INTRODUCTION
Measuring Kinship, Negotiating Belonging

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Abstract: Widespread procedures to measure what is taken to be kinship condition negotiations of various forms of belonging (family, ethnicity, nation, race, and even humanity). Kinship measurements require indicators, evidence, and persuasive display to become institutionalized. This introduction shows these measurements’ generative force, which enables their translation into differentiated access to resources. Kinship measurements pull together different and sometimes contrasting ideas, practices, and materialities. Different measurements can add up, mutually reinforcing each other, and reach thresholds for inclusion or exclusion. Yet most often they remain contested, produce gradual results, and do not achieve closure. Grouping them together as assessments of closeness or similarity, we explore the productivity of kinship measurements in diverse settings, such as medicine, bureaucracy, and ritual, to demonstrate how they shape inequalities and marginalizations.

Keywords: belonging, closeness, indicators, inequality, kinship, measurement, relatedness, similarity, thresholds

While questions about what kinship is are often debated, the procedures that measure kinship have received less systematic attention. A focus on measuring kinship in relation to negotiations of belonging reveals its generative and structuring force. Different bodies of literature have touched on several aspects of these processes. Most explicitly, work in science and technology studies has focused on biomedical measurements of kinship as genetic similarity that are intended to assess health risks and diagnose diseases. These demonstrate the social embeddedness of technologies that often reproduce racial categorization (Featherstone et al. 2006; Finkler 2001; Latimer 2013; Rose 2007). Exploring reproductive technologies and adoptions, kinship studies have hinted at
measurements when documenting how different materialities, substances, and performances of lived closeness produce families (Carsten 2004; Goldfarb 2016; Howell and Marre 2006; Kahn 2000). Legal anthropology and political anthropology have also pointed to kinship measurements in court proceedings and police raids, which rely on various procedures such as interviews and legal documentation, as well as DNA sampling (D’Aoust 2018; Friedman 2010; Heinemann and Lemke 2012). Finally, economic anthropologists have recently (re)discovered how kinship enters into calculations in the realm of finance that depend on evidence of closeness (Kar 2017). These discussions have often been isolated, leaving the general importance of kinship measurements undertheorized.

Drawing the fragmented insights together, we trace how various substances, traits, and practices are turned into indicators of kinship, how measurement units are created, and how results are made effective in negotiating belonging. The breadth and depth of the evidence from Africa, Asia, Europe, and North America collected in this issue attest to the political and economic significance of kinship measurements. Having become naturalized and therefore invisible in institutional contexts, kinship measurements reproduce and structure pervasive inequalities.

Our argument proceeds in two steps. First, we discuss ways in which different ideas about what constitutes kinship translate into indicators. Inspired by Marilyn Strathern (2020), we differentiate between measurements directed at detecting closeness or distance and those aimed at identifying (dis)similarity. Measuring procedures entail quantifications, calculations, estimations, or comparisons of disparate indicators, such as names, genealogical distance, blood types, genes, value of gifts, and frequency of contact. The success of specific measurements requires persuasive display for their institutionalization. Our second step is to underline the productivity of kinship measurements in negotiations of belonging, which structure access to resources. In science, bureaucracy, and ritual, various measurements group people not only as families but also into clans, nations, or races. Although aiming to achieve closure, decisions about belonging usually remain contested through alternative or additional measurements of kinship. With numerous actors being involved in evaluating the legitimacy of measurements, this can lead to new cycles of negotiations. Reaching thresholds of ‘sufficient’ kinship can result in inclusion for some but also in the exclusion or marginalization of others.

Productive Measurements: Creating and Challenging Kinship

Kinship does not precede its measurement. Recent literature has shown diverse ‘signs of relatedness’ to be important in the processes of establishing kinship and that, in this sense, kinship is always ‘assisted’—not just when it is created.
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through the use of reproductive technologies (Goldfarb 2016: 51). Taking the critique of simplistic dichotomies between formal and informal, money and love, hard and soft evidence, substance and practice one step further, we suggest that measurements make ideas about kinship productive when various people, ideas, and things are brought in or out of alignment through certain procedures. Tracking investment in various technologies that legitimize kinship by conferring matter of factness, we argue that measurements occupy the interstices where different, even seemingly incommensurable understandings meet.¹ Putting these procedures at the center brings to light how various measuring practices create, reify, or challenge kinship.

Across the world, different ways of measuring exist (Echterhölter 2017; Nelson 2015; Verran 2001). Bringing this diversity to kinship, we propose to understand measurements broadly as the process of discovering and assessing relational magnitude, quantity, depth, or quality. This move allows us to explore their naturalization, that is, how kinship measurements become socially embedded so that their “power appears natural, inevitable, even god-given” (Yanagisako and Delaney 1995: 1). We are interested in several layers of this process. First, we explore how multiple characteristics are made to count as indicators of kinship.² These then become institutionalized in varied practices of generating evidence that include gathering documents, reconstructing family histories, drawing kinship charts, recording offerings at rituals, sampling DNA, conducting interrogations, searching homes, and mining communication data. These procedures enable and legitimize not only counting genealogical degrees and quantifying amounts of shared substances, such as genes and money, but also estimating closeness in practices of living together, commensality, and care. Grouping these processes around principles of closeness and similarity sheds light on the materiality and dynamics of different kinship measurements.

