tried to exclude since they exist immersed within, and subordinate to, the groups that concern us here (sect. 3.8). Not that people require a territory to identify with a group; as **Brewer & Caporael** emphasize, the traits I subsume under the term "marker" "not only free collectives from the limits of group size but also limits of distance and even time." Ethnic, religious, and other groups that don't control an area, as **Whitehead & Walmsley** say, have "major impacts," but that in no way reduces the merit of distinguishing them from societies. As Parsons (1966) concludes, "Many social systems such as local communities, schools, business firms, and kinship units are not societies, but rather sub-systems of a society," an opinion echoed by another powerhouse in the field of sociology, Lenski (2005, p. 17).

Figueiredo et al. likewise oppose control of a physical area as a criterion for a society. They find it objectionable that the Mapuche living in Chile should be looked at as an ethnicity even though their culture persists, "anchored by the transmission of collective memories." However, we do not denigrate the Mapuche by treating them as an ethnic people who retain an awareness of a shared history that includes memories of having exclusive dominion over an ancestral homeland. Rather, we accurately convey their situation, buttressing the significance of their struggle to be independent – in the sense proposed here, to be a separate society. Note also that nowhere do I claim, as Figueiredo et al. assert, that dominated people such as the Mapuche are *necessarily* assimilated (rather, "depending on the whims of their subjugators, such peoples *could be* gradually integrated": emphasis added; sect. 3.7), and certainly not that they will be *fully* assimilated, as ethnic traits never utterly vanish, though I should add that this is in part because minority groups resist losing those traits that make them distinctive.

In short, rather than legitimize "a neocolonial power structure" (**Figueiredo et al.**), my approach clarifies what those structures have forced on people. While I expressed an openness toward the discretionary removal of territoriality from the diagnosis for a society ("perhaps at minimum [allowing] for some diasporas whose very insular structure sets them apart from the host society," as well as certain horticultural or hunter-gatherer peoples "that have by and large continued to act independently": sects. 3.8 and 1.2), this may be a compelling rationale for keeping it in. In section 7, I describe a strong definition as one that breaks down when things about its referent get conceptually intriguing, as the Mapuche example demonstrates: "Situations where groups …have identities that clash with the[ir] society throw light on the factors that can serve, over time, to further empower and expand societies or rend them and start new societies" (Moffett, 2019. p. 19).

Chapman prefers phrases along the lines of "physical space under control" over "territory" since the latter word is so often employed to express the active defense of a physical space. Perhaps true (e.g., Brown & Orians 1970), but note that, for example, the unabridged Oxford English Dictionary mentions defense only in the entry for "territory" that applies to animals. My goal is to change how biologists perceive territoriality so as to better reflect the variety of the cognitive challenges posed by encounters with outsiders (Ashton, Kennedy, & Radford, 2020), including the option of benign interactions across societal borders. Attachments can exist for instance between societies that have recently split off from each other (Archie, Moss, & Alberts, 2006; Morrison et al., 2020). Transitions in the breakup of a society, described below, including ties that linger after a society divides, are important research topics – another example of a definition's utility being demonstrated by how much we can learn from situations where it doesn't quite work (sect. 7).

Can societies that are amicable in good times nevertheless allow outsiders into only part of the land they occupy, or drive them off entirely "when push comes to shove"? **Chapman** remarks that mountain gorillas tend to have affiliative contacts with other troops mostly at the periphery of their home range, a pattern suggesting that hawkish control of space is centered on the interior, or core, area. **Brooks & Samuni** point out that bonobos are considered nonterritorial. Yet despite their oftentimes friendly intergroup socializing and overlapping distributions, part of each bonobo community's home range is, for all practical purposes, occupied "exclusively" (e.g., Samuni, Langergraber, & Surbeck, 2022), thereby meeting the ecological definition of "territory" as an area exclusively maintained (Schoener 1968); above and beyond that, the spacing out of communities across the landscape is almost certainly evidence of enforced territoriality in the ethological sense, expressed more intensely in the "core." Could it be that we have missed critical moments of conflict when communities initially work out their spatial separations, after which these apes settle down to treat their neighbors most often affiliatively? The proposed definition leaves open the possibility that control of a physical site could be established once, or be expressed only in rare situations when resources are worth defending. For bonobos, any intercommunity antagonism over food (Moscovice et al. 2022) would be affected by the relative size and distribution of their fission-fusion parties, and their potential to recruit reinforcements.

