



Why kinship is progeneratively constrained: Extending anthropology

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Abstract

The conceptualisation of kinship and its study remain contested within anthropology. This paper draws on recent cognitive science, developmental cognitive psychology, and the philosophy of science to offer a novel argument for a view of kinship as progeneratively or reproductively constrained. I shall argue that kinship involves a form of *extended cognition* that incorporates progenerative facts, going on to show how the resulting articulation of kinship's progenerative nature can be readily expressed by an influential conception of kinds, the homeostatic property cluster view. Identifying the distinctive role that our extended cognitive access to progenerative facts plays in kinship delivers an integrative, progenerativist view that avoids standard performativist criticisms of progenerativism as being ethnocentric, epistemically naïve, and reductive.

Keywords Kinship · Performativism · Progenerative facts · Extended cognition · Natural kinds · Reductionism · Reproduction · Malagasy ethnography

1 A novel argument for a progenerative view of kinship

A constructivist direction in the study of kinship within cultural anthropology over the past fifty years has been fuelled by criticism of the long-standing idea that kinship and kin relations are, at their core, reproductive, procreative, or progenerative.¹ For

¹ I use the adjectives *progenerative*, *progeneratively-constrained*, *reproductive*, and *procreative* interchangeably here. Progenerative views of kinship have persisted within evolutionary (Chapais 2008) and

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constructivists (or performativists), there are many ways of kinmaking and only some of these are procreative (Carsten 2004; Levine 2008; Peletz 1995; Strathern 1992a).²

This paper pushes back against this direction in kinship studies by offering a new argument for progenerativism that addresses some prominent criticisms. The putative ethnocentrism of progenerative views is the strongest and historically most influential of these criticisms. This charge of ethnocentric projection is expressed most famously by David Schneider: “Kinship is like totemism, matriarchy, and the ‘matrilineal complex’. It is a non-subject. It exists in the minds of anthropologists but not in the cultures they study.” (Schneider 1972, 51; see also Schneider 1984; Wilson 2016). Marshall Sahlins (2013) has more recently argued that to think of kinship as progenerative in nature also reflects ethnographic naivety about cultural diversity in the performance of kinship.³ Underlying these criticisms, as well as others that flag implicit sexism and racism in the progenerativist tradition,⁴ is a general wariness of reductive tendencies in the history of kinship studies.

The red flags of ethnocentrism, epistemic naivety, and reductionism (let alone sexism and racialized primitivism) signal serious and real dangers to be avoided in the study of kinship.⁵ I argue that those red flags can be heeded and dangers avoided while ascribing a central place for progeneration within kinship. I do so by utilizing conceptual resources drawn from cognitive science, developmental cognitive psychology, and the philosophy of science.⁶

The capsule idea of this paper is that *sophisticated, culturally-specific kinship systems rest on extended cognitive systems that are responsive to progenerative facts*. More specifically, I defend the following argument:

linguistic (McConvell 2013) anthropology throughout the constructivist turn in kinship studies; see also Godelier (2011).

² For a sense of the current state of kinship studies, see Bamford (2019a, 2019b), Leaf and Read (2020), Read (2019), and Shapiro (2018b), as well as the post-progenerative work beyond anthropology encapsulated in the short essays in Clarke and Haraway (2018). For more on the general contrast between progenerative and performativist views of kinship, see Wilson (2022a)

³ For example, in critically discussing the appeal by anthropologists to folk theories of conception that putatively vary across cultures, Sahlins says that it “is probably better not to speak of ‘biology’ at all, folk or otherwise, since few or no peoples other than Euro-Americans understand themselves to be constructed upon—or in fundamental ways, against—some biological-corporeal substratum” (2013, 77), going on to rehearse information from a range of ethnographic reports.

⁴ Implicit sexism and racism surface as criticisms of progenerativism in several contributions to the recent *Cambridge Handbook of Kinship*. For example, Sarah Franklin says that scepticism about biology’s place in kinship coalesced early on with “critical feminist analyses of how ‘the facts of life’ are often used to justify restrictive and hierarchical gender norms” (Franklin 2019, 111). In her editorial introduction, Sandra Bamford reflects a common view of the history of the study of kinship in noting that for “many early kinship theorists, acquiring ‘accurate’ (i.e., bioscientific) knowledge of how offspring were produced signalled a critical state in the transition from ‘savagery’ to ‘civilization’” (Bamford 2019b, 10).

⁵ The presence of ethnocentrism and racialized primitivism as both flags and dangers are a reminder that the more general decolonial challenge to cultural anthropology remains only partially addressed in the discipline (Allen and Jobson 2016; Jobson 2020).

⁶ In reaching beyond anthropology in these ways, the argument here has affinities with recent work by Vukov and Lassiter, both in its general aim of clearing a new naturalistic pathway within the philosophy of anthropology (Vukov and Lassiter 2020) and more specifically in its focus on aspects of 4E contributions from the cognitive sciences to the epistemology of science (Lassiter and Vukov 2021). For an overview of 4E cognition, see Newen, Gallagher, and Bruin (2018).

1. Kinship is governed by extended cognitive processes that bind people together within and across generations.
2. These extended cognitive processes generate culturally diverse forms of kinship that, universally across cultures and over time, distinctively rely on progenerative facts and our sensitivity to those facts. Therefore,
3. Kinship is progeneratively constrained.