**Measuring Kinship as Closeness**

As Strathern (2020) argues, relations—if imagined as connections between persons—draw on ideas of proximity and distance. Measurements of kinship thus can involve various yardsticks to establish ‘appropriate’ closeness. Even if there is agreement about the indicator, distance can be measured in different ways. Results will differ depending on how measurement units, such as degrees of genealogical closeness, are defined, equated, or added up. For example, the Roman law method counted up from a person A to the first common ancestor with a person B and down from there to B again. Thus, the children of siblings were fourth-degree kin. In the eleventh century, the Italian monk Peter Damian argued for counting the number of generations that separated A and B from their closest common ancestor, making the children of siblings second-degree kin (Teuscher 2022). This idea seemed highly counter-intuitive at the
time but is widespread today, showing not only that genealogical closeness or distance is not self-evident, even if kinship is understood as descent, but also that it changes over time.

Measurements of kinship as closeness can involve other indicators as well. As Jeanette Edwards and Marilyn Strathern (2000: 160) show in the case of ‘Alltowners’ in northern England, those who describe themselves as ‘close’ do not invariably talk about genealogical closeness:

The social relationship between a woman and her mother’s mother may be ‘closer’ than her relationship with her mother. Spatial proximity may map onto emotional proximity so that families are regarded as ‘close’ because they live near to each other and members interact frequently. Or ‘closeness’ may evoke the quality of affective ties: mutual support and the ability to confide in, depend upon, and trust.

Such estimations of closeness as kinship indicated by sharing space, care, and frequency of contact go beyond individual understandings of kinship. State, legal, and bureaucratic actors use similar indicators, for example, when judging conjugal unions. In assessing the ‘proper’ levels of affect, shared biographical memories and household items are taken as indicators during immigration interviews (Friedman 2010) and police raids (D’Aoust 2018). John Borneman (1992: 300) describes how West German police conducting home searches counted various ‘things’, supporting the idea that a marital relation is characterized by everyday commensality in a shared household:

Of most interest to them were the private rooms, where the nature of intimate life is inscribed in such easily observable banalities as table settings in the kitchen, bed size and underwear in the bedroom, number of toothbrushes or types of razors in the bathroom, pictures of the married couple and their friends and parents in the living room. These control police looked for evidence of the eheliche Gemeinschaft [marital partnership].

Here, physical objects functioned as indicators for measuring closeness in marriages between citizens of the Federal Republic of Germany and the German Democratic Republic, adding up to approach a threshold in which state belonging was at stake.

Closeness can also be estimated by the financial resources invested in kinship (Zelizer 2005). We can see the productivity of such indicators in the work of police officers in the UK, who evaluate marriages as ‘true’ or ‘sham’ by estimating the cost of wedding attire (D’Aoust 2018). Sharing money can also become an indicator of emotional closeness despite physical distance in transnational families (Coe 2011). Ina Zharkevich (2019) describes a court case in Nepal in which a mother-in-law filed a case against her daughter-in-law for not sharing the remittances sent by the husband from abroad. Diagnosing a shift in the boundaries of kinship from the extended to the nuclear family, Zharkevich
argues that sharing a household, food, and work in this case was not enough “for creating enduring bonds or relatedness or constituting a family” (ibid.: 890); rather, money became a substance of kinship. The use of amounts of money as a yardstick of ‘appropriate’ closeness can be observed in court proceedings, but also in rituals. As Christof Lammer witnessed during burial ceremonies in rural central China, the amount of money given is not only publicly recorded, but also discussed as an indicator of closer or more distant kinship.

During a wedding ceremony of Turkish-speaking immigrants from Macedonia and Turkey in Switzerland, Tatjana Thelen observed how all guests stood in line to hand gifts to either the groom or the bride. They expressed their closeness to one or the other in two different ways. While guests with migrant backgrounds mostly stuck banknotes of various value to the pair’s clothing, other guests offered gifts embodying individual efforts, such as homemade handicrafts or personally selected items. This situation allows for contrasting measurements: the low monetary value of personalized gifts may be taken to indicate authenticity and proximity, but so can larger amounts of money. Rosalie Stolz (this issue) describes how Khmu villagers in northern Laos talked about offerings in rituals above all in terms of quantity. These evaluations attested to relations between different houses and the positions of close wife-givers as well as more distant relatives. Debates centered around the sacrifice of a pig, similar to what Zharkevich (2019: 890) reports of the court case in Nepal where the daughter-in-law accused her mother-in-law of not having “cut the pig” for the wife-givers, using this as evidence of a lack of closeness. In the ritual in Laos, described by Stolz (this issue), the mediators carefully negotiated the value of the pig for the offering, while the elders insisted that the right amount of each part of the animal be offered. Both measurements were intended to ensure that the spirits accepted a ‘fatherless child’s’ belonging to its mother’s house. The importance given to quantities implies that a measuring by spirits is expected, too. If the threshold is not reached, they may decide to let a child die. In both cases, the pig becomes the yardstick of appropriate closeness, thereby defining the boundaries of kinship.