To my mind, this need for a closer examination extends to oceanic species. Open ocean residents would likely show a mobile form of territoriality, staying in contact within a space from which they can choose to socialize with or exclude outsiders through aggression or avoidance (sect. 3.8). **Whitehead & Walmsley** hypothesize that control of space is uneconomical in the open ocean – hence their interest in dropping this criterion for a "society." Indeed, what limited data exists suggests that pelagic bottlenose dolphins may not live in the clearly membered, long-term communities that characterize adjacent coastal populations of the West Florida Shelf (Randall Wells, personal communication, 2024). As for sperm whales, which live in small "units" belonging to one of the several "clans" that extend over an expansive range of ocean, Whitehead & Walmsley conclude that my assessment of this species as having nested societies ("societies [units] within societies [clans]": sect. 4) holds only if the requirement for spatial control is dropped. From what evidence exists for the Pacific, however, where clans overlap widely, the whales consistently stay apart from all units of other clans and yet can choose to approach and intermix with units of their own clan (perhaps selectively, since some units are seen together more often, e.g., Whitehead & Rendell, 2015). Whitehead & Walmsley note that there is no way to compete at least over food in open seas, so why do clans stay apart? Perhaps because they have incompatible cultures (Marcoux, Whitehead, & Rendell, 2007; Whitehead, 2024; Whitehead & Rendell, 2004) that conceivably make it impossible for units of different clans to work together, for example, when hunting squid.

While acknowledging that it may be desirable to drop the criterion of territoriality for pelagic animals based on *a priori* reasoning, I nevertheless encourage marine biologists to look closely for instances of mobile control of space in the open ocean.

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R5. Insights about the control of physical spaces

Baumeister & Southwick's discussion recalls an aspect of territoriality that biologists expect but seldom state outright: A territory is the space *in which those who control it actually live* (e.g., Sergio & Newton, 2003). That's not to say its residents cannot move outside that area, whether to intrude on adjacent territories or explore neutral or unoccupied ground (as prairie dogs do: Slobodchikoff, Perla, & Verdolin, 2009). For this reason, no sports team fulfills the proffered concept of a society: The Chicago Bears do not "live in" Soldier Field. Yet Baumeister & Southwick's commentary makes me curious as to whether many games are contrived to mimic characteristics that impassion citizens about their societies, including the goal of retaining control over, or seizing, a goal line or end zone. This would make clashes between teams a reasonable model for conflicts between societies, an idea these authors pursue.

A question wide open for investigation is whether the *group*-level usage of space could have a cognitive underpinning, much as group identities do; **Whitehead & Walmsley** conclude from the lack of evidence about this matter that control of a space is of secondary significance to societies. Forli and Yartsev (2023) is the only study I have seen that approaches the subject even tangentially for animals, while Xiao and Van Bavel (2012) report how people who feel threatened by immigrants think of the newcomers as originating from much nearer by than they really do; and even these studies don't investigate the issue of group *control* of a space.