My defence of this argument appeals to a perceptually- and emotionally-focused view of what makes for cognitively extended, progeneratively-constrained kinship, a view of extended cognition that is more radical and controversial than at least non-philosophers may initially think. As such, my argument does not rest on claims about language and kinship. As important as kinship terminologies are for human kinship systems, these augment existing extended cognitive capacities that we bring to bear on kinship. They add complexity to an existing cognitively extended phenomenon, rather than create it.⁷

I begin with a characterization of what distinguishes kinship from other important relationship structures and the place of extended cognition in kinship's resulting staying power (Sect. 2). After defending each of the argument's premises (Sects. 3 and 4), I show how the recent conception of kinship as a homeostatic property cluster (HPC) kind allows one to succinctly re-express why kinship is progeneratively constrained in a way that avoids ethnocentrism and epistemic naivety (Sect. 5).⁸ I conclude by drawing attention to the resulting view's non-reductive and integrative credentials (Sect. 6).

2 Distinguishing kinship and kinship's staying power

Kinship is distinctive first and foremost in being the principle *intra-* and *intergenerational* binding structure in human cultures.⁹ Consider this the basic content of kinship. This content has been neglected by constructivist views that summarily characterize kinship as relatedness (Carsten 2004) or mutuality of being (Sahlins 2013), characterizations in danger of lapsing into a thin, over-inclusive functionalism about kinship.¹⁰ Kinship concerns the creation of future generations of people and their relationship to past and present generations. Other significant binding relationships,

⁷ Here I mean to pre-empt the thought that kinship involves extended cognition only because kinship terminologies, which structure human kinship systems, constitute external cognitive resources. For recent discussion of language and kinship, see the varying views of Leaf and Read (2020: ch.11), Layton (2021), Passmore et al. (2021), and Wilson (2022a).

⁸ My earlier articulation of a HPC view of kinship (Wilson 2016) left open its relationship to what I there called "bio-essentialism"; the discussion in Sect. 5 draws on the core argument of the present paper to advance this issue.

⁹ In keeping with the claim that kinship terminology provides additional layering to kinship, rather than serving as its originating source, I note that this distinctive feature of kinship is compatible with forms of kinship that sophisticate the nature of both intra- and inter-generational binding, such as those reflected in Crow-Omaha skewing, whereby maternal and paternal kin terms function differently across generations.

¹⁰ The insufficiency of Sahlins's characterization of kinship as mutuality of being in failing to distinguish kinship from other significant social relationships, such as friendship, has been widely recognized; see, for

such as friendship and those specified by employment, religious affiliation, or nationality, do not bear this same relationship to generations, however important they may be in binding people together.

“Kinship relations”, as Gillian Feeley-Harnik has recently suggested, “are where people first, last and ultimately, deal with such matters as the creation of life, gestation, birth, growth, death, decay, and transformation” (Feeley-Harnik 2019, 76). Kinship is part of the cultural world that each person’s life is naturally enmeshed in from before birth to beyond death and its generational structure is distinctive of it.

The primary place kinship occupies as an intra- and inter-generational binding structure gives kinship its staying power. Patrick McConvell has characterized kinship as “the bedrock of all human societies that we know”, noting that “all humans recognize fathers and mothers, sons and daughters, brothers and sisters, uncles and aunts, husbands and wives, grandparents, cousins, and often many more complex types of relationships in the terminologies that they use” (McConvell 2013, 1). Here McConvell takes progeneratively-characterized kinship as a kind of biological constant or universal, as do others resistant to constructivist critiques of progenerativism (e.g., Shapiro 2018b; Trautmann et al. 2011).

Kinship and kin terminologies are recurrent, pervasive, normatively loaded, and found universally across human cultures. Yet the central roles played in kinship by cognitive mechanisms and psychology more generally have sometimes been ignored or downplayed. For example, Robin Fox says that kinship groups “are the outcome of natural processes; they are as natural as limbs and digestion” and that they “do not depend for their existence on the equally natural ability to classify and name which characterizes our species” (Fox 1975, 30). Fox’s final claim here is mistaken. Like other products of sophisticated human activities anchored by our natural needs—for example, meals (nutrition), clothes (bodily protection and display), and schools (child-rearing)—kinship groups depend on abilities to recognize and classify and, in our own species, to name. As cognitive anthropologists have long recognised (D’Andrade 1995, ch.3), articulating an appropriate role for cognitive mechanisms in an account of kinship is a key part of the integrative bridge to be built between biological and sociocultural dimensions to kinship.

Unlike previous appeals to cognition that posit innate modules in building this bridge (Jones 2010; Gil-White 2001), however, my suggestion is to adopt a non-standard view of the relevant cognitive mechanisms. The fundamental cognitive mechanisms in play in kinship are not bits of intra-cranial machinery but literally extend beyond the head to incorporate the extra-cranial world. Here I apply the controversial idea of *extended cognitive processing* that originated in the philosophy of mind and cognitive science in challenges to individualistic views of computational psychology (Wilson 1994) and everyday psychological processing, such as remembering and planning (Clark and Chalmers 1998).