Measuring kinship as lived closeness also takes place in the market. As Sohini Kar (2017: 303) describes, microfinance institutions (MFIs) in India demand a ‘joint photograph’ of the borrower and her guarantor (a male relative) or conduct ‘house verifications’ to evaluate kinship: “As microfinance loans are normalized in the urban poor neighbourhoods of Kolkata, they have brought kinship relations under the gaze of financial institutions … [T]hey call upon both borrowers and guarantors to continuously reflect upon and provide signs of this relationship as it is lived for MFIs to assess.” Comparative to the police work noted above, these practices are efforts to measure kinship as a basis to decide about the quality of bonds as ‘risky’ or ‘reliable’. Here, they not only prove productive for strengthening or dissolving kinship, but also feed into
gendered inequality since a male guarantor is needed. Similarly, Irene Moretti (this issue) suggests that settlements of insurance claims for compensation of survivors of traffic accidents in Italy are based on diverse practices of measuring kinship that build on and at the same time reproduce gendered inequalities. Despite neoliberal reforms (Muehlebach 2012), welfare operates on the basis of conservative family ideologies that create communities of mutual obligation through kinship measurements. Insurers, victims, and their lawyers seek to translate relational suffering into monetary value. Their measurements rely partly on legal documents (marriage, descent, adoption certificates), but also on estimating emotional closeness through various indicators, such as time spent together, spatial proximity, and frequency of contact. Measured closeness then informs calculations of the monetary value of relational suffering.

As in Nepal and Laos, these measurements contract the boundaries of kinship. However, measurements can also expand kinship, as Liviu Chelcea (2016, this issue) describes for Romania. He uses the term ‘boundary kin’ to show how, during post-socialist restitution, relatives are considered as either near or distant. Lawyers, tenants, and inheritors alike have extended kinship measurements into the past. Both sides rely on descent but weigh genealogical distance and lived closeness differently in relation to ownership of housing. While inheritors assemble documentary evidence to enable the assessment of distant genealogical links, tenants challenge the legitimacy of inheritance by demanding additional measurements of past lived closeness. For instance, one tenant questioned the closeness between a grandfather and his grandchild by pointing to the absence of shared knowledge and cohabitation.

In these examples, we see the first clues of how measurements of kinship are also bound up with class, gender, and wealth as they feed into access to economic resources, a topic to which we will return in the second part. In the following section we turn first to measuring kinship as similarity.

**Measuring Kinship as Similarity**

Like closeness, similarity is often taken as an expression of kinship (Strathern 2020). Resemblances, whether in physiognomy, character, or behavior, have long occupied human imagination. Various bodily traits have thus been viewed as indicators to measure kinship, such as the shapes of ears and noses in pre-Islamic Arab societies, Ancient Greece, and China (Milanich 2019: 11–12). Such measurements of shared characteristics do not presuppose an idea of substance transmission. Staffan Müller-Wille and Hans-Jörg Rheinberger (2007) argue that in the early modern period similarities were attributed to singular events. For example, physiological appearance and character could be shaped by an event during conception, such as ringing a bell. Recent biometric measuring technologies and underlying notions of genetic similarity as kinship have
evolved out of such ideas and practices, retaining some aspects but transform-
ing others and adding new ones.

Despite claims of accuracy and precision, even the probabilities (e.g., of
paternity) and percentages (e.g., of ethnic belonging) calculated when measur-
ing kinship as genetic similarity appear less secure when one considers the
“intense struggle about how the quantification should be performed” (Porter
2012: 596). Specifically, if individual samples come to be seen as representative
of discrete groups or populations, such as ‘African’ or ‘European’, the seemingly
‘hard’ scientific measurements of genetic similarity bear traces of ideas about
kinship formed in nineteenth-century anthropology around ethnic groups being
constituted by shared language, culture, territory, and blood (Braun and Ham-
monds 2012). Even if a person’s DNA is not explicitly analyzed in terms of race
or population, measurements of kinship as genetic similarity are not neutral
tools and may have racializing effects (Tyler 2021).³ Katharina Schramm (this
issue) unpacks the notion of ‘genomic archive’, which is supposed to prove
the unity of the post-apartheid South African nation by demonstrating that its
underlying institutionalized practices of sampling, comparing, classifying, and
interpreting genomic data are implicated in the more recent history of apartheid
and the racialized subjectivities that it helped to shape.