Dousset asserts that "it is the coexistence of, and the relationship between multiple human groups that provided 'society' as Moffett defines it a reason to be." Indeed, control over a space can't apply when a society has no neighbors, a situation realized by the first colonizers of an area. This need for a point of comparison, implicit in the proposed definition (which intimates that the members can pick out anyone who *doesn't* belong), is the subject of a chapter in Moffett (2019), where I quote Royce (1982, p. 12): "The hypothetical group on an island with no knowledge of others is not an ethnic group; it does not have an ethnic identity; it does not have strategies based on ethnicity" (nor is it, given the terminology adopted here, a society). Still, I conclude that "once humans in isolation grow to more than a very few in number they seem to privilege some individuals over others, creating conditions under which multiple societies are born. The requisite foreigners would be birthed from within" (Moffett, 2019, p. 348). Dousset also touches on how people aren't born perceiving themselves as society members, a topic I address in section 3.7.

Qirko notes that groups can associate objects or regions with their identity even if they have lost control of those things, not just in the sense of a community that lives where it did originally though it has come to be dominated by others (as was **Figueiredo et al.**'s concern about indigenous ethnicities: sect. R4) but in the sense of a community driven off its former land. Yet I submit that retaining actual control over a piece of property, whether or not it is the people's ancestral homeland, remains the ideal yardstick for describing said community as a separate unit – society.[7]

R6. Stability of societies

Sani expands on my section 6, where I briefly look at the impermanence of societies. He confirms that his findings on how schisms emerge in organizations (e.g., church denominations and political parties; Sani, 2009) could apply to societal breakdowns as well, presenting an avenue for future research on a critically important subject. My hypothesis (Moffett, 2013) that societies of most if not all species are not just ephemeral but "replicators" that go through a cycle, eventually coming to an end, or at least a division, to create a new generation of societies, will be difficult to document since vertebrate societies generally outlast research programs (e.g., in chimpanzees and bottlenose dolphins: Langergraber et al., 2014; Sellas, Wells, & Rosel, 2005).

I proposed in Moffett (2019, pp. 248–50) that shared markers of identity could have helped keep the societies of our ancestors bonded together at populations larger than those achieved by our primate cousins. **Chapman** may be right that we can learn only a limited amount about the birth of human societies, forged as they are by such markers, from other primates, who rely on individual recognition to stay together as a group. Still, the underlying sequence of events leading up to the division of our ancestral societies and those of many primates may be similar: Increasing stress, exacerbated by population growth, reduces the alignment among members in recognizing who belongs, precipitating the emergence of subgroups that in time divide. (I strongly suggest calling these permanent partings-of-the-way "divisions," since "fission" is widely accepted to indicate temporary separations of "parties" in fission-fusion species.)

Chapman portrays primate society divisions as gradual, which can be the case if the subgroups incrementally drift apart, as may occur with a baboon troop (Susan Alberts, personal communication, 2024). But often the actual severing transpires quickly; what unfolds over months or years are the schisms leading up to it (e.g., Feldblum, Manfredi, Gilby, & Pusey, 2018; references in van Horn, Buchan, Altmann, & Alberts, 2007). In the early stages of the breakdown of one macaque troop, for instance, conflicts initially took place between individuals but shifted to clashes between factions whose members acted en masse, as if they perceived the others as a collective by the time of the final severing (Prud'Homme, 1991).

For nomadic hunter-gatherers, schisms would likely arise because of limitations in communication between widely spaced bands. Lacking a means to connect regularly with all their compatriots and become comfortable with, if not adopt, trends emerging in distant corners of their society, they would eventually diverge markedly enough that their differences would present an irreconcilable source of discord at those times when bands did get together, as reflected, for instance, in localized variations in language (e.g., Birdsell, 1973; Dixon, 1972).

