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CHAPTER 8 DWIGHT READ: TOWARDS A NEW PARADIGM

FOLLOWED BY A DISCUSSION BETWEEN THE AUTHOR AND DWIGHT READ

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Here I report on Dwight Read's theory for a paradigm change in kinship anthropology which entails kinship terminologies being interpreted as symbolic computational systems based on kin term products. I also report on how Read argues that different conceptualizations of sibling, either sibling resulting by descent from parent, or sibling viewed in terms of shared parentage, two cultural conceptions that are rendered – here exemplifying the masculine side – by the kin term products, $S \circ F = B$ [*son of father = brother*] or $F \circ B = F$ [*father of brother = father*], lead to respectively building up a descriptive or a classificatory terminology. The chapter also deals with how Dwight Read accounts for the relationship between genealogical tracing and the working out of kin terms using kin term products and how the logic of kin term products is consistent with the extension of kin terms to kin-type categories beyond the primary ones.

The paper also reports on a discussion between Dwight Read and the author, initiated by questions and observations from the latter, regarding different aspects of Read's reasoning. Not exhaustively, to be mentioned here is the way kin relationships are concretely worked out using kin term products, the model of the family space and the nuclear family, group marriage, how the conceptualization of sibling in terms of shared parentage expressed through the kin term product $F \circ B = F$ [*father o brother = father*] relates to ethnographic data, the nature of the logic of kinship terminologies, the status of the structural equation $S \circ F = B$ [*son o father = brother*] when used within the context of a classificatory terminology, the axiomatic nature of a number of kin term products pertaining to specific kin terminologies, the equations pertaining to classificatory kinship terminologies that are likely to algebraically reduce chains of kin term products, mapped from corresponding kin type strings, like “*son of son of father of father of father*” ($S \circ S \circ F \circ F \circ F$) is mapped from the collateral genealogical relations, father's father's father's son's son (fffss or fffbss) to an irreducible kin term, here *father*, which is the one native speakers use for the said genealogical connection.

The discussion also addresses, taking the example of ancient Chinese dialects, the question of what should be the structural prerequisites for a transition from classificatory (Dravidian) terminologies into bifurcate collateral and descriptive terminologies, a transition that is often posited by a number of linguists and anthropologists. Finally, the discussion deals with the question as to whether the kinship terminologies of the world all ultimately derive from a pre-dispersal African *Proto-Sapiens* kinship terminology. Throughout these lines of discussion, the central question is raised as to why different cultural choices on how siblings are conceptualized were made that led to different human kinship terminologies and social structures.

Keywords: kinship terminology and axiomatic equations, Family Space, Genealogical Space, Kin Term Space, generating descriptive and classificatory kinship terminologies, paradigm change

Forward. This article has its genesis as a draft (in French) for Chapter 8 in a book Dr. Alain Matthey is writing on kinship terminologies and group marriage. Dr. Matthey contacted me by email, saying that his Chapter 8 discusses what I've written regarding a new paradigm for a theory of kinship relations and would I be willing to comment on what he has written. I agreed and when I received his manuscript, I realized immediately that the depth of his discussion warranted a detailed interaction between us regarding the content of his chapter and what I have written regarding the reasons I think a paradigm change is needed. I mentioned the chapter to Dr. El Guindi, the co-editor of the Special Issues of *Structure and Dynamics* titled "Back to Kinship." She suggested that I contact Dr. Matthey to see if he would be interested in having his chapter and any dialogue between myself and Dr. Matthey included in the this Special Issue of *Structure and Dynamics*, "Back to Kinship III." I contacted Dr. Matthey regarding her suggestion, and, on my part, I proposed that we engage in a dialogue in which we worked out, jointly, places where rewording might be helpful and "to include a short mini-dialogue between us that either helps resolve the critique for the reader or makes it clearer precisely what is at issue and identifies any issue that needs to be addressed (by me or others) in future writing" (email of March 11, 2019). He agreed and this article, with its mini-dialogue based on our email communications and titled "Observations about Dwight Read's theory made by Alain Matthey with interlinear comments written by Dwight Read in italics" is the result.

Dwight Read

1.0 Introduction

For the importance that it has gained in the field of kinship anthropology, for its mathematical approach to resolving unanswered key issues, and also for the innovative insight that it provides, the theory of terminological systems of kinship that Dwight Read and colleagues have developed over the years deserves a chapter in this essay in its own right.

The author, Dwight Read, has dedicated a number of articles explaining the difference between so-called descriptive and classificatory terminologies, the two names for kinds of terminologies used by Morgan, but borrowed without slavishly keeping intact all of Morgan's rationale for initiating this distinction among terminologies. What Read retains from Morgan is the idea that descriptive systems distinguish lineal from collateral relations whereas classificatory do not. He does not keep intact other features that Morgan argued also characterize the descriptive systems and thereby earned that designation.

To ensure a good understanding of Morgan's ideas that ground this chapter, let me quote once again the paragraphs where Morgan describes these two types of kinship terminologies, first (1871: 12) at the linguistic level:

The first [the descriptive system] ... describes collateral consanguinei, for the most part, by an augmentation or combination of the primary terms of relationship. These terms, which are those for husband and wife, father and mother, brother and sister, and son and daughter, to which must be added, in such languages as possess them, grandfather and grandmother and grandson and granddaughter, are thus restricted to the primary senses in which they are here employed. All other terms are secondary. Each relationship is thus made independent and distinct from every other. But the second [the classificatory system] ..., rejecting descriptive phrases in every instance, and reducing consanguinei to great classes by a series of apparently arbitrary generalizations, applies the same terms to all the members of the same class. It

thus confounds relationships, which, under the descriptive system, are distinct, and enlarges the signification both of the primary and secondary terms beyond their seemingly appropriate sense.

And secondly (1871: 13), at a structural level:

In the [descriptive] system ..., the collateral lines are maintained distinct and perpetually divergent from the lineal On the contrary, in the ... [classificatory system], the several collateral lines, near and remote, are finally brought into, and merged in the lineal line

Read (2018a: 64) argues that Alfred Kroeber's rejection (1909: 77-84) of Morgan's distinction between descriptive and classificatory terminologies, based on the contention that all systems are classificatory, one way or another, results from a misreading of Morgan. Morgan's distinction, Read writes (2018a: 64):

Is not based on whether *kin terms* (Read's emphasis) are descriptive or classificatory (Kroeber's misreading), but whether the terminology structurally and consistently distinguishes between collateral *genealogical relations* (Read's emphasis). Morgan was fully aware that English terms such as English *uncle* and *aunt* are classificatory in Kroeber's sense, yet the English terminology is descriptive in his schema since the kin terms with lineal genealogical referents do not include collateral referents.

This quote ends with a footnote (2018a: 64, note 5) where Read indicates that Morgan (1871: 32-3) stated that the everyday use of *uncle*, *cousin*, *cousin's son* etc., in the second collateral line revealed

a tendency to avoid the full descriptive phrases. It is evident from the present structure and past history of the English system ... [that] an uncle was described as *father's brother*, or *mother's brother* (italics in the original).

It certainly makes sense, saying as Read does, that what matters first, while distinguishing descriptive from classificatory terminological systems, is that collateral lines are maintained separated from the lineal or conversely that they converge into the lineal.

Kroeber's (1909: 77) argument is absolutely reducing. While declaring as fallacious Morgan's distinction between descriptive and classificatory terminologies, yet then by arguing that all systems are classificatory, to a varying degree, because kinship terms are potentially subject to designating several different categories of kin and degrees of relationship (like for instance, the terms *uncle* and *aunt* in English, which designate several categories, consanguineal as well as affinal), Kroeber performs a sleight-of-hand. This consists in making Morgan's first point – which is not absolutely accurate as we mentioned in chapter 1 – appear to be the essential feature distinguishing kinship systems, then conjuring away the second by bringing it down on the sly as a criterion among 8 different criteria making up kinship terminologies, thus reducing Morgan's definition (Kroeber 1909: 77) to a simple difference between systems that:

... group together distinct relationships and call them by one name, and are therefore classifying ...

and systems that:

... indicate secondary differences of relationship by descriptive epithets added to their primary terms and ... [are] therefore descriptive.

thus, belittling the initial significance of Morgan's structural level, making it appear as if it is just a feature, or criterion, among other same-level criteria that any given terminology may or may not display, like the recognition of the difference of age within one generation, or

whether the sex of the speaker has any importance in the way that the terms are employed etc.¹

Yet, what leads to confusion, and also gives rise to criticism – such as, notably, the criticism from Kroeber – is to use the term “descriptive” (a designation, in sum, not very consistent) for a terminology whose primary distinction is to maintain separate the different descent lines. This term, though leading to confusion, is, however, the one that History has remembered.

Read (2013: 1) also indicates that the distinction, established between the two systems of kinship terminologies and based upon these principles, was not totally relevant in view of the remarks that Morgan himself formulated (1871: 267-77) with respect to the Eskimo System,² where:

... lineal and collateral positions are distinguished in the middle three generations but not for more distant generations so that, for example, the child of one's 'niece'/'nephew' – a collateral relative, is referred to as 'granddaughter'/'grandson' – a lineal relative.

So much for the different classification types elaborated since the time of Morgan and referring, as Read says (2013: 2), for the most part, to terminological surface differences, with the latter based fundamentally on the assignation of kin terms to relations of genealogical connections and not to the structural properties that “generate those surface differences.”

It is precisely to these generative structures, that Read, often in collaboration with other scholars, has dedicated most of his endeavor, culminating in a theory, which is not easy to explicate without running the risk of betraying their intellectual approach.

In this chapter, my aim is to account for the chain of reasoning developed by Read in a paper published in 2007, entitled *Kinship Theory: A Paradigm Shift*,³ an argument that was then resumed and expanded in collaboration with Michael Fischer and Frederic Kris Lehman (Chit Hlaing) in another paper published in 2014 in the French journal *l'Homme*, whose title is *The Cultural Grounding of Kinship: A Paradigm Shift* (Read et al. 2014). When necessary, I

¹ Kroeber listed 8 same-level categories or criteria that the different terms from one given terminology are likely to meet and which are based on a number of intangible principles such as the difference between lineal and collateral relationship (criterion n° 2), the difference of age within one generation (criterion n° 3), the sex of the speaker (criterion n° 5) (italics in the original), etc. Thus, Kroeber argued, all kinship systems may be compared to each other on the basis of these criteria and each of them, he claimed, is involved to some extent in the different terms of each terminology. This leads to an analysis that focuses on the number of terms in a terminology that meet positively or negatively any relevant criterion. The criterion (n° 2) that we are considering here concerns the fact that one term addresses lineal or collateral lines. If it does, then this category will be considered as relevant (“operative”) for the term considered. If it does not, this category will be irrelevant (“inoperative”). The cumulative results will indicate how many terms within one system will meet this particular criterion. In this respect, both the kinship terminology of the Yuqui Amerindians of North America and the English terminology will be considered equivalent because each and every one of the terms of these two terminologies, designate either collateral or lineal relations, versus the Dakota terminology which has a number of terms not distinguishing the different lines. This way of presenting things, putting on the same level what are very different features, is supposed to elevate the quality of sequences of comparison, but one conclusion drawn in Kroeber's paper is that “the fundamental difference between systems of terms of relationship of Europeans and American Indians is that the former expresses a smaller number of categories of relationship than the latter and expresses them more completely” which does not say much about the reason why the terminologies are like this.

² It would be judicious, made here as an aside and with regard to the amount of ethno-linguistic data that has been accumulated with respect to the different branches of the Eskimo language-group, for a linguistic and semantic reconstruction of the proto-Eskimo terminology to be carried out.

³ In the present paper, I will mention the pagination from the UCLA Previously Published Works series: <https://escholarship.org/uc/item/93c7072g>.

will refer to the book that Read published in 2012: *How Culture Makes Us Human: Primate Social Evolution and the Formation of Human Societies*, and also to a book he published the same year, written in collaboration with Murray Leaf: *Human Thought and Social Organization: Anthropology on a New Plane*. On the way, I will also take into consideration two papers published more recently by Read. The first one, an encyclopedia article published in 2015, Formal Models of Kinship, and the second one in a collective book (2018) edited by Warren Shapiro in Memory of Harold W. Scheffler, in which he makes a point of showing how the paradigm change that he consistently calls for, helps explain the difference between descriptive and classificatory terminologies, and especially the nature of, and justification for, the semantic extensions inherent to kinship terminologies, especially the classificatory terminologies.

In all of these publications, Read and his collaborators stress the necessity to reconsider the idea, still prevalent in kinship anthropology, according to which the kinship terms would be:

... primarily names for already established categories of genealogical relations (Read 2018a: 63).

2.0 kin term product

Dwight Read (2007: 5-6, 2018a: 73-74, among other publications), argues that countless ethnographical evidence testified, and still testifies, to the way speakers of one given language – indeed, probably for all languages – compute the kinship relations that link them to other speakers through kin terms without having the faintest idea of the genealogical connections involved. In other words, when a given individual knows what kin term is used by one of his kin to designate a third person, he will immediately know what term he himself should use to refer to the latter. Read (2018a: 79) noted that Scheffler and Lounsbury (1971: 141-42) already stressed that people learn how to classify their relatives without being told anything about the genealogical connections that they have with them:

A person from a society with an Iroquois-type terminology may deduce ... that any man whom his father calls ... 'brother' is to be called 'father' and the son of any man he calls father is to be called 'brother' Thus, when he encounters a man whose father is (or was) called 'brother' ... by his father, he knows that man is his 'father' (or rather his 'classificatory father') and he knows that man's son is his 'brother' (or rather his 'classificatory brother'). He need not inquire into whether the former is his father's long-lost brother or his father's FBS, or his father's FZS etc., in order to know how to classify him....