Kinship as similarity is not only measured through comparing bodily sub-
stances. For instance, the introduction of patronyms enabled the state to iden-
tify ‘proper’ heirs of private property and avoid ‘improper’ wives for marriages
(Scott 1998: 64–71; Scott et al. 2002).⁴ In such cases, bureaucracies created the
very object that could then be used to make kinship as similarity measurable.⁵
In South Sudan’s Citizenship Office, only the testimony of ‘next of kin’ was
accepted to confirm ethnic and, consequently, national belonging. As Ferenc
Markó (this issue) shows, the kinship between applicant and next-of-kin wit-
ness was measured by comparing their names as recorded on birth or age
assessment certificates. Based on the patrilineal logic of the state-recognized
Dinka and Nuer naming systems, these names consist of four parts, with the
second, third, and fourth being the names of the father, grandfather, and great-
grandfather, respectively. The degree of similarity in names was thus equated
with the degree of genealogical closeness.

Comparisons of similarities in character can also be used to measure kin-
ship between persons who are connected through adoption (Howell and Marre
2006). Goldfarb (2016: 51) shows how in Japan adoptive parents and NGO
activists would even note physical resemblance, “be it the appearance of a
child’s face, the way a child moves and speaks, or the tone of a child’s voice,”
as indicators of similarities understood as signs of kinship. Janet Carsten (2004:
139) describes how on the Malaysian island of Langkawi daily caring and food
sharing is thought to make household members, including non-biological chil-
dren, similar in both behavior and outward appearance. The idea of kinship
being materialized in bodily similarity established through a joint environment is shared by contemporary toxicologists. Birth cohort studies not only show the effects of exposures being transmitted between successive generations; they also reveal how humans become more similar to each other through the many toxic substances within and around them. This similarity might be understood as a chemical kinship that, as Janelle Lamoreaux (2020) argues, also needs to be crafted through the measurements conducted by scientists who “delimit … a segment of a broader group through both a recognition of shared exposure and a limitation of those with outlying characteristics.”

As with calculations of closeness, the selection of relevant indicators (both bodily features and behavioral traits) is decisive in measuring kinship by comparing similarities (Goldfarb 2016: 52). The introduction of new indicators is thus never uncontested and needs constant investment in affirmation and recognition to become institutionalized. As Susan McKinnon (this issue) shows, in the early twentieth century the researchers at the Eugenic Record Office (ERO) in the US had to do a great deal of work to establish the category of ‘degenerate family lines’. Having created similarities by reducing complex characteristics and behaviors into singular Mendelian ‘unit characters’, they mapped traits such as ‘feeblemindedness’ or ‘sexual immorality’ onto genealogical grids. By visually equating similarities and kinship, they suggested that they had found and made measurable long intergenerational chains. As with other kinship measurements, their effective display was key for their political success. We now look at such processes before addressing their consequences.

Kinship on Display: Making Measurements Persuasive

In practice, different measurements of kinship through indicators of similarity and closeness exist side by side, sometimes in tension and sometimes mutually reinforcing each other. In order to gain legitimacy and become politically effective, measurements need to be institutionalized, which can be achieved by displaying them in convincing formats and public performances.

While lists, diagrams, and tables have an aura of scientific neutrality and universality, displays of emotional closeness such as photographs or gifts need particularity to be persuasive, as we have already seen in the cases of police raids, microcredit, and rituals. Public performances of measuring lend additional authority to the results (Echterhölter 2017: 35–36; see also Stolz, this issue). These forms of display make what is held to be kinship visible, legitimize it, and establish its measurability.

In anthropology, Lewis Henry Morgan was among the first to use lists and tables to display kinship. Three massive ‘schedules’ of terminology make up more than a third of his 600-page book *Systems of Consanguinity and Affinity of the Human Family* (1871). By arranging terms side by side, the tables suggested
that each referred to essentially the same kinship relations. Such lists establish an aesthetics of neutral comparability, which we can also see at work in the ERO’s *Trait Book* in the US (McKinnon, this issue) and contemporary applications such as the ‘Tabelle’ used in Italy for insurance negotiations (Moretti, this issue).

The display of kinship in genealogical diagrams has proved even more influential than lists. As with the counting of degrees, there is nothing self-evident in these visualizations. Instead, they are expressions of (ever-changing) ideas about kinship. For instance, in Europe the earlier stress on sibling groups in visual displays of kinship shifted to a stress on generation when the idea that descent constituted kinship became more important (Müller-Wille and Rheinberger 2004: 6). In anthropology, W. H. R. Rivers (1910) was instrumental in transforming iconographic secular, religious, phylogenetic, and linguistic pedigrees into the ‘genealogical method’. During the 1920s, the ERO displayed family histories as genealogical links on wheel-shaped diagrams (see McKinnon, this issue). Even today, genetic medicine still repurposes ‘old’ genealogies in ‘new’ medical practices (Featherstone et al. 2006), and genetic counselors in the US use genealogical diagrams in their assessments prior to DNA testing (Jabloner, this issue).