Societies as we know them today are another matter. As discussed above in response to **Cerbone & Turilli**, the borders of many nations show little connection to the identities of their citizens. I argue in Moffett (2019, pp. 301–5) that countries generally come into being when states that have aggressively expanded in the past, such as the USSR or Yugoslavia, fragment "between stretches of terrain heavily populated by ethnicities that once had societies of their own there" (ibid p. 303; Bookman, 1994; Kaiser, 1994; Sekulic, Massey, & Hodson, 1994). The result is the rebirth of former societies on their ancestral homelands, which had been absorbed when those societies were conquered or otherwise forced together and turned into ethnicities. (There are exceptions: Internal political machinations or outside forces can yield countries bearing no connection to those of the past, for example, in the separation of North from South Korea or the severing of Pakistan or Bangladesh from India.) This newfound freedom allows these regional populations to reinstitute diverse aspects of their identities that were never completely forgotten (their collective memories: **Figueiredo et al.**), even if those identities were modified

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by immersion in the conquering group. The result is centuries-long cycles of expansions and contractions, conquests, and dissolutions across the globe (Chase-Dunn et al., 2010; Faulseit, 2016; Gavrilets, Anderson, & Turchin, 2014).

What makes it reasonable to think of the products of a division as the next generation of society isn't merely the disaffection that led to the split. A society's nascent years can be a time of revolution as its members ramp up their differences in identity to promote positive distinctiveness and group unity (Billig, 1995; Butz, 2009; Finell & Liebkind, 2010; Mummendey & Wenzel, 1999).

R7. Families and other tiers of sociality

Klein rightly takes me to task for omitting the phrase "aside from families" at the end of my section 4 title, "Societies are generally the most salient of what can be multiple levels of sociality." The preeminent importance of families as a social tier is a point brought up several times in Moffett (2019), for example, on p. 240: "The ties that bind people most tenaciously, beyond those to their immediate families, will be their identification with a society."

As **Klein** remarks, risk-taking is likely to be greatest for the sake of family members, though as Brewer (1991, p. 475) has stated with respect to national and ethnic groups, "People die for the sake of group distinctions." In humans the strongest impetus for taking extreme risks "for the greater good" arises from the potent feeling of shared identity that follows intense training or rituals, which can lead to identity fusion among the participants (Whitehouse & Lanman, 2014a; Whitehouse, McQuinn, Buhrmester, & Swann, 2014b). Still, in times of national threat, an emotional connection with the society, such as patriotism, or attunement to the expectations of other society members, would likely be the principal motivator driving someone to take the risk inherent in becoming a soldier in the first place, before the recruit has had the opportunity to meet any soon-to-be comrades, let alone fuse his or her identity with theirs. That's because a so-called band of brothers (what sociologists call a "primary group") requires something to fight for above and beyond their compatriots; in my view, primarily the society, a phenomenon Swann, Jetten, Gómez, Whitehouse, and Bastian (2012) call extended fusion.[8] Because extended fusion is weak in the heat of battle compared to a commitment to one's comrades, its motivating role is easy to underestimate. Consider that the moment a country loses a war, its soldiers are more likely to surrender than continue fighting for the betterment of fellow troop members.

This risk-taking facet of societal commitment is readily applied only to people, given the impossibility of assessing whether animals join intergroup conflicts for the benefit of themselves, their kin, or the society at large (though for chimpanzees, participation in raids on foreign territories doesn't seem to strengthen the social bonds between the participants: Samuni, Crockford, & Wittig, 2021). Since undergoing intense rituals together is the primary avenue to local identity fusion in humans, the emotional contagion (Spoor & Kelly, 2004) of "rallies" or "greeting ceremonies" may be a good place to look for analogues among other mammals (e.g., in gray wolves and spotted hyenas: Dan Stahler, Christine Drea, personal communications, 2022).

A topic mentioned in several commentaries is multitier sociality, a consequential characteristic of many species, humans among them. **Grueter & Swedell** reject the concept of society I present because it doesn't allow the use of this term for all such tiers. That is my intent: To provide a conception such that the word isn't simply employed, as it often has been, as yet one more synonym of "tier," "level," or "stratum," so as to render the idea of "a society" blandly uninformative. That said, I see no problem with treating multiple tiers as societies, wherever in the hierarchy they fall, provided they conform to clearly laid out conditions, even if the proposed definition happens to set a high bar for it.