Extended cognition is not the platitudinous view that cognition is merely causally responsive to the physical or social environment but the more striking view that cognition itself extends beyond the boundary of the individual. Proponents of

example, Bloch (2013, 254), Brightman (2013, 260), and Feuchtwang (2013, 281–282). Much the same problem faces those who simply equate kinship and relatedness.

extended cognition hold that cognition incorporates both *internal and external cognitive resources*, whether they be physical, technological, or social in nature (Wilson and Clark 2009; Wilson 2010). The cognitive systems composed of those resources and that ultimately drive our behaviour are distributed between individual and world. For proponents of extended cognition, perception, thought, and motivation are not so much causally interactive with physical or social environments as partly constituted by them. The mind is not all in the head.¹¹

Extended cognition assumes a *non-reductive* view of the relationship between culture and the mind. This is because rather than viewing culture as a mere repository for input to or output from cognitive systems, the extended cognition paradigm takes culture to provide resources that physically constitute *culturally extended* cognitive systems. The tools and artifacts central to archaeology, as Malafouris (2013) has argued, are not simply “good to think with” but, as extended cognitive resources, are part of the machinery of thinking. The most powerful such resources lie in the realms of both what Bloch calls the transactional and transcendental social (Bloch 2008).

Extended cognitive processing is distributed between brain, body, and world and is itself interpersonal, social, and culture in nature (Wilson 2004: ch.1–2). As such, extended cognition cannot be part of a reductive psychological or biological base for social or cultural structures, such as kinship, on pain of circularity. The claim that kinship is mediated by extended cognitive processes thus plays a crucial role in specifying a non-reductive role for psychology in an account of kinship.

Recall that the two premises in my argument for progenerativism are:

1. Kinship is governed by extended cognitive processes that bind people together within and across generations.
2. These extended cognitive processes generate culturally diverse forms of kinship that, universally across cultures and over time, distinctively rely on progenerative facts and our sensitivity to those facts.

In Sect. 3, I defend (1) by elaborating on the claim that kinship involves culturally extended cognition, introducing the idea that it does so by utilizing what I call *like us detectors*. Here I explore the relationship between sociality, extended cognition, kinship, normativity, and our perception of sorts of people. In Sect. 4, I defend (2) by distinguishing progenerative facts from two other kinds of facts about kinship—*institutional* and *scientifically-mediated* facts—and by spelling out how progenerative facts remain important to the performance of kinship despite the diversity to the forms of kinship generated by culturally extended cognition. I argue that reliance on progenerative facts in our culturally extended cognitive processing has an evolutionary character. Distinguishing progenerative from institutional and scientifically-mediated facts about kinship also provides a rich framework for accommodating

¹¹ In taking *cognition itself*, and not simply the cultural transmission or communication that cognition produces, as transcending the boundary of the individual, this view is more radical than Bloch and Sperber’s (2002) appeal to public representations in their account of the mother brother’s controversy. The same is true vis-à-vis views of cognition within standard cultural evolutionary frameworks (Boyd and Richerson 1985, 2005) and within niche construction theory (Laland et al. 2000, 2003).

the well-known, cross-cultural, developmental psychological work of Astuti, Bloch, Carey and Solomon on Malagasy kinship.

3 Culturally extended cognition, sorts of people, and we-knowledge

Sociality is a ubiquitous feature of the biological world, especially the *mobile* biological world. At least three things need to be true for creatures to manifest sociality: some kind of minimal, intraspecific group living, interactions with conspecifics, and a differential sensitivity to the presence of both conspecifics and non-conspecifics. Precisely which living (and even non-living) things are either social or cognitive beings is a topic of expanding recent interest (Calvo Garzón and Keijzer 2011; Kappeler 2019). As I have argued previously (Wilson 2018, 122–126), we can see the particular forms that our sociality takes as building on three forms of cognitive sophistication that we partially share with some nonhuman animals: (a) enhanced internal cognitive processing (b) the distribution of cognitive processing between internal and external resources; and (c) the replacement of individual cognition with some kind of collective or group-level cognition.

Historically dominant individualistic views of cognition have emphasized (a). Especially relevant to (1), however, are (b) and (c). When cognition is distributed between the internal and external resources that an individual commands, it is a form of *extended cognition*. A prominent example of such distribution is the process of remembering, which often involves an individual drawing on and integrating external forms of storage (such as pictures, notes, and other evocative objects) as part of what sustains that individual's activity of remembering. Here the individual remains the subject who remembers, a subject who integratively draws together both internal and external cognitive resources in doing so (Sutton et al. 2010).

The constitutive tasks for a given cognitive activity like remembering also can be distributed *between individuals*. Here what one individual does forms part of another individual's activity of remembering. Joint remembering, where two individuals—a long-time married couple, say—remember an event or episode together, exemplifies this kind of distribution of cognitive resources (Barnier et al. 2008; Heersmink 2017). This raises the prospect that the larger group that those individuals constitute is a cognitive subject; in this example, it is *the married couple* that jointly remembers. In such cases, we have a more pointed departure from individualism: cognition is not simply extended but *collective* or *shared* (Theiner, Allen, and Goldstone 2010; Huebner 2013).