This faculty of generating kin terms using other kin terms has been formally defined by Read (1984: 422) as a *kin term product*, and given a general wording that brings altogether its formal characteristics (2007: 6):

Let K and L be kin terms in a given kinship terminology, \mathbf{T} . Let ego, alter₁ and alter₂ refer to three arbitrary persons each of whose cultural repertoire includes the kinship terminology, \mathbf{T} . The kin term product of K and L , denoted $K \circ L$, is a kin term, M , if any, that ego may (properly) use to refer to alter₂ when ego (properly) uses the kin term L to refer to alter₁ and alter₁ (properly) uses the kin term K to refer to alter₂.

This operation, or mode of computing, has also been given a triangular graphic version (1984, 2018a: 76, Figure 1, among other publications). Let's take the example that Read frequently mentions, with alter₁, called *father* by speaker and calling alter₂, *father*.

First in its graphic form:

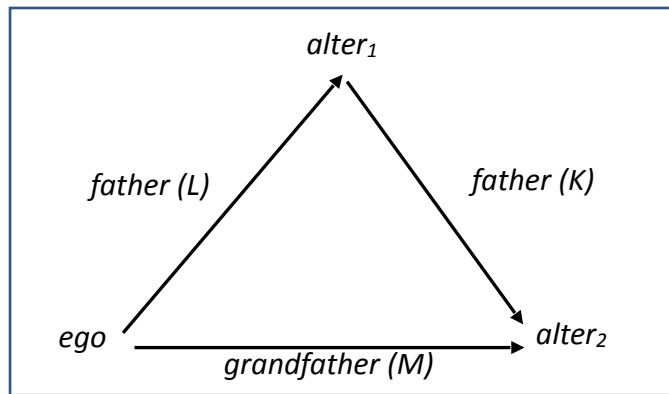


Figure 1: Graphic version of the kin term product *father o (of) father*. One should not forget that this kin term starts with *K*; that is to say, from the term *alter₁* uses to refer to *alter₂*.

Then, using the algebraic version:

$$K \circ L = M$$

with \circ = ‘of’ being the connector (or preposition) between kin terms, thus *father o (of) father* = *grandfather*. Read (2018a: 80) makes it clear that

... the connector, ‘of’, in the kin term product of a pair of kin terms, may be interpreted as a *binary operator* [italics in the original] ⁴ [my note] acting over each pair of kin terms [making up a kinship terminology].⁵ [my note]

Read (2007: 6, 2018a: 74) provides a substantial list of publications documenting how kinship relations are computed on the ground, using kin terms, throughout the world, all showing similar cognitive processes, and he quotes a number of field situations taken from Radcliffe-Brown (1913) regarding the Kariera from Australia, Marshall Sahlins (1962) regarding the Moala Fijians, Anthony Good (1981) for the Kondaiyankottai Maravar from Southern India, Clifford Behrens (1984) for the Shipibo from the Amazonian Peru, Stephen Levinson (2006) for the people from Rossel Island, Laurent Dousset (2005) for the Ngaatjatjarra from Western Australia, and many other authors. I will only refer here to two examples, quoted by Read, illustrating this computing procedure. The first one is taken from Levinson (2006: 26), quoted in Read (2007: 6):

Kinship reckoning on Rossel Island does not rely on knowledge of kin type strings [...] What is essential in order to apply a kinterm to an individual X, is to know how someone else, of a determinate kin type to oneself, refers to X. From that knowledge alone, a correct appellation can be deduced. For example, suppose someone I call a *tîdê* ‘sister’ calls X a *tp:ee* ‘my child,’ then I can call X a *chênê* ‘my nephew’, without having the faintest idea of my genealogical connection to X.

⁴ Michel Gofman, a good friend of mine, while reading this chapter, wondered whether this *operator* was commutative or not. Read answered that the kin term product operator is non-commutative for most kin term pairs.

⁵ Dousset (2008) presents details about the procedure followed by Ngaatjatjarra natives from Central Australia when computing their mutual kinship relations by building a model taking the form of a “relational triangle” (Dousset 2008: 263, 272, 273 notably) that reflects “the indigenous principles underlying their representation, as well as their portrayal of kinship.”

The second, a well-known one, is taken from Radcliffe-Brown (1913: 150-51) and quoted in Read (2018a: 73). It shows how Kariera speakers from Western Australia compute their kinship relationships:

Let us suppose, as an example, that two men A and B, meet each other for the first time. The man A has a relative C who is his *mama*. At the same time, C is the *kaga* of B. It immediately follows that A and B are *kumbali* to each other [italics in the original].

Scheffler & Lounsbury (1971: 140) stressed, relying on their own experience, that competent informants, when asked about the meaning of the kin terms that they used were likely to answer using a “relative product.” For example, when asked “what is a cousin” they might reply:

My cousins are the children of my uncles and aunts....

These two authors (1971: 143) continued by saying that most anthropologists since Morgan and Fison, had collected lists of relative products, but rather than having picked them out in the field, they had deduced them from “data gathered by the genealogical method.”⁶ Similarly, they emphasized that, although informants are generally seldom inclined to verbalize such statements, it is the

... anthropologist’s task to record and then order them into a workable and coherent whole. (1971: 144).

Referring to Murray Leaf (2006), Read (2018a: 76, note 13) observes that kin term products can be systematically obtained from native informants, and gives the example of Punjabi speakers. Leaf (1971, 2006: 310-13) reports how the Punjabi kinship terminology can be built up by associating native informant knowledge and participation. The first step is to culturally identify the most commonly used kin terms (a total of 6): *bāp* ‘father,’ *mā* ‘mother,’ *bhai* ‘brother,’ *bhain* ‘sister,’ *pūtar* ‘son,’ *pūtri* ‘daughter’ and to use each of them, in turn, as the basis for starting the kin term computations, with the informants being asked questions like:

What is the [...] of *bhai* ? (Leaf 1971: 547), (with [...] being a primary kin term, my emphasis)⁷

or

What is your ma’s bap to you ? (Leaf 2006: 311) ⁸

This process furnishes new positions (kin terms) which in turn becomes the basis for new computations, and the result of all of these queries – here I simplify – is a culturally salient (validated) kinship term chart.

If it were still necessary to demonstrate any further that things work like this, *i.e.*, that kin term computing is culturally salient, and, according to Scheffler & Lounsbury’s wording, “psychologically and cognitively real,” I would reproduce *in toto* the enlightening dialogue

⁶ The method systematized by Rivers (1900, 1910), based on exhaustive recording of familial genealogies and other ethnographical data, enabling a thorough sociological study of human communities. Rivers (1900: 77-8) points out that this also makes it possible to study the kinship system structure by recording the terms of relationships that given individuals apply to other community members.

⁷ What is the [...] of *brother* ?

⁸ What is your mother’s father to you ?

recorded in the field by Von Sturmer (1981: 13) that Dousset quoted in his 2008's article.⁹ The context is a meeting between two aboriginal fellows belonging to different local groups – apparently belonging to the Lama Lama ethnic group from Northern Queensland –, who never met before and who were looking for their mutual kinship relationship, if any:

Mareeba man: 'Where you from ?'

Mickey: 'I'm Edward River man. Where you from ?'

Mareeba man: 'I'm Lama Lama man ... do you know X ?'

Mickey: 'No. Do you know Y ?'

Mareeba man: 'No. Do you know Z ?'

Mickey: 'Yes. She's my aunty.'

Mareeba man: 'That old lady's my granny. I must call you daddy.'

Mickey: 'I must call you boy. You give me cigarette.'¹⁰ (my note)

Here we have, under its most limpid and direct form, an *ordinary* verbalized indigenous sequence implying a computation of a kin relation between two individuals who had never met before, but who have a mutual connection to a third one,¹¹ a situation that has occurred and still occurs in innumerable occasions in the daily life of people of the world, even if they are not directly recorded by ethnographers. Needless to say, kin term computing of kinship relations is not specifically attached to situations in which people don't know each other, but regularly occurs in our own life:

- Well mum, is Simone my cousin ?
- Yes dear, she is the daughter of your great uncle Joseph.

Dousset (2008: 273) makes this profound remark:

The relational triangle provides a procedure or algorithm, as well as a cognitive model reflecting how people do in fact determine the kin category in which they stand to each other without genealogical knowledge being a condition. It is not a formal or structural model, but the abstraction of what I believe to be mental representations; and, in this sense, it is also an emic heuristic model.

which clearly establishes the kind of relationship existing between the model and the indigenous mental representation.

⁹ I haven't been able to get access to Von Sturmer's paper. Theo Van Leeuwen (2008: 44) also quoted this situation.

¹⁰ Mareeba is the aboriginal name for a city and a county in North-Eastern Queensland to the west of the coastal city of Cairns. The Edward River is situated in the north-eastern part of Cape York Peninsula (Queensland). Lama Lama is a native designation now associated with several languages (groups) within this region, like Umbindhamu, Umbuygamu, Mba Rumbathama or Lamu lamu, etc.

¹¹ Dousset (2008: 273, Figure 3) gives two other hypothetical triangular situations. The first one involves two Ngaatjatjarra women, ego and A, that never met before and a man B. Ego calls B *kamuru* ('mother's brother'), B calls A *yurntalpa* ('daughter'), therefore ego and A reciprocally call each other *watjirra* ('cross-cousin'). In the second example, ego calls B *ngunytju* ('mother'), B calls A (a man) *watjirra* ('cross-cousin'), therefore ego calls A *mama* ('father'). The author (2008: 272), emphasizes that "in order to determine the relationship between two unrelated persons, a third and intermediary person is necessary," and he goes on to designate this person as the "nodal point" or "*connector*" (italics in the original).

The fact that this *modus operandi* (the products of kin terms) appears as culturally salient and apparently universally distributed suggests to Read (2012: 14-15, 2018a: 77) that a kinship terminology neither simply consists in a list (a collection or an addition) of vernacular kin terms corresponding to categories of genealogically “predetermined” relationships, as it is generally assumed, nor is it modeled on the logic of biological relations,¹² but represents:

[...] a conceptual system that expresses what are the kin relations as they are understood in a particular society and how kin relations may be computed among the individual sharing the same kinship terminology (Read 2007) [...] (Read 2012: 15).

This system

... has an underlying computational logic that enables culture bearers to make kin term computations in a consistent and noncontradictory manner without reference to genealogical definitions of kin terms (Read 2018a: 77).

3.0 Towards a Paradigm change

Read’s conclusion (Read 2007: 3-4) is thus that it is time to make a paradigm change,¹³ which is to say, reconsider the idea that kinship systems and kinship in general are built upon genealogical ties. Read (2007: 4) sums up the old paradigm as follows:

The kin terms are interpreted as linguistic labels for the kin type categories. In this framework, any structure among the kin terms is the consequence of external processes, such as constraints on behavior arising for both social and ecological reasons, that determine a partition of the genealogical space into categories of kin types. Hence causality would be from behavior to the distinctions made in the kinship terminology.

This point is very important. It implies that the structural features of a given system, for example, the fact of calling *father* the brother of your father, or the fact of calling – were you a man – *son* the son of your brother, should not anymore be interpreted, as Morgan thought was the case, as linguistic reflections of the former existence of group-marriage between brothers and women potentially sisters to each other, but not only this, neither it should be thought of as the result of the enforcement of structural extension rules, as Scheffler, Lounsbury and many others thought it was, but to the contrary, it should be viewed as the very consequence of the internal logic inherent to the kinship terminology itself.¹⁴ Read (2007: 2-3) and Read et al. (2014: 64) believe – we already pointed this out – that consensual social anthropological theories have, most of the time, only provided descriptive accounts of kinship terminologies,

¹² Genealogical and biological relationships are obviously not of the same order. Traditional genealogical tracing starts from the supposition that all the relatives descending from common ancestors are altogether tied by consanguineous chains, without caring about the true genetic links that might connect them. The application of DNA research to the familial sphere has upset the deal, notably making possible paternity investigations, until then problematic.

¹³ Paradigm in the sense of model. But Leaf and Read, in the common preface and introduction to their book, *Human Thought and Social Organization* (2012: XV and 2, 6), consider that this wording does not reflect their approach in its globality, an approach that they believe is closer to the working-out of a new science.

¹⁴ Read (2018a: 79) underlined that Scheffler & Lounsbury acknowledged that kinship relations were not simply computed from genealogical ties, but from relative products of kin categories (Read reads kin terms products), but notes that they did not explore the logic underlying the latter.

not explanations for their structural differences.¹⁵ They have stressed, consequently, the necessity of elaborating a new paradigm, capable of defining kinship and accounting for the structural properties of kinship terminologies (Read 2007: 4):

The new paradigm reverses this sequence by beginning with kin terms viewed as cultural constructs, including culturally determined computations for linking kin terms to one another subject to structural constraints and thereby forming a structured system of kin terms. Kin terms can then be linked to categories of kin types through the kin term structure, thereby producing a structured system of kinship categories that provide genealogical definitions for kin terms. I call the process through which the kin terms are linked to categories of kin types cultural instantiation ...