The success of display often has less to do with the force of scientific arguments than with visual persuasiveness. As Amir Teicher (2014) has argued, the German ‘ancestral chart’ (*Ahnentafel*) had an unforeseen public success, although it was accused of being useless for heredity research. Even the organic imagery of trees—which had fallen from grace with the rising sciences of the seventeenth century that favored plain diagrams (see Hohkamp 2022)—is still widely used today. How family trees capture the imagination is not only evidenced by the popularity of software such as Family Tree Maker and the large number of associations and individuals researching family histories. Population geneticists in South Africa also use the metaphorical image of a tree to present the results of compared genetic similarities (see Schramm, this issue).

Like racehorse pedigrees that emphasize certain links and hide others in producing winners (Cassidy 2009), human kinship charts represent only some relations while erasing or ‘dis/working’ others (Bird-David 2019; see also Jabloner, this issue). Seemingly ‘objective’ genealogies are often constructed based on authoritative displays of past kinship as recorded in documents (Chelcea, this issue). Catherine Nash (2004) has argued that scholars of genetics unwittingly reinvigorate ideas about gendered and racial hierarchical difference through reliance on family names as the starting point when searching for genetic similarity. In her examples, this makes the female line invisible, as with the case of measuring kinship through names in South Sudan’s Citizenship Office (Markó, this issue).

Besides making some links invisible, displays of indicators also have the capacity of expanding kinship. In addition to extending individual lines into the
past, as Chelcea (this issue) demonstrates, forms of visualization can offer new forms of political belonging. For instance, the popularity of the German ancestral charts depended (in addition to being compact and thus cheap to print) on their ability to depict the links between kinship and national belonging for everybody, not just a few wealthy families. These examples already hint at the productive power of displays that allow measurements of kinship to become the basis of decisions about belonging, to which we turn in the next part.

**Kinship Measurements in Negotiations of Belonging**

In their interplay, kinship measurements effectively enable decisions about belonging that go beyond individual ties. By structuring access to resources, measurements of kinship are part and parcel of power differentials and economic inequalities. Expanding Strathern’s (2020) reflections on how closeness and similarity are evoked in the English language, we can see how their measurements as kinship can support and reproduce but also challenge existing social inequalities in various contexts worldwide. Thus, tracing how kinship measurements are made effective in different institutional encounters constitutes an inroad to explore the naturalization of power.

For example, the above-mentioned state-introduced patronyms promised unambiguous identification of citizens and their relatives for varied purposes, such as taxation, conscription, inheritance, and welfare. However, although governing bodies seek to make their populations legible (Scott 1998), selected indicators of kinship are not applied universally; rather, recognition follows a command structure (Povinelli 2002: 225). Thus, while Western families are assumed to be produced by intimacy and love, Indigenous people in Australia have to produce a ‘descent group’. They must “dehumanize themselves into pure genealogy to gain the recognition of courts” (ibid.: 234) and thereby get access to state aid. Similarly, Torsten Heinemann and Thomas Lemke (2012: 817) argue that the models of kinship promoted for German citizens differ substantially from the ones used by immigration officers to decide about migrants’ eligibility for citizenship: “The latter have to comply with a traditional heterosexual biological family model in order to be officially recognised as family in immigration cases. At the same time, in public opinion and in recent legislation the family is mostly defined by social dimensions for native German citizens.”

Established and new experts—ranging from elders, politicians, and lawyers to bureaucrats, scientists, and ordinary citizens—have quantified, evaluated, compared, and displayed kinship in various ways to establish belonging, thereby adjudicating claims and access to resources. Belonging includes diverse forms of membership in kinship and ethnic groups, but also in nation-states, categories of race, and even humanity.\(^8\) It also carries a positive connotation (particularly
in English) and is naturalized in similar ways as kinship. As Edwards and Strathern (2000: 15) suggest: “It seems natural that persons should want to belong (to whatever it is).” In discussions about belonging, either-or decisions about inclusion or exclusion have received much attention. A focus on kinship measurements adds two aspects. First, if kinship measurements become the basis for either-or decisions about belonging, this requires attention to thresholds and to the mixing of different indicators that become decisive in reaching the decision through measuring. Second, kinship measurements tend to be continuous and therefore translate into gradual belonging. Both binary decisions and degrees of belonging based on kinship measurements result in greater or lesser access to resources. Whether reinforcing or challenging each other, kinship measurements have far-reaching consequences for both individual life chances and inequalities—locally, nationally, and globally.