In fact, **Grueter & Swedell** see me as favoring a definition of "society" that lines up most closely with their concept of "core," a term they use to describe what they consider the primary "socially bonded breeding units" of socially tiered species. While some of their examples of cores correspond with societies sensu this article (e.g., for savanna elephants), the two don't need to match, as they point out themselves, notably so given how these authors apply the term liberally enough to grant it even to simple monogamous families (hence they describe the "cores" of hunter-gatherers as "family units [mostly monogamous, sometimes polygynous, rarely polygynandrous]" existing within "interconnected multicamps": Grueter et al., 2020, p. 844). In my terms what represents a society for these hunter-gatherers is instead what Grueter & Swedell term a "multicamp" (my "multiband societies") (sect. 1.2). Like all human societies, those of nomadic hunter-gatherers contain layers of social affiliation (notably families distributed across relatively fluid bands, the latter homologous to chimpanzee parties, e.g., Layton, O'Hara, & Bilsborough, 2012).

Smaldino also considers multitiered sociality a problem for my concept, giving the example of France being nested in the E.U., the sort of circumstance I address in section 7. As put forward in Moffett (2019, p. 350), this union is a coalition insomuch as "the members don't see the E.U. as an entity worthy of their loyalty the way they do their countries," which maintain independent territories. I agree with **Cerbone & Turilli** that Great Britain – or more accurately to their point, the United Kingdom – is another artificial construct, closer to an alliance than a society, as its people have at best a weak connection with even those minimal aspects of shared identity such as respect for national values described earlier; and the same is absolutely true of the countries that they point out were manufactured by outsiders after World War I, as is the case for much of Africa.

A case in point when it comes to the variable attributes of "nested" groups (e.g., Madsen & de Silva, 2024), only some of which meet the current criterion for a "society," is the gelada. As far as is known, those in the two upper tiers researchers claim for this primate, the "band" and "community" (Roux & Bergman, 2012; Snyder-Mackler, Beehner, & Bergman, 2012), share nothing "other than the habit of moving more or less across the same general ground" (sect. 4). While geladas' capacity for individual recognition is the subject of unsettled research, which **Grueter & Swedell** critique,[9] these aggregations amount neither to "identity groups" (in that outsiders aren't distinguished) nor to "social groups" (at least insofar as a band or community shows no sign of acting as a separate collective when in contact with other groups in its own tier). Social scientists have long distinguished between groups lacking any meaning to those in them and those significant to the members (e.g., Isin, 2002, p. 26). Grueter et al. (2020) do so as well by concluding that "aggregations of social units without active social preferences (e.g., attracted to the same localized resource or co-occurring due to constraints of habitat structure) cannot be considered MLSs" (i.e., multilevel societies). These gelada tiers may be epiphenomena, having descended from a single ancestral society (or "unit," likely homologous to the troops of some other primates: Bergman, 2010, p. 3051) that originally roamed the area.

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Which is not to say that merely being near others won't offer advantages, just as converging in a flock can yield payoffs to birds in confusing or driving off threats (Beauchamp, 2013) – and, in geladas, potentially doing so indifferent to whether the others present are part of the same band or community, and arguably without cooperating, given that the animals have identical goals but their actions are in no way organized to serve their collective advantage (Noah Snyder-Mackler, personal communication, 2023; meaning any benefits are "byproducts": Sachs, Mueller, Wilcox, & Bull, 2004) – a situation that at best might be described as a "spurious collaboration." This is why I proposed in section 4 that until we know more, such associations (among them certain groups ascribed to humans: Roscoe, 2009, p. 76) shouldn't be treated as tiers in a multitier *social* organization.