Thus, Read postulates the primacy of the terminological system over the genealogical computing and makes the latter depends from the former. As he puts it (2007: 12), the explanation shifts from a research of external conditions that could have possibly motivated the structure, to an identification of the generative logic that underlies it.

4.0 Primary terms and mapping of kin terms

Read (2018a: 80) writes:

Viewing a kinship terminology as having an algebraic structure (Read 1984) is culturally salient and leads to analyzing a kinship terminology as a symbolic, computational system based on the kin term product.

This logic embedded in any given kinship terminology enables us to generate or to engender all the kinship terms and thus all the kinship relationships that the terminology may actually conceive, acting on kin term products starting from *primary terms* – we will return to this designation shortly. This structural logic, or internal computing logic, that Read (2018a: 80) refers to as forming an “abstract algebra,” is made tangible by “empirically” building up what Read (2007) and Read et al. (2014), among other papers, labeled as a “kin term map,” thus a graph representation (formalization) of the kin term products generating all the kin terms making up a kinship terminology and thereby forming a kin term space,¹⁶ beginning by representing the primary kin terms from the *self* position and pursuing by products of these primary terms, one by one with each other, generating new terms which in turn are made into kin term products and so on.¹⁷ The kin term space thus encompasses the totality of the terms generated using kin term products and made concretely visible by means of geometrical representations.

Like Morgan, Read (2018a: 77) calls *primary* the terms designating the kinship relationships from the first familial circle (the *primary relationships*), all of them conceived from

¹⁵ I give, once again, the excerpt *in extenso* (Read et al. 2014: 64): “The formal methods of componential analysis, rewrite rules [to which he adds] the recent appeal to optimality theory from phonemics (Jones 2010) only provide us with descriptive accounts of kinship terminologies, not the reasons for differences between them [...]”

¹⁶ Read et al. (2014: 71) explain what they mean by *kin term space* and *kinship terminology*: “(the kin) terms form a kin term space in which symbolic computations [*i.e.*, computations of kin terms] circumvent the cognitive limitations [of genealogical calculus]. We call the ensemble of kin terms making up a kin term space a kinship terminology.”

¹⁷ the AKT (American Kinship Terminology) map, See the terminology used by American speakers, see also the map of the Shipibo, a Panoan language from South America (Read 2007: 8-9: Figures 1 and 2), and the map of the Kariera, an Australian language that we already mentioned (Read et al. 2014: 75, Figure 5).

speaker and known as being those of parents (or father and mother), spouse (or husband and wife), child (or son and daughter) and sibling (or brother and sister). These relationships are built up on marriage ties and reproductive criteria in use within a given culture (see the *family space* paragraph). One of the properties attached to these kin terms, also justifying their appellation, is that they cannot themselves result from a kin term product, but that it is, from them, and through their mutual products, that other (non-primary terms) are generated, those being, in turn, put into product with the first ones, engendering, in an ascending and descending generational manner, a kinship terminology, composed, as an average, of between 15 and 25 terms (Read et al. 2014: 71). This assertion, though, needs further elaboration as concerns sibling terms. In effect, Read argues that the sibling relationship can be conceptualized in two ways, depending on whether a sibling is considered as ‘child of parent’, thus via the parent-to-child relationship, which is formulated by the kin term product:

... *child* (of) *parent* = *sibling* (Read 2007, Read et al. 2014, Read 2018a),

or as a relationship directly linked to *self* and indirectly to parents. In the first instance, the sibling term is in no way a primary term; in the other instance, it is a primary term, thus a generating term (though not the only generating term) for the kinship terminology. Most of Read’s theoretical endeavor has consisted in demonstrating that the difference between a *classificatory* and a *descriptive* system is that the sibling terms are or aren’t *primary* (or generating) terms within a given terminology (Read 2018a: 102). I will address this issue below.

To these primary terms, one needs to add the central position of *self*, or *myself*, considered as a same level generating element with the other primary terms. So, according to Read, the American terminology only needs (*my*)*self*, *parent* (*father* and *mother*), *child* (*daughter* and *son*) and *spouse* (*husband* and *wife*) in order to be empirically generated using kin term products (Read 2018a: 98) and graphically represented (Read 2007, 2012, 2014, 2018a).

Read carries the argument a bit further (2018a: 83) by saying that one needs to consider that the symbolic system constituting a kinship terminology is based not only on the kin term product logic, but is also

Integrated with fundamental kinship concepts such as reciprocity of kin terms.

We will also return later to this property.

5.0 Scheffler, Lounsbury, Read and the kin term products

At this point, it seems to us crucial to open a parenthesis that sheds light on what makes the difference between Scheffler & Lounsbury’s analysis on the one hand and Read’s on the other hand, regarding the cultural and cognitive status of kin term products, labeled by the two first authors as ‘relative products’ (of kin classes). Obviously, the three authors agree on claiming that these computing statements are emitted without the speakers having to mobilize their genealogical knowledge whatsoever, as is reported in the example quoted earlier regarding how users of Iroquois-type terminologies -- taken as an example by Scheffler & Lounsbury (1971: 141- 42, quoted by Read) -- compute their kinship relationships.

Yet Scheffler and Lounsbury (1971: 143) warned against any suggestion that these “relative products” could be more

psychologically and cognitively “real” than the other symbolically *more elaborate* [my emphasis] treatments of systems of kin classification.

i.e., the componential or the extension rules analysis, (Scheffler & Lounsbury 1971: 141).

While they abstained from belittling the intrinsic value of relative products worked out ‘in the field’, even recommending that anthropologists should “make a great deal more use” of statements that informants are likely to volunteer, these were clearly assigned a secondary cognitive status, like that of one’s folk grammar when compared to linguistic discourse. Thus, they suggested (1971: 143-44) that they should be judiciously used as a means to “validate a formal semantic analysis,” for

If an analysis is valid it should turn out that its posited definitional and extension rules can be paraphrased in terms of the rules volunteered by informants [*i.e.*, the kin term products] (Scheffler & Lounsbury 1971: 144).

This is precisely the type of test case that the two scholars developed with the kinship terminology of the Siriono natives from Bolivia (1971: 144-47) by putting up a list of plausible relative products that they thought any “intelligent” Siriono could have volunteered, covering all the primary and extended range of kintypes “denotable by the terms.” I say plausible because no Siriono informant was present to validate these products by saying them. And they concluded that as far as Siriono daily needs are concerned, these statements constituted a consistent whole, allowing for correct computations of kin terms. The question was then (1971: 147-48): Why bother with formal analysis if Siriono speakers (and more generally any native speaker) work out correct relationships while computing their vernacular kin terms? David Kronenfeld (1980: 166) made pretty much the same point in his conclusion regarding his ‘F’ analysis of the terminology of the Fanti from Ghana.¹⁸

Scheffler and Lounsbury then argued (1971: 148), first that the list of ‘native’ definitions and relative products was nothing more than a “paraphrase of the formal semantic analysis,” notably elaborated in the chapters 4 and 5 of their book, and second, that this paraphrase expressed a

... degree of particularity and redundancy that is not characteristic of the other.

Thus, every particular native statement expressed specifically (thus incompletely) what the structural rewrite rules formulate in universal terms. Statements like “the children of my brothers I (being a man) call them *children* or more exactly, I call the children of anyone I call *brother, children,*” or also “I (being a woman) call the children of anyone I call *sister, children,*” are just particular cases, covered by a higher-level rule, *i.e.*, the *same-sex (as speaker) sibling merging rule*.

Scheffler & Lounsbury (1971: 148-49) conclude that all specific vernacular rules, appearing as having the form of kin term products, with or without an extensive character, consequently appear to have a cognitive and psychological value of limited scope, and also that an analysis that does not bring forward systemic rules global in scope, like the *same-sex (as speaker) sibling merging rule*, is indeed incomplete, as it

... has not yet revealed the fundamental underlying principles of the system (Scheffler & Lounsbury 1971: 148).

¹⁸ Kronenfeld realized two different analysis of the Fanti kinship terminology. The first one, of Lounsburian inspiration, was based on equivalence rules and then called the ‘L’ analysis. The second one, the ‘F’ analysis (F for Fanti), was defined by Kronenfeld (1980: 159) as “a formalisation of the logic contained in the relative products by which Fanti explained or justified their terminological assignments of kinsmen.” The author’s conclusions (1980: 164-65) were that the ‘F’ analysis was psychologically real “in the sense that it very directly represents what [...] informants did in their heads when they themselves calculated correct kinship relations, that is, ‘correct’ denotative usage.”

The two authors (1971: 149) establish that both sets of rules – the vernacular and those resulting from semantic analysis – are formally equivalent because both have the same descriptive value, yet only the latter possesses an absolute value. In their very conclusion of their chapter 7 (1971: 150), they claim that:

The psychological or cognitive status of the definitional and equivalence rules posited in Chapters 4 and 5 should now be fairly clear; it is highly probable that they are *general structural principles* [my emphasis] underlying and relating a number of more specific relationships between terms and the kin classes they designate.

As I indicated in Chapter 7, it is precisely this ontological status that Dwight Read denies to such rules, therefore depriving them, from any explicative value, allocating it, in turn, to the formal logic inherent to vernacular kin term products, themselves able to account for the structural differences between the descriptive and the classificatory systems.

Read (2018a: 70-2), in problem 3 (cultural saliency), gives an account of Kronenfeld's (1980 [2009]) analysis of the Fanti (see my preceding footnote), noting that the author concluded that only the 'F' analysis, based on kin term products was culturally salient. Yet, Read objects to Kronenfeld's argument (1980: 166) that only the 'L' analysis was adequate to provide "valid cross-system comparisons" because, contrary to the specificity of the 'F' analysis, for such comparisons,

... one needs to have the parts of the various systems being compared all expressed in a single set of units,¹⁹

which is exactly what Kronenfeld says the 'L' analysis is able to provide. Read (2018a: 71-3) sums up Kronenfeld's position as follows. Read admits that Kronenfeld is right saying that some of the properties of the Fanti kinship terminology are not universal, hence they could not be used universally were the aim of the analysis limited to using only Fanti's non-universal kin term products. However, what Kronenfeld failed to recognize, Read pointed out (2018a: 71-2), is – may the reader forbid me this long, but necessary quote –

... that the principles leading to the generation of a kinship terminology from primary kin terms – the latter being the kin terms specifying family relations (Read et al. 2014) – leads universally to computational systems enabling culture bearers to determine kin relations (Read 2007, Leaf and Read 2012, Read et al. 2014), and these computational systems can be the basis for comparison [here a note arguing that structural forms are 'analytically comparable even when each is generated from different units and structural equations']. It is the structure generated from the units of a kinship terminology, not the units themselves, through which intersystem structural comparison should be made.

Let us next define the mutual relationships between the kinship relationships stemming from kin term products and the genealogical order.

6.0 Genealogical space and predictions

Read et al. (2014) model the genealogical space, defined as the totality of possible "pathways" that lead, by recursive computing (or genealogical tracing) from a given individual to any other individual through child-to-parent or parent-to-child sequences, or through concatenations (or strings) of such sequences ultimately linked to a common ancestor. Read et al.

¹⁹ A comparable argument was used by Scheffler & Lounsbury (1971: 149): "Aside from their inadequacies ..., such analyses [in terms of kin term products] fail to carry the analytic process far enough to make the results of several such analyses readily comparable with one another ... [and the] analysis has ethnological, or comparative, or theoretical relevance only insofar as it is capable of revealing precisely how and where (a) particular system is similar to and different from yet other kinship systems."

(2014: 70) stress that the genealogical space comprises a vast number of likely pathways, due to the “combinatory explosion” prompted by the existence of maternal and paternal choices at each step of the recursion. Let’s take an example. In English, *granddaughter* of *great-uncle* is a *cousin*; this statement is a kin term product. In actual occurrence, Simone is instantiating this relationship. In ordinary circumstances, this may suffice, but if I have to be more precise and express the relationship that ties me to her at a genealogical level, I will be bound to make a genealogical tracing, starting from me, to ascend along my mother’s direct line, thus to my mother, then to the mother of my mother, then to the father and the mother of the mother of my mother who are our common ancestors and then descending to their son (who is the brother of the mother of my mother), then to the son of their son and then to the daughter of the son of their son, who is Simone. In English, this genealogical tie is typically labeled: ‘Simone is my mother’s mother’s father’s son’s son’s daughter’ (mmfssd), or mother’s mother’s mother’s son’s son’s daughter’ (mmmssd), or more commonly, avoiding the common ancestors: my mother’s mother’s brother’s son’s daughter (mmbds). In order to better visualize this linkage, I can draw a graph representing both instantiated lines rejoining at the level of common ancestors. This tracing illustrates the cognitive difficulties that anyone meets while computing distant collateral genealogical connections.