Extended and collective cognition allow us to create cultural capital serving as common cognitive resources, as when we collectively devise and deploy writing systems (Donald 1991) or when we coordinate our activity with sophisticated technologies, conventions, and heuristics to successfully navigate a large navy vessel (Hutchins 1995). We can then individually make use of such common cognitive resources in cognitively extended processing, as when we each use pen and paper to jot down notes for ourselves, or when a sonographer plots out points on a navigational chart. When our causal interaction with external cognitive resources is sufficiently sustained and robust, those resources become integrated to form an extended

cognitive system, often one that enhances our cognitive abilities (see Wilson 2010, 2014).

Whether or not nonhuman animals can make use of extended and collective cognitive systems that rely on shared intentionality (Wilson 2017), it is human animals that have made themselves masters of these cognitive trades. Traditions, rituals, ceremonies, rehearsals, and cultural symbols are amongst the cognitive resources familiar to social scientists, particularly anthropologists and archaeologists. Such external resources make for what Shore (1996, ch.13) calls *the ethnographic mind*, resources that Malfouris (2013) has more explicitly conceptualized in terms of the extended cognition paradigm.¹²

Human kinship systems provide a stock of external cognitive resources that partially constitute extended cognitive systems. These cognitive resources include kinship terms and the more elaborate systems of kinship terminologies that have been the focus of linguistic anthropologists. But on the view that I am defending, the external cognitive resource basis is broader than this and includes both linguistic and nonlinguistic resources accessed by perceptual and motivational systems, the latter of which are not essentially linguistically mediated.

Importantly, this culturally extended cognition generates normativity. As the principal binding structure in human cultures with both intra- and inter-generational dimensions, kinship displays a particular form of normativity that governs the “mutuality of being” central to it.

Normativity exists when there is a distinction between a correct, proper, or appropriate way for a process, event, or outcome to be completed, and thus an incorrect, improper or inappropriate such way (Andrews 2020). The most familiar and robust forms of normativity are the product of distinctly human practices and institutions.¹³ These presuppose a kind of shared or collective intentionality, such as the norms generated within legal systems, within codes of etiquette, and by morality. Such norms may be explicit in the form of rules or commands or may be implicit in the ways in which we interact with one another. The threefold sophistication to our cognitive processing that I began this section with—internal complexity, extended cognition, and collective intentionality—structures human sociality partly through this normativity.

Any cognitively extended normativity endows us with certain capacities—extended capacities, if you like—in negotiating social life in general. But the extended capacity especially relevant to kinship is the ability to distinguish between *sorts* of people. People sort one another in many ways: by their height and weight, their eye, hair, and skin colour, their sex and sexual behaviour, their income level and type of employment, their personality and beliefs, their tastes in recreation and entertainment, their ancestry, religion, and ethnicity, their astrological sign and year of birth, and their marital and parental status. This mixture of cross-cutting and hierarchical sorting is a ubiquitous feature of how we think of one another and ourselves (Hacking 2007).

¹² Malfouris’s work in cognitive archaeology provides one of the few explicit anthropological engagements with the extended cognition paradigm, despite the gesture toward extended cognition made by others, such as by Donald, Hutchins, and Shore in the work cited in this and the previous paragraph.

¹³ That said, I also think that normativity arises in and through nonhuman and human cognition; it is not solely a feature of our own species’ activity (Vincent, Ring, and Andrews 2018).

Amongst the most important ways in which we use this capacity to sort people is in determining whether other people are *like us*. The study of this capacity is manifest in social, personality, and developmental psychology. Our people-sorting capacity plays out in social psychology through in-group formation and bias (Brewer 2007) and in personality psychology via the need to belong as a fundamental human motivation (Baumeister and Leary 1995). A body of evidence from developmental psychology suggests that our sensitivities here emerge early in life (Kelly et al. 2005; Kinzler et al. 2007; Mahajan and Wynn 2012). These sensitivities perhaps build on what Meltzoff (2007) calls “like me” detectors used in infant imitation (Meltzoff and Moore 1977; see Oostenbroek et al. 2016 for a critique). But they are richer, requiring the ascription of bodily, perceptual, cognitive, and relational states to oneself and others.

This sorting of human beings often has significant normative uptake, generating a distinctive type of knowledge that departs from typical third-person knowledge. It is knowledge about how others relate to oneself, first-person plural knowledge. *First-person* because it is knowledge *of one’s self*; *plural* because it is not just me-knowledge but *we-knowledge*, knowledge that I have of myself as a part of some larger *us*. This we-knowledge is group focused and so primes us to feel that we co-belong.

Kinship is one domain in which such we-knowledge is paramount and the *feelings* of likeness and co-belonging especially pronounced. Progenerativists and their performativist critics agree that kinship constitutes an important way in which people identify others as being like them. In English, the etymology of “kin”, “kind”, and “kindred” entwines the concepts of relatedness and likeness, as do common idioms and colloquialism (Like father, like son; A chip off the old block; The seed never falls far from the tree). One’s kin both feel like or similar to oneself in an important respect, as well as being of one’s own kind, as both Sahllins (2013) and Strathern (2020, ch.1) note.