R8. Cooperative interactions, or relationships generally, as defining features

Cooperative interactions come to the fore in many commentaries. **Brooks & Samuni** claim that I lump together the diversity of cooperation and reject its importance "in one motion" when I conclude that "cooperation can be so varied and shifting…that it is judicious to define societies in a way that is neutral to its existence." Not so. What I mean is that the wide variability in cooperation patterns – extending as cooperation does to species that lack societies (e.g., bison seek out companions within their unbounded herds: Joel Berger, personal communication, 2024) – makes cooperation problematic for *defining* societies. Moreover, the fact that, as **Ramos-Fernandez et al.** say, the multiple identities of humans and many other animals affect collaborations in myriad ways speaks as well to the inadvisability of singling out cooperation as a *societal* phenomenon, especially since intragroup conflicts may also have social utility (sect. 2).

Bodor & Havrancsik conclude that I see identity as "opposed to interaction," which I don't; nor do I have any intention of either ignoring "interaction" or failing to acknowledge its centrality in the study of groups. Furthermore, my views are consistent with identity being "a social construction." **Smaldino** conceives of a society "as a unit for collective behavior and information processing," the latter phrase bringing to mind framing of a society as a group organized cooperatively by means of reciprocal communication; still, I cannot envision a concept of "society" based on information processing given how information flows between dyads to neighborhoods to societies sensu this article to EU-style alliances and, nowadays, across the globe.

Brooks & Samuni describe group territoriality as "a top-down group cooperation challenge." No doubt spatial control can be inherently cooperative, whether or not the definition spells this out (and why should it: In sect. 3.1, I envisage one member safeguarding its group's space unassisted; if such a strategy is found, my money is on it being in an ant with very small colonies). Yet even assuming cooperation is a "foundational component of societies" (their words) such that no society can sustain itself without it (I agree, though it can be vanishingly weak: Olson & Blumstein, 2010; ch. 8 in MacDonald & Newman, 2022), societies "are not necessarily natural units of cooperation" (my words).

I concur with **Ramos-Fernandez et al.** that social interactions are relevant and that "networks are preeminent tools for understanding societies." My suggestion that societies are "generally the most salient" (note that I don't make salience obligatory) in no way demotes social networks or groups other than societies to irrelevance (in particular for understanding the inner workings of societies, including the efficiency of their networks, e.g., Pasquaretta et al., 2014); I just don't see the utility of networks (or "interactions") in fulfilling the role of a definition to accurately distinguish one of the things-being-defined from any other, given that both positive and negative interactions, and the social networks that thereby emerge, can occur in and between societies. Think about it: While social networks in aggregate can largely (or in species without intergroup relations, entirely) match the boundaries of society memberships (i.e., have a high "network modularity"), this almost certainly is not because those networks are confined to that set of individuals by happenstance but because those members differ from all "outsiders" in sharing a unique group identification as a diagnostic trait.

I also agree with **Ramos-Fernandez et al.** that "it is relationships, not simply group membership, that animals pay attention to." Vertebrates put cognitive energy into attending to their personal connections (e.g., Dunbar, 2009). On this basis these authors prefer to frame societies with respect to social relations (but do not specify how such a concept would read to serve for studies across species). I would argue, however, that the spider monkeys studied by Ramos-Fernandez et al. present one of many cases of how animals establish social relationships with reference first and foremost to recognizing one another's membership in a significant group, their society: The immediate hostile response elicited by encounters between members of adjacent communities cannot be explained by prior interaction between those individuals; rather, a resolutely negative reaction to any and all "foreign" monkeys will have existed without interruption back to the origin of the species and must be overcome by any individual who transfers, generally after a period of integration. Indeed, the finding that vervet males who successfully transfer into a new troop switch their call from one indicating that its members are foreign to another communicating their position in the local hierarchy (Seyfarth & Cheney, 1984) suggests a category shift in how they perceive themselves ("group mindedness": Brooks & Yamamoto 2022); Robert Seyfarth (personal communication, 2024) thinks it likely that troop members also change their vocalizations to the newcomer in the same manner (even if the new resident still doesn't get along with everyone and can be subject to attacks: Cheney & Seyfarth, 1990, p. 22). As for humans, most social identity theorists see group identification as a necessary condition (and, likely, precondition: Fabio Sani, personal communication, 2024) to sustain significant collaborations over time (Smaldino, 2019; Tomasello, 2009).