Read (2018a: 83) maintains that computing based on kin term products allows predicting all the kin categories (the relationships of genealogical connection) “subsumed” by kinship terms (kinship relations) generated in the process.²⁰ As an English example, Read (2018a: 92) takes the kin term product of *parent* by *grandparent* equals *great-grandparent* symbolized as $Pt \circ GPt = GGPt$. Read shows that the predicted kin categories for the kin term *great-grandparent* will be equal to the product of the genealogical instantiations of each of the kin terms making up the kin term product. The kin term instantiations are given by Read using lower case letters, ‘m’ for (genealogical) mother, ‘f’ for (genealogical) father.²¹ The instantiations for the primary term *parent* (*Pt*) are {m; f}, the ones for *grand-parent* (*GPt*) (Read 2018a: 92) are equal to the product of {m; f} x {m; f} since $GPt = Pt \circ Pt$, whose result is {mm; fm; mf; ff}, hence the genealogical category subsumed by the kinship term *grand-parent* (*GPt*).²² As far as the *great-grandparent* term is concerned, the product of instantiations will be {m; f} x {mm; fm; mf; ff} thus {mmm; fmm; mfm; ffm; mmf; fmf; mff; fff}. Taking this process further on, we will be able to compute in the same manner the instantiations of the kin term product, *parent* o (of) *great-grandparent* = *great-great-grandparent* (*Pt*

²⁰ Bennardo & Read (2005: 24, note 19), note that Kronenfeld 1980, “observes – in contradiction of the extensionist assumption of rewrite rule analysis – that one can determine the genealogical referents of terms from the kin term calculations via the referents of the primary kin terms.”

²¹ The symbols used here for kin terms are capital letters in italics: *GPt* (*grandparent*), *Pt* (*parent*), *M* (*mother*), *F* (*father*), *C* (*child*) *D* (*daughter*), *S* (*son*), *Z* (*sister*), *B* (*brother*), *GC* (*grand-child*), *A* (*aunt*), *U* (*uncle*). Each of these symbols can be combined with anyone else. *G* will indicate a generation above or under the relationship that follows, + or – indicate the fact that a sibling will be older or younger than ego. Genealogical ties are symbolized using lower case letters.

²² Read (2018a: 91, note 23), observes that kin term products and their genealogical instantiation (genealogical kin-type products) are written in the opposite direction. Thus, the kin term product *brother* o *father* = *uncle* (*B* of $F = U$) having the genealogical instantiations (the product of genealogical kin categories subsumed by *B* and *F*) given as {b} x {f} should be read using the possessive case, thus father’s brother {fb}. I, in turn, observe that, it is correct as far as English goes, but that in French both the kin term product and the genealogical instantiation are expressed in the same direction, using the preposition ‘de’, or ‘du’, so that the kin term product *frère* de (o) *père* = *oncle* ($B \circ F = U$) is instantiated as ‘frère du père’.

o $GGPt = GGGPt$), written as $\{m; f\} \times \{mmm; fmm; mfm; ffm; mmf; fmf; mff; fff\}$ whose result is $\{mmmm; fmmm; mfmf; ffmf \text{ etc.}\}$. Read (2018a: 92) concludes that these successive sets of kin types represent the exhaustive series of genealogical referents for the kin terms *grandparent*, *great-grandparent*, *great-great-grandparent*. All the possible genealogical referents for kin terms can be calculated in this manner, for all the of kin term products from a descriptive terminology like the English (or American) and French terminologies.²³

Read (2018a: 92-4) tackles the way that genealogical instantiation is operated from kin term products within classificatory terminologies, taking as an example the kin term product $F \circ (of) F = GPt$ ($tamai \circ tamai = kui$) from the Tongan kinship terminology. *Kui* can be translated as the non-sexually marked general term *grandparent*. Read (2018a: 93) first observes that the predicted genealogical referent for *kui* generated from $tamai \circ tamai$ is $\{f\} \times \{f\} = \{ff\}$ which, he says,

... obviously is not the full set of genealogical relations for the kin term *kui*. We also need to consider other products of primary ascending terms equal to *kui*.

Thus, $fa'e \circ fa'e = kui$ ('mother' o 'mother' = 'grandparent'), $fa'e \circ tamai = kui$ ('mother' o 'father' = 'grandparent'), $tamai \circ fa'e$ ('father' o 'mother' = 'grandparent') which is to say that, according to kin-type calculus, *kui* has also for genealogical referents: mm, fm, mf (Read 2018a: 93). Read only mentions, at this point in his article, what are the focal referents for the primary kin terms *tamai* and *fa'e*. We know that $tamai \circ tamai$ does not simply determine $\{f\} \times \{f\} = \{ff\}$, but also – and it is not exhaustive – $\{f; fb\} \times \{f; fb\} = \{ff; fbf; ffb; fbfb\}$ and so much for the other mentioned products. We should add that the genealogical referents of *kui* are even more extended through the genealogical space as Read (2018a: 93) indicates that

... *kui* is used in all ascending generations from the second generation upwards,

like in $tamai \circ kui = kui$, thus $F \circ GPt = GPt$ (see also Bennardo & Read 2007).

Read (2018a: 93), then formulates a rule (or property) general in character, regarding the relation between a kin term, the kin term product leading to this term, and the corresponding genealogical kin-type products:

In other words, included as genealogical referents of a kin term are the kin-type products corresponding to *any* (italics in the original) kin term product that equals (that is, is reducible to, using the structural equations) the kin term in question.

The question about how kin terms are extended, covering categories of kin types other than the primary (or focal) kin type that it designates is addressed by Read at the end of his article of 2018a. One of the peculiarities of this question relates to the fact that a number of kin term products, prototypic of classificatory kinship terminologies, reduce the term resulting from the product to one of the terms put in the product, like *brother* of *father* = *father* ($B \circ F = F$) or *sister* of *mother* = *mother* ($Z \circ M = M$), *daughter* of *brother* (man's speaking) = *daughter* ($D \circ B = D$) etc. Read (2018a: 93) makes it clear that the property that I just mentioned, will be used

... to show how the extension problem is resolved through the generative logic for classificatory terminologies.

²³ Thus, for *child* of (o) *uncle* = *first cousin* (*cousin germain* in French), knowing that *uncle* covers fb, mb, mzh, fzh (with h = husband), we can write $\{fb; mb; mzh; fzh\} \times \{s; d\}$ thus $\{fbs; fbd; mbs; mbd; mzhs; mzhd; fzhs; fzhd\}$. I am not talking here about cousins by marriage.

I will account for Read's argument after the part, below, that deals with the generation of classificatory terminologies.

7.0 The family space and the sibling conceptualization

Since it is possible to go from a kin term calculus to the determination of its genealogical referents, a thing we do more than once during our daily lives when we need to compute the precise genealogical connection that binds us to a relative that we name from a particular kin term: *uncle*, *great-aunt*, *second cousin* etc., and since it is possible, from computation, to predict in a realistic and correct manner, the 'instantiable' genealogical categories for each and every kin term from a kinship terminology, either descriptive or apparently also classificatory – the resolution of the extension problem being postponed – it must be assumed that there must be a common basis to the two ways of understanding kinship. In the article where Read and his colleagues (Read et al. 2014) deal with these fundamental conceptual questions, they (2014: 65) assume the necessity of relating

... the logicity of specific terminology structures to a common conceptual basis for both a genealogical and a kin term space. They jointly form a space of kinship relations, and both derive from a structure of relations we call a *family space* [italics in the original]. ... The relationship of the family space to the genealogical and kin term spaces [also] makes evident two different ways that the sibling relation has been conceptualized.

By "conceptual basis" common for both genealogical and kin term spaces, Read (2012: 24) means the "basic" concepts of kinship (see below), also considered as "axiomatic" (Read 2015: 53-54). Let me quote the passage where Read et al. (2014: 65) clarify the nature of primary conceptual relationships upon which the kinship terminologies are built:

As a cultural construction, the system of kin terms constituting a kinship terminology must begin with initial (that is, primitive, in a logical sense) conceptual relations whose definition lies outside the kinship terminology, otherwise we have circularity. In our framework these primitive conceptual relations are derived from the culturally identified positions that form a family space from relations: '*as ancient as the family*' (Morgan 1871: 10; emphasis in the original).

In his 2012 book (p. 24) Read speaks of:

... the basic concepts of kinship that have to do with the positions making up the cultural concept of a family as a basic social unit, not the form that a culturally constructed system of kinship relations takes on.

The primitive relations are those that are recognized or identified within the familial structure between the individuals making it up, which are modeled under the form of a family space, conceived between one particular individual, those who engendered him, his parents, who are spouses of one another, those that his own parents engendered besides himself, his siblings, or sisters and brothers, those whom, in turn, he engendered with his own spouse, his children if plural, and of course his spouse, his husband or wife. These relationships, Read et al. (2014: 66-9) remark, include both cultural and biological dimensions. Morgan (1871: 36, 145, 448 etc.) called them "primary relations."

This is also how Read (2015: 55-6 and Figure 3) conceives them in his "family space" model. Furthermore, in his article of 2018a (p. 63) Read answers positively to the question as to whether:

The kin terms making up a kinship terminology are derived directly from primary relations, such as the relations linking family members.

Morgan (1871: 470) stated, as we mentioned earlier (chapter 1), that the *primary relationships*, making up the familial circle, were historically, the first to have been assigned specific terms, and these have to be logically considered as the *primary terms*. For his part, Read (2018a: 77) assumes that the primary terms structuring kinship systems through their mutual products,

... are terms for the family relations,

and he adds (2014: 65) that,

... from an evolutionary viewpoint, these primitive conceptual relations had their origin in the evolving mental/cognitive capacities of the precursors of modern *Homo sapiens* (Read, Lane and Van der Leeuw 2009; Read 2010b, Read 2012).

The family space, defined by Read et al. (2014: 65-66, Figure 1) as a body of four interconnected (primary) “positions” is materialized by means of a “minimal” square-shaped sketch, with its four angles symbolizing those positions, also identified using little squares (not represented in our own graphic below). The superior squares concretize the parent’s generation’s positions, the inferior ones the children’s generation’s positions. The mutual and reciprocal relationships between the four positions are those between parent and child, child and parent, spouse and spouse, child and child (sibling and sibling). These relationships are materialized by vertical horizontal or diagonal lines. In fact, each of the squares (or angles) represents two positional possibilities: parent and (or) spouse, child and (or) sibling. The different positions, one may say, the different ‘statuses’ are actualized (or set up) – here I significantly simplify, without, I do hope, betraying the authors thought – or more exactly legitimized by the marital institution. This institution is materialized in the sketch by the spouse reciprocal relationship (dotted line).

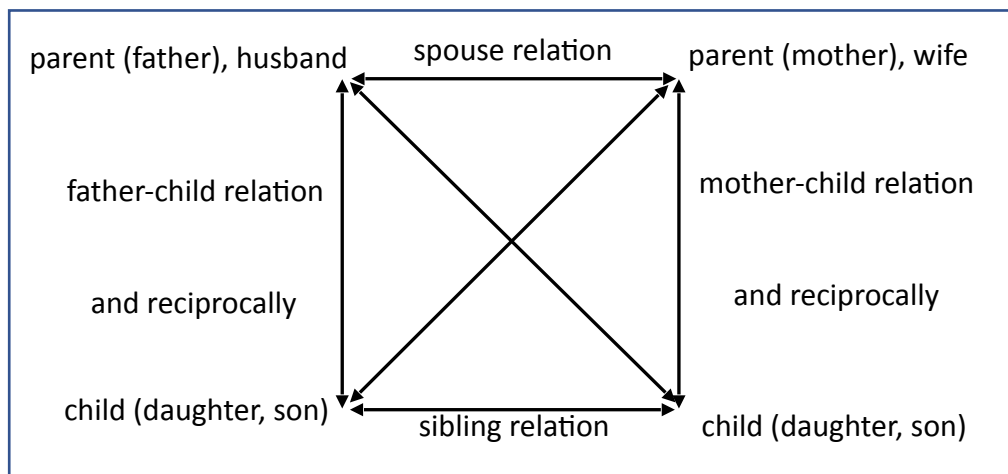


Figure 2: Family structure. Adapted from Read 2015 (Figure 2) (diagonals, also represent parent-child-relations and reciprocally, child-parent relations).

In a more recent article, Read (2015: Figure 2), a new sketch is added to the first one and titled “family structure,” which defines these positions as those of parent (father, and mother), spouse (husband and wife) and child (son and daughter), and through vertical, horizontal and diagonal lines with arrowheads, all the possible relationships encompassed by this

structure. The diagram's label stipulates that the "structure is that of a nuclear family,"²⁴ though this appears to be a misstatement since, in the preceding paragraph Read (2015: 55) indicates that this structure

... neither defines, nor determines the empirical form of actual families. Rather, it illustrates the structural relationships among the axiomatic kinship relations that are integral to the concept of family.

Here is an adaptation from this diagram:

Thus, the positions must be considered as "culturally identified," this is to say that an individual does not necessarily derive his status within a family from a biological tie with the other members of the family structure. What Read et al.'s (2014) conception implies is that the family structure's (or space) positions are, by definition, put through a filter of cultural criteria, coming down to knowing who is to be considered as father, mother, child etc. in a given society, and not to consider parents and children as necessarily determined through biological factors.

Read (2015: 55 and 56; Figure 2) points out that this model, including these positions and their mutual relationships, is to be viewed from the perspective of an outside observer. Conversely, the adoption of a self-centered point of view transforms the "family structure" into a "family space," in which the relationships are all considered from the *self (myself)* position. This latter model corresponds, in broad outline, to Morgan's idea of the familial circle (see chapter 1):

From the self position, we have an ascending direction determined by the parent position in relationship to the self position and a descending direction determined by the child position in relationship to the self position. (Read et al. 2014: 68)

As indicated, Read et al. (2014) and Read (2015) make it clear that this model is not peculiar to a particular form of family – the nuclear family for example. The authors thus posit that each position within the model may be instantiated, according to cultural criteria, by one particular individual or several (Read et al. 2014: 67 and Figure 1). A father can have several wives, or a mother several husbands. The model even encompasses the fact that several women can be the spouses of several men, as note 3 (Read et al. 2014: 67) suggests by mentioning ethnographic references to group-marriage.