**Thresholds of Measured Kinship**

Thresholds can be reached by adding up evidence or by outcompeting other measurements. Moretti (this issue) shows how the dynamics of addition and subtraction of genealogical and lived closeness make survivors of car crashes and their families ‘kin enough’ for insurance payouts. In decisions about political belonging, reaching thresholds is not just a question of measuring relations between individuals and their kin. Diane Nelson (2015) follows how the identification of dead bodies after the civil war in Guatemala has produced ambivalent effects of de- and rehumanization. Genetic data of DNA samples drawn from exhumed remains are collected in databases and must be reconnected to surviving or later-born family members through measurements of genetic similarity. Linked to the promise of compensation as well as legal justice, the procedures for identifying and reconnecting with kin also allow former ‘enemies of the state’ to be reintegrated in the body politic. This is an ambivalent move. The surviving must first turn to the state, which often means breaking with their former political convictions (and those of their deceased kin) or ignoring the cruelty of colonization. Moreover, individual measurement results must be aggregated to make the persons identified ‘count’ politically as victims of genocide.

Thresholds of measured kinship for ethnic or racial belonging can be based in ideas about either purity or admixture. While mestizo nationalism informs the search for admixture in Mexican genomics (Hartigan 2013), white nationalism informs the search for purity in the US (Fullwiley 2007). In the latter case, faced with unexpected or unwanted revelations of ‘admixture’ through genetic testing, white supremacists pursue repair strategies to reaffirm their claim of belonging to the white nation (Panofsky and Donovan 2019). One of these strategies is to dispute the reliability of measurements of kinship as genetic similarity and instead emphasize other measurements of, for example, genealogical closeness.
An alternative way to challenge a specific measurement that fails to produce the desired results is to lower the threshold of belonging and allow for admixture. Schramm (this issue) shows how the same result of measuring genetic similarity can be used by individual actors to testify to different belonging—one attesting to European descent and the other to African. Thresholds that favor ‘pure’ or ‘admixed’ results may inform inclusive as well as exclusive policies. One such example of a well-intentioned concept of belonging with a low threshold for kinship as genetic similarity that valorizes admixture rather than purity can be found in the post-apartheid context. Scientists, politicians, and intellectuals present South Africa as a ‘genomic archive’ of common humanity through shared kinship as a basis for national belonging (see Schramm, this issue).

In the North American context, both low and high thresholds of kinship have been institutionalized for tribal belonging. Among other membership criteria, many Native Americans in the US and First Nations in Canada have set thresholds of consanguine similarity and genealogical closeness of ‘tribal blood quanta’, ranging from one-half (more exclusive) to one sixteenth (more inclusive). While genealogy is acknowledged as measuring closeness, the use of DNA testing is fiercely debated. Those who lack bureaucratic documentation hope to prove ‘enough’ kinship through genetic similarity of DNA samples. Others argue that such measurements cannot disclose and determine an individual’s cultural and political belonging (TallBear 2013). In these contexts, belonging benefits claimants, but genealogical measurements of proportions of descent were also used in Nazi Germany. The notion of the ‘hidden’ recessive gene and its ‘clandestine nature’, derived from Mendel’s insights into the hereditary nature of various characteristics of peas, made Nazis regard ‘half’ and ‘quarter Jews’ as more ‘insidious’ than those readily ‘knowable’ (Teicher 2020). The threshold for exclusion due to racial belonging based on kinship measurements was thus set low, with devastating effects.

McKinnon (this issue) outlines antecedents of these policies in the measurement systems that researchers at the ERO developed. Besides older humoral concepts of heredity and degeneration, they too relied on Mendel when constructing ‘degenerate families’ to push for the ‘purification’ of the nation through marital prohibitions and legally mandated sterilizations. Their measurements of kinship as similarity embodied implicit upper-class values that formed thresholds for the construction of ‘bad’ family lines. Fieldworkers of the ERO judged the observed filth, rags, and lack of shoes in poverty-ridden families as signs of deeply ingrained and inherited ‘degeneration’. Despite all their efforts to produce ‘neutral’ scientific measurements, their class-based choice of indicators justified the exclusion of tens of thousands of socially and economically marginalized Americans from procreation.

However, even kinship measurements that do not meet thresholds of closeness based on upper- or middle-class standards of ‘appropriate’ care do not
necessarily lead to straightforward exclusion. Instead, measured kinship may undo belonging on one scale while enabling belonging on another. For example, Eirini Papadaki (2018) describes how nurses and social workers in a public maternity hospital in Athens observe feeding practices and document the frequency of visits and other parental practices. In the end, they decide whether lower-class and migrant parents have shown ‘enough’ closeness or if they should recommend that the authorities activate state care. In the case of undocumented migrants, children who have been transferred into state care acquire Greek citizenship. Ending kinship based on measurements of ‘insufficient’ closeness here leads to a new national belonging.

While the contributions to this special issue show that implicit values underlie kinship measurements that perpetuate inequalities, this is not always about reaching a threshold. Rather, such measurements can be translated into degrees of belonging.

**Translating Measurements into Differentiated Access to Resources**

Since kinship measurements produce gradual results (such as degrees of closeness or percentages of similarity), they do not always translate into clear-cut inclusion or exclusion. Instead, their gradual character may be retained in politics that place belonging on a continuous scale, thereby granting only partial access to resources. While the results of measurements are immediately important to individuals, they also structure access to resources and thereby shape patterns of distribution of wealth.