Ramos-Fernandez et al. give a nod to Hinde (1976), who drew on concepts from the social sciences to explore animal interactions, relationships, and social structure. Yet while Hinde mentions primate societies (i.e., troops), it is with respect to their internal structure; their memberships are taken as a given or, in the case of intergroup relationships, omitted. Hinde's concerns bore solely on internal social cohesion, leaving unaddressed the unity, and external delineations, of societies. This reflected the perspective of most social scientists of that era, as studies of intergroup behavior involving the *categorization* of individuals (notably by Tajfel, 1970, 1974) were widely ignored until the 1980s (Marilynn Brewer, personal communication, 2024).

No commentator raised much objection to the second of my criteria for societies, that the groups must have the potential to last for generations. I will point out that a gap exists in our knowledge of the relation between the formation of minimal, and generally transient, groups and the identification to societies that can

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endure for lifetimes. Can the first be reinforced to become the second?

I again thank all the commentators for a stimulating discussion about how to define and understand societies. Of the questions that have been raised, one of the most basic may be how humans initially came to employ shared traits as markers of identity; and then how, from that humble start, those identities expanded into the many and varied forms people exhibit today. A hypothesis that I propose as a basis for further research is that the labyrinth of modern human identities evolved from our predecessors' foundational sense of belonging to a society, which eventually branched out into affiliations to innumerable groups of varying importance, prestige, and longevity. As a consequence of this deep history, collectives ranging from gangs to corporations share characteristics with societies; by virtue of this correspondence, as **Chapman** affirms, insights into the dynamics of group affiliation at lower or higher levels may illuminate processes operating at the societal level, and vice versa. Certainly, though, the most profound, and urgent, questions are those bearing on what keeps a society together and functional, in opposition to the forces that tear it apart by engendering distrust, social schisms, outright anarchy, and civil war.

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Notes

1. Even if in this case the constituent members don't create one localized object from being in physical contact.
2. I addressed this problem with social networks in section 5.
3. Hence member actions aimed at maintaining group identity can include both the regulation of external boundaries vis-à-vis outsiders and managing internal inconsistencies in identity. A theory from immunology (Pradeu, Jaeger, & Vivier, 2013) is that identity variants tend to be rejected when introduced too abruptly, which might apply here to a black sheep.
4. **Dousset** notes that the Western Desert Aborigines do not claim ownership over the lands they occupy, an interesting outlier human population discussed in section 6.
5. Formally speaking, Ramos-Fernandez et al. are correct in that a *collective* identity implies a sense of collective agency and the need for individuals "to experience group identity," as **Brewer & Caporael** put it, that cells don't possess.
6. This isn't to say that complications around identity are fewer at a cellular level than for animals: gut microbes can be tolerated or adaptively identified by the body they inhabit at the same time outright parasites insert themselves by exploiting weaknesses in its recognition system (Pradeu 2020, ch. 3).
7. **Brooks & Samuni** argue that, as an alternative to physical territories, societies can "maintain control of social, reproductive, or even conceptual spaces." While such collectives could certainly fit among the many alternative definitions of "society," this usage fails to capture the sort of group I have in mind. "Social collectives," the phrase employed in their concluding sentence, may serve nicely instead.
8. Both kinds of social fusion can be coopted by groups such as religious sects and ethnic minorities, with the potential for rupturing a society; see section R6 and section 5 of the target article.
9. Bergman (2010) showed that limited individual recognition is likely for male geladas; female interactions are so limited, however, that Thore Bergman (personal communication, 2024) expects they likewise lack "much recognition beyond the team" (i.e., the unit to which their own unit most closely associates).

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