These types of idioms and usages, and more generally the connection between kinship and felt likeness, are cross-culturally robust. This connection between kinship and felt likeness permeates much of the ethnographic diversity that Sahllins reviews in documenting support for his view of kinship as culture, not biology. Sharing the same birthday for certain Inuit groups in Greenland (Sahllins 2013, 9) or the same house for the Nyakyusa in the African Rift Valley (Sahllins 2013, 22) can constitute the grounds for the mutuality of being characteristic of kinship. This connection also holds of examples more standardly cited by performativists, such as the Langkawi in Malaysia and the Zumbagua in highland Ecuador (Carsten 2004, 137–140), where house and food sharing constitute the making of kinship. What is co-partaken is a similarity in trajectory, a life experience taken to be of the same kind. Cross-culturally, those who are conceptualized as kin share something important, a sense of common belonging.¹⁴

Friends, co-workers, political associates, professional colleagues, and those with whom one shares strong interests and core values can also be felt to be like us, and so are amongst those with whom one co-participates in a sense of mutual being. Recall

¹⁴ This is not to say that similarity or likeness is either necessary or sufficient for kinship. The realist and anti-essentialist commitments of the HPC view of kinship recounted in Sect. 5 are incompatible with such claims about the relationship between similarity and kinship.

that kinship relations are distinguished from all of these, however, in that they create a sense of binding and belonging that non-incidentally links together individuals within and across generations. The fundamentality of kinship makes it no surprise that when other forms of “mutuality of being” gain a grip on our identities—as in ethnic, racialized, nationalistic, and even globalist identities—they often do so by invoking the language of kinship.

4 Progenerative constraints and the performance of kinship

So much for (1) and the claim that kinship employs a cultural form of extended cognition that draws on extended mechanisms of like us detection and binding. If such mechanisms do underwrite the culturally extended cognition that governs kinship, progenerativism about kinship follows if progenerative properties and relations have a distinctive role in kinship, so conceived. (2) claims that they do because there is an asymmetrical dependence between progeneration and other features that allow kinship to be made or performed through culturally extended cognition.

Bernard Chapais’s (2008, 2014, 2016) identification of precursor cognitive abilities for kin discrimination in nonhuman primates is relevant to defending this claim. Chapais has argued that nonhuman primates have homologues to many of the core components of what he calls the *deep structure* to human kinship systems that require the cognitive capacity to recognize and distinguish kin, particularly uterine kin. Chapais himself does not draw on the extended cognition paradigm in articulating the nature of these cognitive capacities in nonhuman primates. But given their perceptual and low-level conceptual nature, it is plausible that the like us detectors that, I have claimed, are part of the extended cognitive systems driving human kinship are shared by nonhuman primates. Whatever we say of nonhuman primate kinship itself,¹⁵ it should be less controversial that the external resources that humans have integrated with their in-the-head capacities—language, conventions, rules, practices—that make human kinship distinctive from its primate precursors are readily conceptualized as constituents of extended cognitive systems.

But why think that such extended cognitive systems in our own species support a *progenerative* view of kinship? In discussing the significance of the claim that biological motherhood is sometimes denied, overridden, or ignored in the construction of kinship, Chapais notes that “motherhood creates genealogical kinship. Whatever the ideology of procreation, the biological facts of pregnancy, parturition, lactation, and maternal care translate into matrifilial links.” (Chapais 2008, 55). The biological facts that Chapais intimates but doesn’t specify are what I have been calling progenerative facts, and the matrifilial links that our sensitivity to those facts generates are a function of extended cognitive machinery centred on like us detectors. Progenerative facts include the following:

¹⁵ Views about the plausibility of kinship in nonhuman primates turn largely on corresponding views of the role of sophisticated cognitive capacities, language, and cultural norms in kinship; see El Guindi (2020, ch.1–2) and Leaf and Read (2020: ch.4) for recent sceptical views of nonhuman primate kinship.

- Females are pregnant prior to giving birth.
- The newly-born and young are not self-sufficient and are relatively vulnerable and so require nurturance and protection for an extended period of time.
- Those reproduced develop to become adults and often themselves reproduce.
- Adults, those who reproduced them, and those whom they have reproduced are sometimes alive at the same time.
- A female can give birth to multiple individuals over time.

Our sensitivity to such progenerative facts establishes the intra- and intergenerational filiation that distinguishes kinship, ultimately endowing us with basic concepts of (respectively) pregnancy, care-provision, development, generations, and siblings. It does so in concert with the cognitive capacity to recognize both the relevant individual kin and the corresponding progenerative relations between them.

Important for the argument here is that these facts are suitably low-level to be universally known by members of every human culture. (This feature of progenerative facts also makes plausible the view that they are structuring precursors to human kinship in our primate ancestors.) Their constancy in an individual's sociocultural environment allows them to function as external cognitive resources for that individual. For this reason, they can be integrated with internal cognitive resources to form the cognitively extended systems that govern human kinship.

Progenerative facts contrast in these respects with two other sorts of fact about kinship. The first of these are *scientifically-mediated facts* about reproduction, birth, and nurturance, such as the following:

- Conception occurs when one or more ova are fertilized by one or more sperm, producing one or more zygotes.
- The ovum and sperm are the biological substances contributed intergenerationally to form new individuals.
- Genes, which are made up of many base pairs of DNA, make a significant causal contribution to many observable traits that are inherited.
- Mutations in genes can lead to different phenotypic characters in offspring.
- Deficiencies or excesses in certain proteins can significantly alter a child's developmental trajectory.

The biological and medical sciences discover such facts. Unlike progenerative facts, these facts are not generally known and accepted, even if the continuities between folk and scientific knowledge in "Western" cultures makes them more generally known there than in many other cultures. For this reason, the extended forms of cognition structured by scientifically-mediated facts are culturally specific and gain significantly more limited purchase on the *like us* mechanisms that govern kinship.