Failing to establish kinship with one’s father, for instance, might mean losing access to his name, financial support, care, and inheritance. In Brazil, politicians responded to these issues by allocating enormous financial sums to make paternity tests widely available. Building on an understanding of kinship as descent that legitimizes access to care and support, ‘irresponsible fathers’ were seen as responsible for the widespread poverty of mothers and their children. Identifying genetic fathers to make them provide care thus seemed an appropriate political tool to alleviate this structural pattern (Fonseca 2009). While it ultimately failed, we see here how political actors try to use measurements based on ideas of kinship to transform societies. In another context, in which the state and its way of determining paternity is invoked locally only as a threat, Stolz (this issue) shows how ritual measurements shift inheritance rights and care responsibilities from the father to the maternal household. In both cases, the distribution of wealth is legitimized through ideas of kinship as descent—here fatherhood—but measurements can either affirm or transform belonging and thereby access to resources.

Anna Jabloner (this issue) shows how higher than ‘normal’ health risks are attested or relativized through different kinship measurements that thus
structure differentiated access to medical care. Estimated health risks based on patients’ kinship charts, in combination with medical assumptions about their thus determined ethnic and racial belonging, inform genetic counselors’ decisions about access to genetic testing. Results may in turn reveal more or less material similarity than estimated through genealogical closeness. If high ‘relative risk’ is reduced to that of the ‘general population’, further medical treatment may become foreclosed.

Kinship measurements that are used to determine ‘tribal blood quantum’ have not only resulted in either-or decisions about tribal belonging, as discussed above. They have also been translated into differentiated access to resources such as land:

[T]he General Allotment Act of 1887, also known as the Dawes Act,… divided communally owned reservation lands into individual … allotments … Indians deemed to be “half-blood” or less were given full title and, with it, US citizenship. Indians who were deemed to be more than half-blood had title held for them in trust for twenty-five years … [The] “mixed-bloods,” therefore, had greater autonomy in land tenure. They could legally sell their land to others. (TallBear 2013: 56)

Gradual measurements of closeness and similarity are also important in many inheritance regulations that naturalize kinship in tandem with social inequality (Yanagisako 2015, 2018). Degrees of genealogical closeness and the number of parallel genealogical links translate into shares of inheritance. In the case of post-socialist restitution of housing, potential heirs may lose shares of their desired inheritance if supplementary evidence of past kinship brings closer or additional kin of the former owners to light (Chelcea, this issue). In many countries in Continental Europe, it is very hard to disinherit children, who have the institutionalized right to an ‘obligatory share’ based on the idea of kinship as descent. However, the calculation can be further complicated by taking other kinship indicators into account. In Austria, for example, the testator can reduce the statutory share of an inheritance (Pflichtanteil) by half if the potential heirs performed insufficient lived closeness.

Moretti (this issue) unpacks similar processes of merging lived closeness and degrees of legal kinship for calculating insurance payouts in the aftermath of traffic accidents. Accidents are seen to cause ‘relational suffering’ if they lead to geographical or emotional distance of kin. In her example, a son in the process of international adoption is considered close by family members, but assessed as too distant by insurance companies to qualify for compensation. The closeness of a wife caring for her husband at home is calculated based on the same indicators (geographical proximity, frequent contact, and legal union). However, instead of subtracting, the loss adjuster added them up to argue for the remaining strength of kinship to reduce compensation—with significant economic (and gendered) implications for victims and their families.
In this way, institutionalized measurements of kinship shape access to resources. What is negotiated are the processual details—unless their fundamental legitimization becomes questioned.

**Conclusion**

Feminist and other anthropologists have long analyzed the persistent importance of kinship for political economy (McKinnon and Cannell 2013; Thelen and Alber 2018b; Yanagisako 2015). The focus on measuring kinship offers a framework that allows us to bring to light the underlying processes of this ongoing significance. People all over the world discuss whether individuals are ‘really’ close enough to be called kin and therefore deserve care, money, inheritance, and other resources. Kinship measurements are widespread, past and present, yet are hardly ever noticed as such. Early anthropological studies overlooked the productiveness of measurements due to the assumption of kinship having reality as something given and measurable. While it has become a truism in anthropology that kinship is processual and negotiated, measurements applied with the aim of producing closure do not match this image of flexibility and related ideas about the immeasurability of closeness, intimacy, and love. Thus, we argue that despite the ubiquity of kinship measurements, their theoretical significance has not yet been explored.

The articles collected in this special issue demonstrate two major points: first, in order to understand the flexibility of kinship, we need to pay attention to measurements; second, as ostensibly definitive kinship measurements are employed in negotiations of belonging, they significantly shape inequalities and marginalizations. The intricate processes of inventing indicators, generating evidence, and applying measurements create particular versions of kinship that support or undermine other versions of it. This produces gradual results, and belonging always remains contested, even if thresholds for inclusion and exclusion are temporarily reached. In these processes, memories or documentation of past measurements can be situationally mobilized or challenged, and expectations of future measuring results can likewise be invoked in negotiations of belonging and access to resources (see Jabloner, this issue). Measuring kinship happens repeatedly—not only during our lives, but also before birth (see Stolz, this issue) and after death (see Chelcea, McKinnon, and Schramm, this issue)—with potentially devastating political and economic consequences.