I will now go back to a crucial question, only briefly outlined earlier: What about the sibling position with regard to *self*? According to Read et al. (2014: 69), a culture is given two structural options as to the sibling position's orientation. In order to avoid paraphrasing, and misrepresenting this important point, I will quote from the authors:

One, [the first structural possibility], is that the sibling positions are directly linked to the parent positions and indirectly to the self position through the parent positions [Figure 3A] and the other is that they are directly linked to the self position and indirectly linked to the parent positions [Figure 3B]. The two possibilities arise from two interpretations that can be made of the fact that one's parent's child can either be oneself or one's sibling. The first possibility corresponds to imagining child of parent as being distinct from oneself, hence one's parent's child occupies a sibling position as indicated in Figure 2A. The second possibility corresponds to imagining that the child of parent is oneself, hence a sibling position is not

²⁴ Read (2019, personal communication) clarifies that the wording "the 'structure' is that of a 'nuclear family'" should be: "the 'structure,' when fully instantiated, will have the structural form of a nuclear family." See Read's comment on Matthey's Observation n° 3 below.

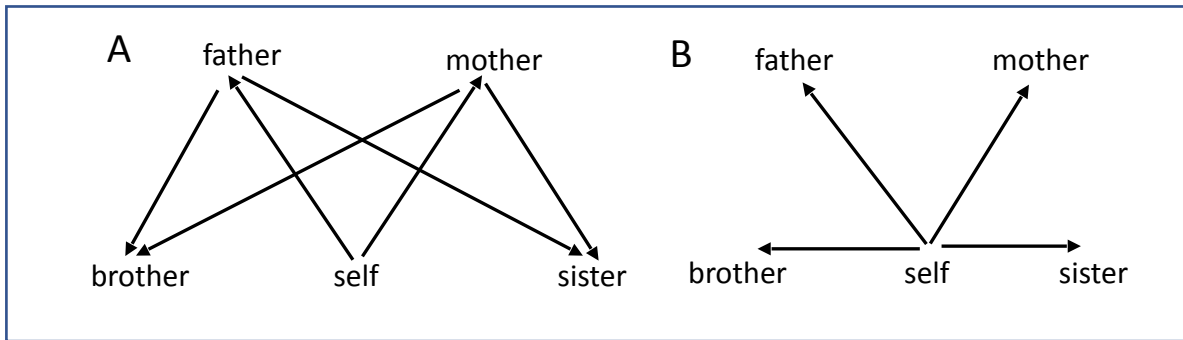


Figure 3: Sibling positions with *self* position as reference (adapted from Read et al. 2014 and Read 2018a).

linked directly to a parent position but to the self position as indicated in Figure 2B [Figure 3A and B here adapted from Read et al. 2014].

In other words, insofar as sibling is conceived as child of parent (a child other than myself), *i.e.*, generated by the kin term product:

$$\text{child o parent} = \text{sibling.}$$

It cannot be considered as a primary term (or relation), because it is itself the product of primary terms. Conversely, as long as my sibling is conceived as having the same parent(s) as I, thus expressed using the kin term product:

$$\text{parent o sibling} = \text{parent,}$$

the sibling term appears as primary. At first glance, this kin term product may appear as trivial or insignificant, but, in fact, the whole demonstration that follows about the generation of a classificatory kinship terminology relies on it. Here is a more recent wording by Read (2018a: 99) pertaining to this question:

Structurally, there are two ways that a sibling may be defined: (A) speaker's sibling is the child of speaker's parent other than speaker and (B) individuals A and B are siblings when the parents of A are also the parents of B (see Figure 4 [here Figure 3]). Empirical justification for these two ways to conceptualise siblings comes from ethnographic observations regarding the importance of the sibling relation when sibling is conceptualised through shared parents

In order to illustrate the second way to conceptualize a sibling – hence to justify it empirically – Read mentions how the Kaluli from New-Guinea – an ethnographic example taken from Edward Schieffelin (1976: 54-55) that the author has often taken up in his articles and essays on kinship – compute their sibling relationships. Here is the calculation done by the Kaluli speaker:

‘I call him brother because my father calls his father [the father of this brother] brother’

Schieffelin (1976: 54-55), still quoted by Read (2018a: 99, among other quotes) extrapolates that the

... *sibling relationship takes precedence over descent [parent-child links] whenever the principles are in conflict* (italics in the original).²⁵

Read also quotes Rusiate Nayacakalou (1955: 48), an indigenous Fijian ethnographer, commenting upon an analogous Fijian computation:

... if A is a classificatory father to B, and C is also a classificatory father to B, then A and C are classificatory brothers, even if no genealogical tie can be traced between them.

Read (2018a: 99) emphasizes that Nayacakalou (1955: 46) identifies the sibling conceptualization in Fiji through a principle of common parentage. I will return to this point in one of my observations below.

8.0 Generating descriptive and classificatory kinship terminologies

We have now reached the most important articulation, which is to explain the difference between the descriptive and the classificatory terminologies, two designations that, as I have already said, Read has kept from Morgan. Read postulates that this difference relates primarily to the fact that the sibling term is or isn't a primary term within the internal logic of a given kinship terminology. The first alternative is constituent of a classificatory terminology, the second one of a descriptive terminology.

Read has set the objective of proposing a theory relating to how, within the two types of systems, specific terminological structures may be formally generated. Several steps appear necessary in order to reach this goal. I do not intend to repeat everything that the author (or the authors) wrote during the course of his (their) demonstration, and I urge my readers to read the different articles that I have mentioned throughout the present chapter -- a number of which, as Read himself recognizes, are conceptually difficult. Here, I would rather emphasize, throughout the following demonstration, what appears crucial with regard to an explanation for the peculiar structural features of a classificatory terminology, which, as Read et al. (2014: 83) reiterate, can be summarized by saying that a classificatory terminology

... [does] not distinguish between, for example, genealogical parents, and genealogical same-sex siblings of genealogical parents.

With these features constituting the "core property" (*i.e.*, the "classificatory principle," Read 2007: 20) of classificatory kinship terminologies. Read then (2007: 20) explains that all the theories, up to the time of his writing, have basically failed

... to recognize that a structural property such as the classificatory principle arises from the logic for the generation of kinship terminologies.

and consequently (Read 2007: 21), one has to

... outline the logic leading to the equations "Brother" of "Father" = "Father" and "Sister" of "Mother" = "Mother."

²⁵ Schieffelin (1976: 53) observes that the Kaluli, not being great genealogists, may short-circuit these computations by relative products, which, most of the time, bring forward a sibling relationship as a link explaining the application of a kin term to a given individual (1976: 54). During this operation, he stresses once again (1976: 55) that "ties of sibling relationships are in contradiction to those traced by descent and that [the next phrase quoted by Read 2018a: 99] the sibling relationship takes precedence over descent" Indeed, in a strict genealogical perspective, the individual that someone calls *brother*, using the computation described by Schieffelin, and whose father is the paternal uncle of the speaker, is not his genealogical brother but his genealogical cousin.

Among all the steps deemed necessary by Read throughout the process of generating a kinship terminology, whatever its type may be, there are three upon which we must focus our attention: the first one consisting in generating what the author calls an ascending structure (the terminology and the structural equations applying to the generations higher than ego's), the second one consisting in generating a descending structure, the third one consisting in using one of the *universal* properties pertaining to kinship systems, *i.e.*, the reciprocity of kin terms.

Generating the ascending structure, is achieved by formulating *all* the products of primary, ascending kin terms (Read 2007: 21, Read et al. 2014: 79, Read 2018a: 90, 100) pertaining to a given system, starting from ego's generation up through the direct ascending line. All terminological systems include as primary terms those describing the relationships within the family space, thus *father*, *mother*, or *parent* when the kin terms are not sexually marked, *husband* and *wife* or *spouse*, *daughter* and *son*, or *child*, *sister* and *brother* or *sibling*. Depending on whether *sibling* is conceived as resulting from the product of *child* and *parent* ($child \circ parent = sibling$), or as directly linked to *self* (see Figure 2 B; $parent \circ sibling = parent$), it will function as a primary term or not. Let's recall that, according to Read, a primary term does not result from any kin term product and that it is from primary terms (or generating terms) and through their mutual products that the terminology is built up. Thus, considering the American terminology, and confining ourselves to the masculine side, we will have a terminological ascending generating set made up from *male self* or *myself* position (written as *E* by Read) consisting of *father* (*F*) generating *grandfather*, through the product $father \circ father = grandfather$ ($F \circ F = GF$), then generating *great-grandfather* by the kin term product $father \circ father \circ father = great-grandfather$ ($F \circ F \circ F = GGF$), etc. The descending structure, also generated from *self*, comprises *son* (*S*), and the kin term products are $son \circ son = grandson$ ($S \circ S = GS$) then $son \circ son \circ son = great-grandson$ ($S \circ S \circ S = GGS$), etc.

For a classificatory system, the generating set for the ascending structure – still confining ourselves to the masculine side, as in the 2018a article – is *male self* (*myself*), *father*, *elder brother* (written as *B+*).²⁶ Three equations are “introduced.” The first one is $B+ \circ B+ = B+$, which Read says identifies the older brother in the ascending structure as a sibling term. The second structural equation is written as $F \circ B+ = F$, a kin term product that Read asserts agrees with the conception of a sibling being someone sharing his parents with *self*. This last equation is crucial as we will see momentarily. The third equation in the ascending structure may be $F \circ F \circ F = F \circ F$, meaning that, within a classificatory terminology and as far as this usage is ethnographically asserted, the second generation's kin terms will be used to designate the third generation's position as well.²⁷ Read (2018a: 94) points out that such an equation is “axiomatic,” which means that no satisfactory explanation has been yet given for its existence, and that one must take it for what it is, because it expresses the idea held by the mem-

²⁶ Read et al. (2014: 83-84, note 8) give the reasons why it is essential to take *B+* (*brother* older than *self*) for the ascending structure, and, through reciprocity *B-* for the descending isomorphic structure. I do not discuss these reasons here.

²⁷ While commenting on the first draft of this chapter (paper), Dwight Read wrote, and I quote: “Different terminologies have used different ways to limit taking products in an ascending or a descending direction. $F \circ F \circ F = F \circ F$ is one way (with variation on the generation level where a reflexive equation like this limits the ascending direction), another is that $F \circ F \circ F \circ F \circ F = 0$ (there is no kin term after the 4th ascending generation – the Punjabi have an equation like this) or $F \circ F \circ F = S \circ S \circ S$ (the ascending generation forms a circle with the descending generation, so $F \circ F \circ F \circ F = S \circ S$, and so on.”

bers of a group with respect to these relations. This being said, the kin term product $B^+ \circ F$ and the possible kin term resulting from it is missing. Let us hold off; it will be generated later.

Now we come to the descending structure. It is, by definition *isomorphic* (Read 2018a: 94) in relation to the ascending structure, and generated by means of the masculine set of descending primary terms: *(my)self*, *son* (in relation to *father*), and *brother younger than self*, (in relation to *brother older than self*), respectively written as E , S , B^- . Read defines the conditions that make F and S , and B^+ and B^- , reciprocal terms. He then introduces the structural equations isomorphic²⁸ to the ones from the ascending structure, $S \circ S = SS$, and $S \circ S \circ S = S \circ S$, isomorphic to $F \circ F \circ F = F \circ F$, meaning that there is no specific term to designate the third descending generation's positions, except, as long as it is conceptualized in this manner, by the term(s) pertaining to the second descending generation. He also introduces $S \circ B^- = S$, isomorphic to $F \circ B^+ = F$. The equation $S \circ B^- = S$ is intrinsically classificatory and may be verbalized as: "I call *son* anyone my younger brother(s) call(s) *son*."

At this point, Read calls upon another "universal" property inherent to kinship systems: *reciprocity*. This means that the reciprocal equation of a structural equation expressing a kin term product and pertaining to a given system is also a structural equation belonging to this system. Algebraically written, we have that $X \circ Y = Z$ and its reciprocal $Y^r \circ X^r = Z^r$ (with the exponent r indicating reciprocity) are both equations for the system if either is an equation for the system. Using the American system – the same applies to my own French system – I call *uncle* the person that my father calls *brother* ($B \circ F = \textit{uncle}$), and I call *nephew* the one my brother calls *son*, ($S \circ B = \textit{nephew}$), or even, I call *son* the one my son calls (*younger*) *brother* ($B^- \circ S = S$) and reciprocally I call *father* the one my older brother calls *father* ($F \circ B^+ = F$). For the classificatory terminologies, the equation $F \circ B^+ = F$ has the reciprocal equation $B^{+r} \circ F^r = F^r$, which says that $B^- \circ S = S$, hence $B^- \circ S = S$ is included as an equation in the descending structure.