Progenerative facts about kinship also contrast, in these respects, with *institutional facts* about kinship. These concern social regularities and norms about kinship, including the following:

- Upon death, property is typically inherited by those classified as kin.

- Those identified as kin, especially parents, have moral and legal obligations to nurture and care for their children.
- Procreative sex and sex more generally are regulated by one or another institution of marriage.
- Individuals whose adoption creates or augments a family acquire many (if not all) of the rights and responsibilities of biological relatives.
- Families are recognized in various ways by larger-scale social institutions, including clans and states.

Such institutional facts about kinship are often important to particular kinship practices but lack the universality and cognitive shallowness that characterize progenerative facts. To gain the cognitive purchase that progenerative facts have they require further specification within particular cultural circumstances. Most importantly, that specification *presupposes* cognitively accessible progenerative facts. Ideologies of procreation within a specific culture construct how members of that culture think of kin. But this construction involves re-shaping or re-purposing extended cognitive machinery antecedently geared to respond to progenerative facts.

So (2) rests on the following conception of kinship. Progenerative facts generate basic kinship relations between mothers, fathers, and children that, in turn, are readily recognizable across all human cultures. As Chapais has argued (2008, 54–57), such facts (or perhaps a subset of them) underpin nonhuman precursors to human kinship via their uterine-based recognition throughout the *Primate* order consisting of approximately 250 species. Sophistications to this recognitionally-based, extended cognitive kinship system in our own species ultimately generate both scientifically-mediated facts and institutional facts about kinship. Scientifically-mediated facts have an uneven cultural distribution and have limited cognitive purchase on individuals, even within the cultures in which they are accepted and accorded significance. Institutional facts vary cross-culturally and require significantly more complicated cognitive capacities, such as those created by language and those required for many forms of collective intentionality. Both kinds of fact about kinship are anchored by a concept of kinship constrained by progenerative facts. For this reason, other facts about kinship, as important as they are for how individuals within specific cultural contexts perform kinship, are distinctively reliant on progenerative facts (see also Holy 1996, 167).

To see how varied ideologies of procreation are accommodated on this threefold conception of progenerative, scientifically-mediated, and institutional facts about kinship, consider a phenomenon such as *partible paternity*, which allows for multiple biological fathers (Walker, Flinn, and Hill 2010), alongside partible maternity. Beliefs about and practices incorporating partible paternity correspond to *institutional facts*, turning as they do on complex cognitive capacities deployed in culturally-specific settings. Given that biological paternity has a restricted visible signature, there are few readily-detectable progenerative facts that partible paternity contradicts. Biological maternity, by contrast, has multiple visible signatures, such as pregnancy and parturition, that biological fatherhood lacks. The corresponding progenerative facts, such as the first listed above—females are pregnant prior to giving birth—constrain the development of beliefs and practices that incorporate partible maternity. That is

why truly partible maternity has historically been much rarer across cultures. Having been facilitated primarily by relatively recent technologies of surrogacy, facts about partible maternity are perhaps best thought of as *scientifically-mediated* facts.

One might reasonably wonder whether a progenerative fact, such as that females are pregnant prior to giving birth, can be undermined by related technologies that create artificial wombs or make possible trans maternity. I think that the answer to this question is clearly “yes”. Supposing so, in any case, serves to underscore that the role that progenerative facts play in kinship does not imply that they cannot change due to technological or cultural shifts over time.

I have intimated that the reliance of both scientifically-mediated and institutional facts about kinship on progenerative facts is at least partially *evolutionary* in nature. Cognitive access to progenerative facts is a part of the deep history of kinship shared by human and nonhuman primates and is the bedrock on which other facts about human kinship rest. One might also ask whether this reliance is also *developmental*. That is, do children scaffold their knowledge of the larger set of facts about kinship on that of progenerative facts? Extensive collaborative research on Madagascar between developmental psychologists and anthropologists provides a rich context for answering this question, even if it does not (yet?) produce a definitive answer to it.

As Astuti, Solomon, and Carey (2004, 19) note, “Madagascar has been recognized by anthropologists as one of those places where traditional procreational models of kinship do not work because people emphasize the importance of post-natal processes in determining kinship and personhood over the facts of procreation”. Building on Bloch’s (1993) ethnographic research with the Zamifinary on birth and kinship and using Solomon’s (1996) paradigm for probing implicit beliefs about family resemblance, Bloch, Solomon, and Carey (2001) explored both Zamifinary children’s and adult’s beliefs about the inheritance of bodily and psychological characteristics. They reported two striking main findings.

First, Zamifinary adults appear to share the view that bodily (but not psychological) traits *are* inherited from a birth parent. Second, Zamifinary children acquire this view of biological inheritance only during their teenage years, significantly later than the ages at which children in North America do. The first finding suggests—against those who think that the distinction between “biological” and “social” facts about kinship is merely projected by anthropologists to all cultures—that a theory of biological inheritance is a mechanism driving inferential reasoning, even in a culture whose ethnographies suggest a limited role for such a theory.¹⁶ The second finding suggests—against those who view such biological knowledge as a prior, innate constraint on kinship—that views about biological inheritance are acquired through a long process of cultural immersion.