A close look reveals that kinship measurements transgress well-established divisions such as those between ritual and science, feelings and interest, private and public. Various supposedly contrasting forms of kinship all depend on indicators, evidence, and yardsticks—and their persuasive display. Alongside genetic, biometric, and chemical measurements of kinship through comparisons
of visible or invisible bodily similarity, kinship as genealogical or lived closeness is measured through various other items of evidence in institutionalized procedures. In this way, established measurements set limits for agency, as when evidence cannot be provided in the institutionally required form. But they also enable forms of agency, including inventions of indicators, redefinitions of units, and the forgery or destruction of evidence. Even when indicators, measuring units, and evidence are not challenged, different conclusions can be reached if algebraic signs are inverted during measuring, as in the case of antithetical estimations of kinship as closeness through the monetary value of gifts.

While underlying ideas of similarity and closeness may be in tension, different measurements still mix and may also reinforce each other. All of them have the same effect: by first assuming kinship exists in a particular form, and then producing indicators and data that support the assumptions, measuring ultimately constitutes (or negates) kinship. The dynamics of kinship measurements structure economic and political inequalities around the world. They deserve our attention.

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**Notes**

1. While genetic testing has seemed to reinforce an understanding of kinship as rooted in sexual reproduction (Featherstone et al. 2006; see also Finkler 2001; Fonseca 2009; Nash 2004), it also points to the multiplicity of ways in which kinship as bodily similarity and connection may be understood (Franklin 2013). Other studies have exposed that a one-sided attention to science, technology, and biology overlooks “other ways in which kinship may be ‘given’” (Mason 2008: 32). Even the ‘givenness’ of English (and by extension Euro-American) kinship is constituted in narrations of lifelong experience (Edwards and Strathern 2000; Finch and Mason 1993; Mason 2008: 32). Our focus on measurements allows us to connect these insights on the multiple but overlapping ways through which kinship is constituted.

2. Although almost anything could ultimately become an indicator of kinship, the institutionalization of measurements is often confined by “expertise inertia” and “data inertia” (Merry 2016: 6–7). On the work, travel, and effects of indicators with a specific perspective of their use in governing, see also the various contributions in Rottenburg et al. (2015).
3. For example, databases are crucial for understanding the racializing effects of familial searching in criminal investigations. By comparing profiles of DNA found at crime scenes with those in databanks, partial or near matches are interpreted to turn genetic relatives of the person in the database into suspects (M’charek et al. 2020). If the database used is a ‘racialized archive’ that over-represents certain groups, members of these groups may be disproportionally suspected of crimes even if the genetic comparison itself is designed to avoid DNA loci that attest to physical traits historically linked with ethnicity or race (Jabloner 2019).

4. Jean Taylor (1983) and Ann Stoler (2010) have described colonial rulers’ preoccupation with regulating kinship between European colonizers and their subjects through different bodies of civil law and related bureaucratic procedures of naming and registering.

5. This generative capacity is not an exception: “The process of measurement tends to produce the phenomenon it claims to measure” (Merry 2016: 12).

6. Echterhölter (2017) examines disputed late-nineteenth-century writings on qualitative measurements by Jacob Grimm, who referred to them as ‘notarization’.

7. While a shift from flesh to blood as the dominant symbol of a connecting substance was underway in the fifteenth century (Johnson et al. 2013), in the eighteenth century the word *consanguineum* could still be used as a mere compliment in court language without pointing to shared substance.

8. As a central concept, ‘belonging’ emerged relatively independently in kinship studies and political anthropology in the 1990s (Thelen and Alber 2018b). In both bodies of literature, the underlying theoretical concern was to move away from essentializing notions toward more constructivist and processual views (Edwards and Strathern 2000; Geddes and Favell 1999; Pfaff-Czarnecka 2011).

9. Of course, DNA testing might not be a voluntary confirmation; it can also be imposed involuntarily to establish personal identification and belonging. As Noa Vaisman (2012: 112) shows in relation to the identification of ‘living disappeared’ in Argentina and the state’s abduction of children, such testing produced not only legal challenges but also repositioned the state “so it can now shape, decide and influence its citizens’ identities through their own DNA.”

10. More often than not, kinship measurements intended to prove purity and thus affirm national belonging do not produce the expected results. At the turn of the twentieth century, genealogists in Germany, using widely accessible ancestry charts that were powerful displays of kinship, aimed to strengthen feelings of belonging, not only within families, but also toward the community and the nation. However, the charts also consistently revealed quite diverse ancestry (Teicher 2014: 80).
References