The direct outcome of the reciprocal property, with respect to the structural equation $S \circ B^- = S$, is to have the reciprocal equation $B^{-r} \circ S^r = S^r$; that is, $B^+ \circ F = F$. Read also demonstrates that $B^- \circ F = F$ and finally that $B \circ F = F$ ("I call *father* anyone my father calls *brother*"), which is one of the (principled) equations upon which all classificatory systems are based. This demonstration also applies to a feminine generating set, from which one obtains: $Z \circ M = M$ ("I call *mother* anyone my mother calls *sister*"). Read concludes that the fact that a sibling term is a generating term (a primary term) within a given system appears as the very condition for the existence of a classificatory terminology. Allow me to make a citation, particularly striking in its radicality:

Surprisingly, the *classificatory equation* [my emphasis] arises for purely structural reasons inherent to the generation of a kinship terminology structure We have thus turned Morgan on his head. What Morgan took as a terminology property that required a hypothesized behavior such as group marriage for its explanation is, instead, the simple consequence of conceptualizing a sibling relationship as a fundamental kin relationship from which other kin relations are derived. Nothing could be simpler: sibling conceptualized as an irreducible construct leads logically to the *classificatory equation* [my emphasis] (expressed using kin term products) ... (Leaf & Read 2012: 275).

²⁸ Isomorphic means that the application of a set (E) to a set (F) that makes a law of (E) (ex: +) correspond to a law of (F) (ex: x).

9.0 The problem of the extensions within classificatory systems

We will deal now with the last point of great anthropological importance, which is to explain how a number of kinship terms within classificatory terminologies come to have several genealogical instantiations, both with regard to the direct and the collateral lines. For Read (2018a: 103-104), it is a question of establishing the structural foundation for the extension of a number of terms to several genealogical categories (kin-type products), empirically observed, like the extension of the term *father* – taken as the most mentioned example – to the genealogical father’s brother category, written as {fb}, as well as to several collateral categories of the same generation, like father’s father’s father’s son’s son {fffss (ffbs)}, or father’s father’s father’s father’s son’s son’s son {ffffsss (fffbss)}.

Read (2018a: 103) observes that the first extension to {fb} is established by genealogically instantiating each of the terms of the kin term product (or structural equation) $B+ \circ F = F = B- \circ F$ by means of the product of the categories $\{b+\} \times \{f\} = \{b-\} \times \{f\}$, which equals {fb+, fb-} and thus the category {fb}. By contrast, the other extensions are formally established, starting *from*, empirically asserted genealogical extensions of the term *father* to the father’s father’s father’s son’s son or father’s father’s brother’s son genealogical categories {fffss (ffbs)} towards the corresponding structural equation – thus for fffss: $S \circ S \circ F \circ F \circ F = F$. Read then shows that the latter is verified, by reducing it to the irreducible kin term, *father*.

Read reduces the equation to

$$S \circ (S \circ F) \circ F \circ F = F \text{ thus to}$$

$$S \circ B \circ F \circ F = F \text{ (by the equation } S \circ F = B, \text{ son other than myself).}$$

This product can be further reduced to

$$S \circ (B \circ F) \circ F = F \text{ thus to}$$

$$S \circ F \circ F = F \text{ (by the already verified structural classificatory equation } B \circ F = F),$$

This product is then reduced to

$$B \circ F = F \text{ (by the equation } S \circ F = B),$$

which is the very equation defining classificatory terminology systems.

Read goes on (2018a: 104) to comment:

... hence the genealogical relation given by the kin-type product fffss corresponds to the kin term product $S \circ S \circ F \circ F \circ F = F$, and so the genealogical relation fffss is included under the kin term F.

Read (2018a: 104) then stipulates that all the genealogical extensions of the terms belonging to classificatory kinship terminologies are likely to be predicted in the same manner:

... by reducing the corresponding kin term product with the structural equation for generating the kinship terminology to a kin term K that is irreducible, then assigning the genealogical string to K.

Read (2018a: 104) concludes:

We find that the predicted assignments match(es) the observed assignments for all kin terms, consequently we have an explanatory argument (see Read 2008) for the categories of genealogical relations associated with the kin terms in a classificatory terminology.

The fact that it is possible to predict in this manner the genealogical content of kin term products appears to confirm two things (Read 2007: 10).²⁹ First, that the definition of kin term via genealogical criteria does not constitute

... [the] irreducible information about kin terms ...,

then, that if terminologies can be generated from kin term products, also taking into account a few structural equations, as I just mentioned,

... then we have constructed a *formal way* [my emphasis] to generate both the kin terms for the kinship terminology and their genealogical content. This result shifts the basis for comparison of terminologies to the primary kin terms and the structural equations from which the terminologies can be generated

10.0 Conclusion

In this chapter I aimed at showing how Dwight Read managed, through a long, methodical and thorough theoretical endeavor to build up the idea of the necessity of a paradigm change in kinship anthropology. This conception has its origins in a new approach on how people within different human societies work out their mutual kinship relationships by computing kin terms (using an algebraic operation that Read defined as a kin term product), even without having the faintest idea of the actual genealogical ties that may be referred to by the kin terms involved during this operation.

This fact, once firmly established on the basis of consistent ethnographic data, led him to reconsider how kin terms and kinship terminologies should be scientifically interpreted. Rather than linguistic labels for genealogical kin-types, kin terms are instead viewed as cultural constructs linked to each other through kin term products, starting from primary terms (those referring to the kinship relationships that are directly related to ego in the family sphere, like the mother, father, child relations etc.) and then building outward to form a system of kin terms (a kinship terminology). Read went on to demonstrate how the structure of kinship terminologies (the systemic way in which the terms are generated for any given terminology) is precisely based on the internal (*algebraic*) logic of kin term products, a logic differing from that of genealogical tracing, based on children to parents up(down)ward sequences which he defines as *recursive*. Read thus posits a kinship terminology as a symbolic computational system based on kin term products.

Although displaying different logics, both modes of computing relationships (the system of genealogical connections, and the kinship terminology) have common deep roots in a structure of relations that has procreation and marriage at its basis. Read points out how the two modes of working out relationships can be understood in relation to one another, notably showing how the extension of a number of kin terms from a given kinship terminology to genealogical categories more distant than the ones they primarily refer to may be determined through the inner computation logic of the given kinship terminology itself.

Perhaps the most salient part of the contribution that Dwight Read has made to kinship theory is to show how the paradigm change that he calls for also radically modifies the ideas that can be formulated about how kinship systems, and notably classificatory systems have been (or are) established. Observing that none of the theories that were put forward so far, ei-

²⁹ It is also possible to find the appropriate kin term for a kin relation from information that is genealogical by nature. The computation, though, may be painstaking when the genealogical tie happens to be on a collateral line, e.g., a mother's mother's father's brother's son's daughter (*mmfbsd*) is a *third cousin once removed*.

ther the rewrite rules analysis or other accounts appealing to factors external to the terminologies themselves, and supposed to motivate its structure, have provided consistent explicative answers to the existence of the two different forms of kinship terminology structure, the classificatory and the descriptive – a distinction that he has rescued from Morgan and founded on whether or not the lineal genealogical relations are terminologically merged with the collateral – Read went on to argue in detail how different modes of conceptualizing a sibling may have consequences for generating kinship terminology structures. Sibling, conceptualized in terms of shared parentage, and embodied by the kin term product $F \circ B = F$, will lead, by bringing into play two properties universal to kinship terminologies, namely isomorphism between ascending and descending kin term structures and reciprocity between structural equations, to generating a classificatory terminology. Sibling conceptualized as parent’s offspring other than self is embodied by the kin term product $S \circ F = B$, meaning that sibling is a “concept constructed from the kin terms parent and child” (Read 2014: 85) has no generative value in the descriptive terminology where it is found.

On the historical side, Read has posited a sequence where the concept of genealogical connections and genealogical tracing appeared on the stage long before kinship terminologies arose. However, due to the cognitive difficulties entailed by the long chains of genealogical strings, or by the number of possible genealogical “pathways” by which distant genealogical connections can be established, notably collateral relations, a new system easier to handle, of symbolic and mathematical nature, was introduced into *Homo sapiens* social repertoire at about the same time when other highly symbolic achievements emerged in the societies of the Upper Paleolithic.

I will now proceed with the observations that Read’s theoretical achievement has prompted me to make.

Observations about Dwight Read’s theory made by Alain Matthey with

interlinear comments written by Dwight Read in italics

1. Read (2018a: 91-2 and note 23), takes good care to distinguish the phrasing of a kin term product from the one corresponding to genealogical tracing. The former appears in the form of the equation $X \circ Y = Z$; for example, *mother* o (of) *father* = *grandmother* ($M \circ F = GM$); the latter, which amounts to a genealogical instantiation from this product, appears, in English, in the form of the possessive case, thus *father’s mother*, which, as Read says (2014: 70) signals a genealogical sequence going from parent to parent. This assertion about the possessive form distinguishing genealogical sequences from kin term products is not generalizable to other languages. In French, as well as in numerous other languages, both formulas – kin term product and genealogical sequence – are formally equivalent and one would say *mère de père* for both in French.

Morgan stressed that in a number of kinship terminologies, kinship nomenclatures were in the form of a combination of primary terms. I have already mentioned his examples taken from Gaelic languages, where one finds, according to his sources, the terms *mac mac my shuyr*, literally ‘son of son of sister,’ in Gaelic Manx, or *bràthair m’athair*, literally ‘brother of father’ in Scottish Gaelic. I also listed a few examples taken from the Arabic kinship terminology. A

number of Arabic kin term products, starting with those including primary terms, may not end up with *another term* but with some descriptive formula, thus a combination or composition of kin terms, either primary or not. The product of *ibn o ibn* (*son o son*), if we follow Morgan's tables (1871: 77-127) displaying the Arabic kinship terminology (among other mostly descriptive terminologies), results in *ibn ibni*, 'son of my son,' the product of *ibn o ibn o ibn* will equal *ibn ibn ibni*, 'son of son of my son.' Still in Arabic, all the relations through cousinhood obtained through products of children by aunts or uncles will also result in descriptive formulas: *bint o 'amma* (*daughter o paternal sister*) = *bint 'amma*, *ibn o hāl* (*son o maternal uncle*) = *ibn hāl* etc. (see also Cuisenier & Miquel 1965). In the context of Aboriginal Australia, George Taplin (1879: 156) published evidence, brought up by Gason, of descriptive formulas within the Dieri's classificatory terminology, side by side with simple kin terms. Thus, *andrie kakoonie noa*, literally meaning, in this order, 'mother-sister-spouse,' (cf. English mother's sister's husband), coexists with *apirrie wauka* that we have already met and refers to a secondary or 'little' father. The existence of such parallel systems seems to give some credit to Morgan's idea (1877: 484) about the coexistence of a descriptive system – that we can also interpret as a system of genealogical tracing – and a classificatory system within one single language.³⁰ Such examples could be multiplied. This does not deprive the concept of kin term product from its operative value, but may limit its scope. Read observes that a kin term product may have several outcomes: another kinship term, which is the usual case, no kin term, or even more than one (Read 2018a: 75).³¹ To this we must add the possibility that one kin term product leads back to itself.³²

DR: The comments by AM regarding kin term nomenclature are informative. I deliberately do not deal with nomenclature as this is a separate dimension orthogonal to the dimension of structure and my focus has been on the structure of kinship terminologies. How nomenclature relates to structure and how structure is represented through nomenclature would be a useful expansion of my work on the structure of terminologies. AM's comment that the kin term product also in-

³⁰ Unfortunately, Morgan (1877: 484) is not very precise when he claims that "All the tribes possessing the Turanian system (a classificatory system, my emphasis) describe their kindred by the same formula, when asked in what manner one person was related to another. A descriptive system precisely like the Aryan always existed both with the Turanian and the Malayan, not as a system of consanguinity, for they had a permanent system, but as means of tracing relationships." This system, brought to light by Morgan, bears similarities with what Read calls genealogical tracing. But, through this phrasing, one can also assume that Morgan alludes, without clearly conceptualizing it, to a kin term product system.

³¹ Read (2018a: 75) gives the American-English example of the product of *mother* by *first cousin once removed*, which may be either *great-aunt* or *first cousin* because the term *first cousin once removed* can address the child of a *first cousin* or the child of *great-aunt*.

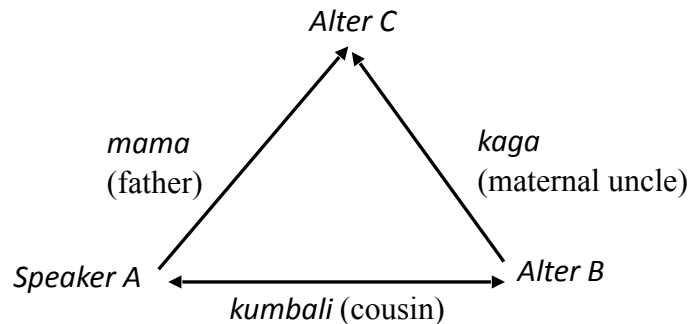
³² These 'descriptive' combinations of primary terms could indicate a terminological impoverishment following a structural terminological change. Within Gaelic systems, it could be that the second generation's descriptive combinations correspond to the disappearance of the inherited PIE grandparents and grandchildren terms. This seems to be also the case for the first ascending and descending terms. The descriptive formulas seem to have taken precedence over the inherited terms designating uncles and aunts. What is happening with the cousin terms is less clear since no term for these relations has been yet formally reconstructed at the PIE level.

cludes the case where the kin term product of *K* and *L* leads back to *L* is implicit in my phrase: “the kin term product of the kin terms *K* and *L* leads to the kin term *M* by the equation, $K \circ L = M$.” (2018a: 75) since *L* and *M* could be the same kin term and, if so, $K \circ L = L$. Nonetheless, it is better to be explicit in the manner that *AM* suggests.