In their monographic treatment of Malagasy views, Astuti, Solomon, and Carey (Astuti et al. 2004) replicated these results with the Vezo on Madagascar and extensively discussed both their location and significance (see also Astuti 2007, 2009). In

¹⁶ As Astuti notes elsewhere, “Vezo adults take for granted the constraints imposed on human relations by the biological facts of reproduction. As ethnographers, we witness their efforts to transcend these constraints, and we should strive to represent them for what they are: efforts to work against the ties of biological kinship, to attenuate the difference between birth and nurture, to erase the ‘signs’ that only birth parents can leave on their children.” (2007, 186).

their concluding comments, after providing a careful statement of the significance of the first finding, they offered an explanation for why Vezo social discourse avoids “drawing attention to the exclusivity of the biological relations between birth parents and their children” (117). Here Astuti, Solomon, and Carey appeal to the instrumental value this avoidance has in creating community cohesion. But it is the second finding that might be thought more directly relevant for the developmental reading of the distinctive reliance view I am defending here. That finding suggests that the gradual and culturally variable acquisition of knowledge of progenerative facts by children makes it unlikely that those facts play a distinctive role in children’s developmental trajectory.

To see this, consider the putative progenerative fact that children share their birth parents’ bodily traits. The studies suggest that Malagasy children reject this claim in favour of the view that children share both the bodily and psychological traits of those adults who raise them (“adopted parents”). Since children come to acquire the contrary adult view, people in Malagasy cultures seem to begin without a theory of biological inheritance and later acquire it. If so, knowledge of the progenerative facts cannot be a developmental scaffold for later kinship knowledge.

This result may well undermine a developmental reading of the distinctive reliance thesis that I have been defending. But consider three other possibilities. First, Malagasy children’s task performance here may simply be an adaptation of the adult view that over-generalizes from psychological to all traits in the human case. Second, knowledge of other progenerative facts is compatible with lacking a theory of biological inheritance to explain within-family resemblance. That some such knowledge is present early on is suggested by the fact that Malagasy children as young as six recognize that animal offspring share the species kind of their birth parents (Astuti et al. 2004, 90–102). Third, children sharing their birth parents’ bodily traits may not be a progenerative fact at all. What is and isn’t a progenerative fact is not an a priori matter, as already indicated by the cases of partible paternity and partible maternity. Theories of inheritance may instead turn on scientifically-mediated or institutional facts about kinship.

5 Progenerative kinship as a homeostatic property cluster

So perhaps both evolutionary and developmental readings of the distinctive reliance thesis that I have been articulating can be defended. In any case, the progenerative view of kinship and the argument I have given for it also can be summarily expressed in terms of the homeostatic property cluster (HPC) view of natural kinds due to Richard Boyd (Boyd 1999) and diversely developed and explored by a number of others (Griffiths 1999; Khalidi 2013). Here I concentrate on two related tasks: showing how kinship’s standing as an HPC kind further articulates the claim that kinship is progeneratively constrained, and subsequently consolidating the view that the HPC conception of kinship supports progenerativism.¹⁷

¹⁷ I leave for another occasion the task of locating this conception of kinship as an HPC kind among recent innovations in the literature on kinds and classification in the human sciences (Franklin-Hall 2015;

The HPC conception of kinds has garnered attention amongst philosophers for its promise for application to a much messier and more complicated world than that typically portrayed in traditional accounts of natural kinds. Unlike what has been called traditional essentialist views of natural kinds (Wilson, Barker, and Brigandt 2007), on the HPC view there are no individual properties strictly necessary for membership in a given kind, with kinds instead being structured by clusters of properties that are stabilized by underlying mechanisms and robust relations. Biological and social features of kinship cluster in just this way, with cultural practices mediating some of the requisite robust relations.

Since the HPC view has been developed as an alternative to traditional essentialism about natural kinds, a HPC approach to kinship also departs from this kind of essentialism about kinship (Wilson 2016, 576–78).¹⁸ Viewing kinship as appropriately modelled as an HPC kind, however, is compatible with but doesn't entail any form of progenerativism about kinship; the HPC view is neutral here. What more is needed to establish a progenerative view of kinship within the HPC framework is to show how the requisite homeostatic clustering reflects the kind of distinctive reliance that I have argued other features of kinship have on progenerative facts.

The arguments of Sects. 3 and 4 make establishing this additional claim relatively straightforward. The progenerative facts that serve as constraints on kinship are not a random assortment of facts relating to kinship but hold together because of underlying biological mechanisms governing progeneration. That is, they form a homeostatic (or perhaps better, *homeodynamic*) cluster unified by mechanisms governing pregnancy, parturition, organismic development, and human life spans. And they generate a basic conception of kinship because they are readily detected by the like-us mechanisms that constitute part of the extended cognitive machinery we use in generating the sense of intra- and intergenerational belonging that distinguishes kinship from other social relationships. The cognitive accessibility of the facts they detect make it likely that these like us mechanisms have homologous precursors in nonhuman primates. It follows that their operation is not mediated by putatively uniquely human traits, such as language or culture. Both scientifically-mediated facts about kinship and institutional facts about kinship, each of which enriches this basic concept of kinship, differ in these respects.

Scientifically-mediated facts about kinship cluster and do so in part by relying on more elaborate forms of these mechanisms. Yet they lack the universal cognitive pull of progenerative facts, even within the cultures in which they are more widely known. Their sophistication also requires language and other cultural forms of external mediation for them to gain cognitive purchase on us.

Institutional facts about kinship cluster together with progenerative facts to generate culturally diverse performances of kinship. That clustering is underwritten by cultural practices and conventions, which themselves can vary significantly across

Ludwig 2018).

¹⁸ The application of the HPC view of natural kinds to kinship in Wilson (2016) identifies the resulting view as a form of non-reductive realism about kinship, and so as distinct from both the earlier polythetic approach of Needham (1975) and more general views of natural kinds that generated pheneticism and numerical taxonomy about species in the philosophy of biology. For recent discussion of the HPC view and species, see Kendig (2022) and Wilson (2022b).

cultures. But without progenerative facts, there would be no such culturally-mediated clusters. Thus, kinship has an internal homeostatic property cluster structure that mirrors the kind of distinctive reliance that, I have argued, supports a progenerative view of kinship.

To illustrate how this adaptation of the HPC view applies in a concrete case, consider a practice of postnatal kinmaking often touted by performativists as showing the limitations of progenerativism about kinship, that of adoption, which has been reconsidered in recent discussions. Berman (2014) has highlighted how facts about the physicality and materiality of pregnancy and childbirth serve as what she calls *interactional constraints* on practices of adoption or child circulation in the Marshall Islands. Shapiro (2016, 221–228) has identified ways in which those practices occur against a backdrop of progenerative kinship in three cultural locations often cited in constructivist accounts of kinship: the Malay peninsula, the Hawaiian Islands, and amongst the Belcher Islanders in northeastern Canada. People in all of these cultures know progenerative facts and their performances of kinship rely on how this knowledge infuses the institutional facts particular to each culture. The co-presence of progenerative facts in these adoptive practices undermines stronger claims of performativists that kinship is sometimes biologically innocent, floating free of any claims about biology at all (see also Shapiro 2015; Wilson 2022a).

More pertinently here, the cultural universality and cognitive accessibility of progenerative facts affords them an asymmetrical constraining role in how adoption is performed. Scientifically-mediated and institutional facts governing practices or performances of kinship vary across cultures, but the cluster of progenerative facts remains a constant constraint. Thus, the HPC view of kinship integrates biological and cultural dimensions to kinship practices such as adoption within an overarching progenerative framework.

My hypothesis is that this framework can be utilized to explain the range of examples that performativists have produced, including those involving the sharing of birthdays, houses, and food introduced in Sect. 3 in discussing the views of Carsten and Sahlins. Those explanations, and so an ultimate defence of that hypothesis, rest on the kind of attentive re-examination of ethnographies that Berman (2014) and Shapiro (2016) present for the case of adoption. A defence of that hypothesis remains a task for another occasion.

6 Progeneratively-constrained kinship: Integration without reduction

This paper offers a new argument for an old view in anthropology: progenerativism about kinship. Sophisticated, culturally specific kinship systems rest on the extended cognitive systems governing intra- and intergenerational belonging, systems responsive to kinship structures anchored in progenerative facts.

To support this progenerative view of kinship I have reached beyond anthropology in a number of ways, leaning on the non-reductive credentials of recent philosophical views of kinds and cognition in each of Sects. 3–5. In Sect. 5 I appealed to a relatively recent innovation in thinking about natural, social, and human kinds in

the philosophy of science, the homeostatic property cluster view. The premises in the core argument in the paper in Sects. 3 and 4 draw from psychology and the cognitive sciences the idea of culturally extended cognition and like us mechanisms sensitive to progenerative facts. I have postulated that kinship derives its distinctiveness and staying power in part from non-linguistic, culturally extended cognition.

On the view I have articulated, progenerative facts about kinship possess a pair of properties that allow them to play a special role in the concept of kinship, a role played neither by the institutional facts central to performativist views nor by more scientifically-mediated facts. Progenerative facts are both part of pre-institutional human sociality (unlike institutional facts) and have a high level of epistemic accessibility. As a result, they are largely shared and capable of generating concepts with everyday cognitive pull (unlike scientifically-mediated facts).

Kinship anchored in such facts represents a form of progenerativism. Euro-American conceptions of kinship are progenerative in much the way that other conceptions of kinship are progenerative. It is just that they are shaped by an additional layer of biological knowledge generated by bioscience and biotechnology, knowledge that plays a central role in reflections on kinship and new reproductive technologies (Strathern 1992b; Andreassen 2018).

I began by noting that the idea that kinship and kin relations are, at their core, progenerative, reproductive, or procreative has raised the red flags of ethnocentrism, epistemic naivety, and reductionism amongst anthropologists who have taken kinship in a constructivist or performativist direction. This paper has provided conceptual resources for moving beyond these negative evaluations of progenerative views of kinship. The kind of knowledge of progenerative facts generated by extended cognitive processing that I have identified is not culturally specific, and one of the key epistemic innovations of the homeostatic property cluster view of kinds is its rejection of traditional essentialism. Moreover, the conceptualisation of kinship as involving extended cognitive processing undermines the basis for viewing progenerative views as reductive in their appeal to psychology and biology. These core features of the resulting integrative conception of kinship thus provide little on which to hang standard criticisms of progenerativism. Kinship can be progenerative without tears.

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