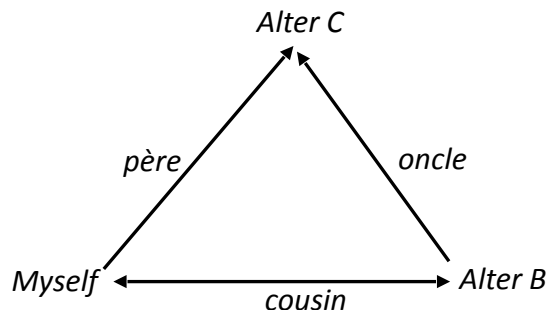
- Among the examples of vernacular kin term products pointed out by Read in different articles, some appear where the computing process looks inverted and so cannot be strictly formalized as kin term products in precisely the sense that Read first defined them. Let’s take the two examples described previously in this chapter. The first one is when two Lama Lama male speakers who had never met before, proceed to establish their mutual kinship relations by reference to a third person with whom both are related. The second, well known example taken from Radcliffe-Brown (1913: 150-51), is recounts how a Kariera speaker computes the correct kinship term to be applied to an individual he does not know but who has a well-defined kin relation to a third person to whom he is himself (the first speaker) related:

Let us suppose, as an example, that two men, A and B, meet each other for the first time. The man A has a relative C who is his *mama* (father, my emphasis). At the same time C is the *kaga* (maternal uncle, my emphasis) of B. It immediately follows that A and B are *kumbali* (cousins, my emphasis) to each other.

This triangulation can be graphically represented as follows:



The very same situation, in my French system, is when I call *cousin* the man (alter B) who calls *oncle*, my father (alter C). Here is the graphic triangulation:



The formula summing up this situation is not the one that Antony Good (1981: 113, quoted in Read 2018a: 73) used to describe the kin term computing process among the Kondaiyankottai Maravar, a Dravidian group from southern India:

If ego knows what term to use for Alter A, and also knows what term A uses for Alter B, he can easily work out what term he himself should use for B.

But rather, while remaining faithful to the compact side of the phrasing, it would be:

If ego knows what term to use for Alter A and also knows what term B uses for Alter A, he can easily work out the term he himself should use for B.

Apparently both procedures are used indifferently by the speakers in any language – though this remains to be verified in detail. Thus, one can easily conceive, as I just exemplified with my own language, that with regard to the relative who calls my father *oncle*, I call him(her) *cousin* or *cousine* or that a relative who is called *neveu* or *nièce* by my father I call him(her) *cousin* or *cousine* as well. The difference between the two methods is that the first one, as it stands, cannot be formally represented as a product of kin terms. This, however, does not remove anything from the operational value of the kin term product. Although these two ways in which mutual kinship relationships are established might appear different, the first one is likely to be reduced to the second one.

Thus, the Kariera-type computation (first triangulation on page 151) reported by Radcliffe-Brown is likely to amount – in terms of mental operations – to working out kin term products. The male speaker A is likely to (mentally) formulate: “B is *kuling* (‘nephew’ [‘son’ of ‘sister’]) of C, my *mama* (‘father’) thus he is *kumbali* (‘cousin’) to me,” and the male speaker B in turn works out: “A is *mainga* (‘son’) of C, my *kaga* (‘maternal uncle’) thus he is *kumbali* (‘cousin’) to me.”³³ In the French example, one just replaces *oncle* by *neveu* or *nièce*, its reciprocal term, and obtains *neveu* (*nièce*) o (of) *père* = *cousin(e)*.

The case involving two Lama Lama male speakers reported in Von Sturmer (1981) and quoted by Dousset (2008), where A (Mickey) calls the woman C *aunty*, and B (Mareeba man) calls C *granny*, can be as well reduced to the kin term products *grandson* of *aunty* and *nephew* of *granny*. But, not being knowledgeable of the common vernacular kinship terminology they are using, I will transpose the interaction between the two men into the Kariera language and kinship terminology.

Suppose, then, that A (Mickey) calls the woman C (his ‘aunty’) *toa* (‘father’s sister’), and that his interlocutor, B, calls C (his ‘granny’) *kandari* (‘mother’s mother’). A (Mickey) knowing that C is *kandari* (‘mother’s mother’) to B, immediately deduces that B is *kandari* (‘daughter’s son’) to C (see Radcliffe-Brown 1913: 154 about the reciprocal use of the terms for grandparents). He will now think out the kin term product:

³³ The example, often borrowed by Read (2018a: 73 and elsewhere) from Marshall Sahlins (1962: 155), illustrates the way that the Moala speakers from the Fiji islands work out their kinship relationships. We are still in the case where one supposes that Ego (A) never met the third person (Alter C):

... if A is related to B as child to mother, *veitanani*, while C is related to B as *veitacini*, sibling of the same sex, then it follows that A is related to C as child to mother although they never before met or knew it.

Thus, this is a situation of Kariera type, where A knows the term that C uses to address B. What makes this situation peculiar is that B and C are same-sex siblings. In other words, they address one another as siblings of the same sex (*veitacini*). This configuration can, consequently, be narrowed to the kin term product $Z \text{ o } M = M$ (*veitacini* o *veitanani* = *veitanani*).

... *kandari o toa* (C) = *mainga* (DS o FZ = S). Thus, B is *mainga* ('son') to Mickey.

Now B (the other man), knowing that C is *toa* (father's sister) to A, immediately deduces that A is *toa* ('brother's son') to C, as *toa* is reciprocally used between father's sister and brother's son (FZ – BS). B then works out the following kin term product:

... *toa o kandari* (C) = *mama* (BS o MM = F). Thus, Mickey is *mama* ('father') to B.

These three fictitious examples illustrate how the “Kariera-type” interactions between two individuals not knowing each other but both having a definite kin relation with a third person may actually be narrowed to the interlocutors working out their mutual kin relationships using kin term products in the manner that Read indicates.

DR: It definitely would be useful to have more systematic studies of the way the users of kinship terminologies determine kin term relations when the proper relation is not known to the parties involved, and not just anecdotal, or largely anecdotal, accounts.

3. Now consider the family space as a conceptual foundation of kinship relations. The joint article by Read et al. (2014: 65) has a broad conceptual scope and intends (I repeat here my previous quote of this passage):

... to relate the logic of specific kinship terminology structures to a common conceptual basis for both a genealogical and a kin term space. They jointly form a space of kinship relations, and both derive from a structure of relations we call a *family space* (emphasis in the original) ... The relationship of the family space to the genealogical and kin term spaces also makes evident two different ways that the sibling relation has been conceptualized.

Read et al. (2014) go on to say:

As a cultural construction, the system of kin terms constituting a kinship terminology must begin with initial (that is, primitive, in a logical sense) conceptual relations whose definition lies outside the kinship terminology, otherwise we have circularity. In our framework these primitive conceptual relations are derived from the culturally identified positions that form a family space from relations “*as ancient as the family*” (Morgan 1871: 10, emphasis in the original).

Read tells us that the logic of terminological systems -- I quote all the articulations – “derive from” (Read 2015: 53, Read 2018a: 63), “begin with” (Read et al. 2014: 65), or “has to do” with (Read 2012: 24) primary or “primitive” conceptual relations, which in turn “derive” or come from the culturally identified positions of the family space. In other words, the kinship terminologies, as well as the separate genealogical scaffolding, both find their very basis in the primary relations generated by the advent of the family within archaic *Homo sapiens* society. These primary relations and concepts, and the terms that they engender, have their deep roots, Read says (2015: 53):

In ... the biological facts of reproduction and in culturally defined marriage systems that define conditions for offspring to be fully recognized as social members of a society ...

Read (2015: Figures 2 and 3) acknowledges that his diagram that introduces the “concept of self into the family structure,” and is supposed to “incorporate all the elements for the concept of a family,” is modeled on the structure of a “nuclear family,” while he admits (2015: Figures 2 and 3) that actual families may have empirical forms depending on the cultural instantiations of the categories in the family structure.

DR: My wording, “The structure is that of a nuclear family...”, suggests that I derived the family structure/family space using the nuclear family as a model. That is not the case. Instead, I asked myself: Which of our primary kinship relations could reasonably, in a deep history sense, have been understood even before our hominin ancestors had worked out a rudimentary kinship terminology system? The obvious candidate is the mother relation – we intuitively know who is a mother and what is meant by the mother relation through the facts of pregnancy, birth, nursing, mothering behavior, and so on. The father relation likely came into play as the ability for an emotional bond between a male and a female developed, and the marriage relation was then a cultural way to resolve the inherent ambiguity of the father relation. It is only after these primary relations are in play that it makes sense to refer to the nuclear family as a social unit. Thus, more accurate wording would be: “The Family Space, though it may appear to resemble the form of a nuclear family, differs from a nuclear family in the following ways ...” Even better is the wording I used in Read (2018a: 84) “By a Family Space will be meant a mental construct, not the instantiation of a mental construct such as the nuclear family that is part of the phenomenal domain.” In the book edited by Warren Shapiro in which the article, Read (2018a), appears, The contradiction is due to incorrect wording used by Shapiro, the senior author for the Introduction, that I, the junior author, missed in the proof-reading stage of the book’s publication.

The legend of Figure 1 of the joint article of 2014 (Read et al. 2014: 66) stipulates that one person or several may be assigned to each of the positions within the family space according to cultural criteria. With regard to the positions of parent-spouse, for example, this remark allows the assignation of one man to the position of father-spouse, and several women to the position of mother-spouse, thus generating a polygynous family space; or several men may be assigned to the father-spouse position and one woman to the mother-spouse position, generating a polyandrous family space. Even more, if several men are assigned to the father-spouse position and several women to the mother-spouse position, we will get a group family space (Figure 4).

This last possibility is briefly addressed later in the same article (2014 et al.: 67, note 3) with the mention of ethnographical references to group marriage in

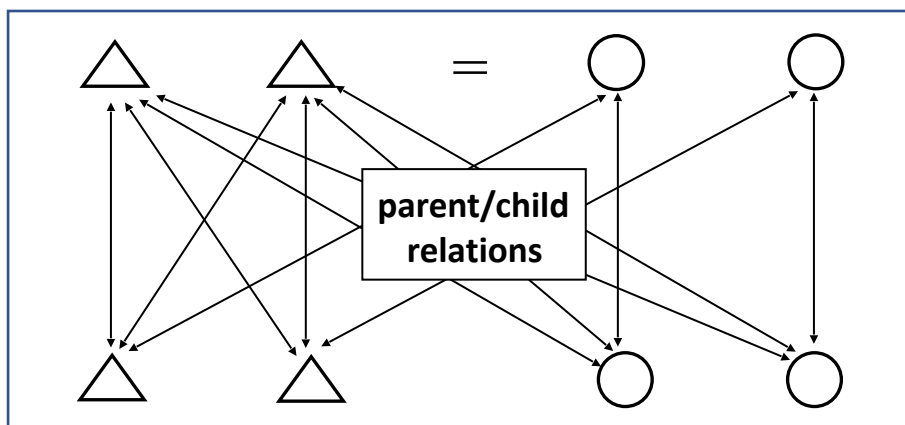


Figure 4: Family space where several individuals are assigned to the positions of parent-spouse. The triangles stand for males, the circles for females, the sign equal indicates a spouse relation between all the individuals belonging to the first ascending generation. For purpose of clarity, I do not represent the sibling relation.

Thomas (1906).³⁴ Is this to say that Read et al. (2014) rehabilitates, by the back door, a solution that Read (2007: 20) rejected a few years ago, arguing that the distinction established by Morgan between the descriptive and the classificatory terminologies:

... was extremely insightful though non-intuitive as indicated by his abortive attempt to account for classificatory terminologies through group marriage.

DR: Whether group marriage in the form of a cohort of brothers marrying a cohort of sisters was ever the regular practice of any group is an empirical question. Whether group marriage of this kind could account for classificatory terminologies is a logical one. Morgan's argument was rejected on the empirical grounds that there was no ethnographic evidence showing that group marriage of brothers with sisters ever occurred – but that does not establish that group marriage like this never occurred over the time frame for the deep history of kinship relations. However, even if brother-sister group marriages did occur, Morgan's argument connecting marriage like this to classificatory terminologies is faulty as his argument only provides an argument for why father and father's brother might both be referred to by the same kin term, but this does not establish why other males in the +1 generation would also be referred to as 'father' and it does not establish the symmetry between the 'father' term and the 'mother' term. Also, it does not establish why, in classificatory terminologies, there are two terms for same sex sibling, conventionally translated as 'older same sex sibling' and 'younger same sex sibling.' Regardless of the empirical facts regarding whether it ever occurred, brother-sister group marriage does not account for the classificatory terminologies on logical grounds.

³⁴ As we noted earlier, Thomas (1906) is – with Malinowski (1913) – one of the most ferocious destroyers of the idea of group marriage.

Let us go on. Read postulates that the logic pertaining to kinship terminologies, as well as the genealogical relations, arise from, or derive from the culturally identified positions making up the family space. We are entitled to ask in what manner.

DR: Genealogical relations derive from the relations in the Family Space using the logic of recursion. Thus, the mother relation links child to child's mother; then recursively, the mother relation links child's mother to child's mother's mother and so on. Similarly, for the other relations in the Family Space. The Family Space relations lead to kin terms and the kin term space through the binary product logic of kin term products. Thus, the mother relation leads to, through kin term products, $mother \circ mother = 'grandmother'$, where 'grandmother' is the English translation of the name assigned culturally to the kin term product: $mother \circ mother$. Similarly, $mother \circ 'grandmother' = 'great grandmother'$, where 'great grandmother' is the English translation of the name culturally assigned to the kin term product, $mother \circ 'grandmother'$, and so on. Similar computations hold for the other relations in the Family Space.

We can see this duality for the Family Space as the foundation for both a Genealogical Space and a Kin Term Space in languages such as English where the same word is used for both a genealogical relation and a kin term relation. The English sentence "She is my mother" is ambiguous with regard to whether "she" is the woman who begat me and so I am referring to her in a genealogical sense, or whether, if I happen to be adopted, I am referring to her as mother in a kin term sense. Further, it is the fact that genealogical relations derive from the logic of recursion and kin terms relations derive from the logic of binary products that we assign the genealogical relation, m , to the kin term, 'mother', the genealogical relation f to the kin term 'father' and so on.

According to Read, the particular form that the instantiation of the family space takes, seems to be of secondary importance in the building process of kinship terminologies. Thus, the Matis, an Amerindian ethnic group living in the Javari River Basin of western Brazil, display a classificatory kinship terminology and their marriage practices are multi-faceted: individual, polygynous and polyandrous (Erikson 2002). This is apparently consistent with the idea that the formal structure of classificatory terminologies does not reflect actual matrimonial usages, instantiating the parent-spouse positions from the family space, but has to do with factors of cultural order – or are culturally determined or in compliance with cultural requirements – that come into play in kinship conceptions, thus in primordial relations generated by the family structure, such as the conceptualization of the sibling relation (see observation 5).

4. Read's theory about the generation of descriptive versus classificatory kinship terminologies basically rests on how the sibling relationship is conceptualized in a given culture. The difference between the generative logic leading, on the one hand, to descriptive terminologies, and on the other hand, to classificatory terminologies depends on whether the sibling term is – or is not – a primary term, and

thus a generating term within the terminological system. Earlier, we pointed out a number of examples, collected by Read, showing how, within a classificatory context, siblingship is conceived according to the principle of common parentage. Read formalized the difference between the two conceptions by means of two kin term products:

$S \circ F = B$ where B is not a primary term and

$F \circ B = F$ where B is a primary term.

Regarding this crucial part of Dwight Read's theory, I was intrigued about how Read (2018a: 99) relates the second kin term product to several examples of classificatory nature taken from Schieffelin (1976), Burridge (1959-60) and Nayacakalou (1955), supposed to illustrate a conceptualization of sibling in terms of "shared parents," a conceptualization that Nayacakalou, identifies through the "*principle (my emphasis) ... of common parentage*" (Nayacakalou 1955: 46, quoted in Read 2018a: 99).

Thus, I came to read the entire excerpt where Nayacakalou (1955: 46) speaks of this principle. Here it is:

The second [unifying] principle (the first one being common descent by fathers, my emphasis) is that of common parentage, which binds together the members of a sibling group. This group forms the prototype of relationship at each generation level within the lineage group. The principle of common parentage, by simple extension using the classificatory principle, enables all the members of each generation within the lineage group to be classified together as siblings.

To make himself even clearer, Nayacakalou (1955: 46) then quoted Radcliffe-Brown (1950: 24) commenting on the unity of the sibling group:

... a son may, in a particular system, be taught to regard his father's sibling group as a united body with whom he is related as their 'son.'

Such a configuration certainly applies to the other examples given by Read. I will not discuss them any further for now. See also Read's comments about Observation 8, below.

DR: Radcliffe-Brown's notion of the Unity of the Sibling group as an explanation for genealogical father and father's brothers (among others) all being referred to as 'father' lacks one crucial property: By what criterion does one know whether the Unity of the Sibling group is operative in a particular society since this property is not universal? The answer, as I have shown formally in Read (n.d.), is that the Unity of the Sibling group occurs and operates in the manner discussed by Radcliffe-Brown when siblings are conceptualized as those persons who share the same parents. Consequently, Nayacakalou's elaboration on common parentage is simply spelling out the logical consequences of this sibling criterion – consequences that are worked out formally in the various papers by Read that AM has referenced. Classificatory terminologies, Radcliffe-Brown's Unity of the Sibling group, Nayacakalou's elaboration on common parentage, and Schieffelin's and Burridge's observations that I have referenced all have their foundation in a single concept: Siblings are those persons who share the same parents.

Now shift to the historical level. One may consider that societal entities, each independently, have conceptualized siblingship one way or the other in the course of their historical development for reasons that remain to be determined, this driving *ipso facto* a particular semantic into their respective kinship terminologies. The initial conceptions about kinship, as well as the terminologies apparently resulting therefrom, may have been transmitted over long periods by human groups (or linguistic families), modified only here or there in some structural or terminological details. Let's add yet another aspect: What, other than chance, are the general conditions that drove the emergence of these two conceptions of sibling that are apparently radically opposed? (I have difficulties believing that the emergence was due to chance.) A number of ethnographic testimonies – many of which I gathered from the literature – show the importance of siblingship (the fact of being sisters and brothers) in the social, familial, sexual, and ritual life, as well as in their material organization for a majority of human groups worldwide, whether hunter-gatherers or not. Among the social behaviors that are connected with siblingship, there is notably the fact that groups of brothers – the same may be true for sisters – , as many have reported is the case among hunter-gatherer societies, live in the same camp or in the same longhouse, with their respective spouses – often sisters – who they episodically share, or to whom any brother may have sexual access, in a more or less systematic manner, and over variable periods. Howitt showed how the Dieri kinship terminology is indebted to the institution of *Pirrauru* relation for a number of its semantic and terminological peculiarities. We will see later that similar situations are widely distributed. These behavioral characteristics are part, it seems, of what Read (2007: 4) designates as “external processes” of a social nature that, he considers, are foreign to the generation of kinship terminologies. It is not inconceivable, however, that the concept (*i.e.*, the ideology) of siblingship, expressed in terms of common parentage between several individuals, might *have been* – as it is undeniably a very old perception – based on group relations between brothers and their spouses, sometimes also sisters (I don't speak here about marriage), thus implying a more or less close-knit community or collaboration in the material life, the education of children, the provisioning of the camp, the sexual and the ritual life, and so on. Such a socio-familial context would, without a doubt, favor the fact that the children, within the limits of the groups thus defined, would consider themselves to be born from the same fathers, and thus would consider themselves to be brothers and sisters. This group structuring would then be a solid foundation and motivation for the conception of siblingship through common parentage, that the ethnography brings to light.

DR: My argument regarding the consequences of the two different ways that siblings may be perceived, either as being the children of one's parents other than oneself, or as sharing the same parents, does not address the conditions under which one or the other perception of siblingship should occur, and it is useful that AM has considered some of the situations under which the second perception of siblingship might occur. However, his argument needs a causal connection be-

tween behavior on the ground and the fact of classificatory terminology systems that the same kin term that refers to genealogical father (f) also applies genealogically to fb, ffbs, fffbss, and so on. As stated, his argument does not account for this property of the 'father' term since he places no constraint, neither on the genealogical relations among the (adult) males who are, according to his argument, in the same community nor on the children who are in that community as well. Then he states that under the conditions he outlines all of the males of the community will be referred to as 'father' by all of the children of the community. The argument needs a causal mechanism as to why this leads the children to collectively refer to all the males collectively as 'father.' Absent such a causal mechanism the argument becomes circular. In addition, and in a manner that needs to be explained, the genealogically disparate group of children and the genealogically disparate group of adult males that initially need not match the genealogical categorization for the 'father' term, the 'son' term or the 'brother' term in a classificatory terminology then gets sorted into a group of males who genealogically match the genealogical categorization of a 'father' term in a classificatory terminology, and a linked group of children, each of whom is the genealogical child of one of the males in the linked group of males. In addition, not only must there be this sorting, but the children, all of whom initially referred to all of the adult males as 'father' according to AM's argument, must now shift to only calling the males in the linked group of males by the term 'father.' That classificatory terminologies could arise in this manner does not seem plausible.

The formal development proposed by Dwight Read, which implies one or the other sibling conception for the foundation of terminological structures, appears to be fundamentally innovative. I have no difficulty either to accept that the "classificatory equation", $B \circ F = F$ ("I call father someone my father calls brother") appears as the result of the structural logic inherent to the process of generating a kinship terminology (Leaf & Read 2012: 275), thus the structure would reflect cognitive processes implemented through the internal logic of a kinship terminology.

But this is not the scenario that Read, Leaf and colleagues favor, for they leave unanswered the question as to why, in some cultures, one calls *brother* someone called *son* by a third person that his father (the father of the first individual) calls *brother*, even knowing that the two first individuals are not necessarily genealogically related.

DR: The logic of generating a terminology under the cultural contexts in which siblings are conceptualized as those who share the same parents conditions leads to the kin term product, 'brother' \circ 'father' = 'father' and since 'son' \circ 'father' = 'brother'; it follows that speaker's fbs is a genealogical relation that speaker refers to as 'brother'. The reverse need not be true. The Fanti terminology is a descriptive and not a classificatory terminology (pace Kronenfeld 2009), yet has the structural equation 'brother' \circ 'father' = 'father' (Read n.d.). As discussed in Read (2018b), the Fanti, the Shipibo and the Punjabi terminologies are a sequence of descriptive terminologies in which each has the equation 'son' \circ 'fa-

ther' o ... o 'father' (n+1 times) = 'father' o ... o 'father' (n times). The Fanti has this equation for n = 1, thus it has the equation 'son' o 'father' o 'father' = 'brother' o 'father' = 'father. The Shipibo has this equation for n = 2, thus it has the equation 'son' o 'father' o 'father' o 'father' = 'brother' o 'grandfather' = 'grandfather'. The Punjabi terminology has this equation for n = 3, thus it has the equation 'son' o 'father' o 'father' o 'father' o 'father' = 'brother' o 'great grandfather' = 'great grandfather'. The reason for having the equation may be to simplify the ascending terminology for higher order generations, with n being a structural parameter whose value reflects the maximum generational level that plays an elaborated functional role in the society's form of social organization. Thus, the Fanti terminology, in comparison to the Punjabi terminology, has a relatively simple terminology mainly spanning generations -2 to +2, and this may reflect a less elaborated form of social organization in Fanti society in comparison to Punjabi society.

Schieffelin, as I indicated in footnote 25, said that, insofar as the genealogical ties between the two individuals are difficult to trace out,³⁵ it is the relation of sibling, generated during the working out of the kin terms that prevails. Here we have the embodiment of a *cultural fact* in the sense that Read and colleagues understand it, resulting in a *gap* between the genealogical given and the conceptualization of kin relations by a particular culture, in this instance, under the form of siblingship as this is understood, shared and conveyed by all culture bearers through their kinship terminology.

DR: It is precisely this genealogical gap that underscores why a paradigm shift is needed, going away from the ontological assumption: procreation → genealogical relations → (categories of genealogical relations) → (kin terms as labels of genealogical categories) to an ontology in which procreation → Family Space → [(1) Genealogical Space or (2) Kin Term Space] → Kinship Space.

So, we are back to Morgan and his astonishment when faced with the apparent absurdity of kinship classification as it is recognized among the Seneca even when confronted with the perfectly transparent genealogical ties resulting from descent. Read (2012: 24) points out how the kinship relations acknowledged by the Crow Amerindians are at odds with genealogical connections.

DR: We are now back to Morgan, but with an answer to his astonishment since we have found, as he put it "the fundamental conceptions which lie, respectively, at the foundation of the two original systems" (1871:14): Are siblings perceived through descent as the offspring of parents other than self? Or, are they perceived through ascent as those persons who share the same parent?

³⁵ Even if the two individuals are genealogically connected as cousins, the second individual being the son of the brother of the father of the first, the sibling relation prevails. Note that this is the case in every classificatory terminology where a genealogical cousin of the same sex as the speaker on either the mother's or the father's side is called by a sibling term.

Read goes on to claim (2012: 24) that

This does not mean that kinship systems are cultural constructs that determine kin relations in a manner independent of biological relations, but only that kinship terminologies are not constructed according to the logic of biological relations [genealogical, my emphasis].

But from what logic are they made?

DR: The logic is that of the kin term product applied to the relations making up the Family Space and the kinship ideas that are part of a group's kinship system, such as reciprocity of kin terms (which appears to be universal) and properties among primary kin terms such as 'child' o 'spouse' o 'parent' = 'child' o 'parent' (cf. Lounsbury's Half-Sibling Rule).

If, in order to explain the extension of a number of terms from classificatory terminologies to categories of relatives remote from those that the terms primarily refer to, we reject the appeal to particular forms of marriage that they are supposed to reflect; if we also reject the appeal to principles displaying circularity, or to *ad hoc* rules having a limited explanatory value, then there only remains an explanation in terms of cultural facts. Read goes to great lengths to demonstrate that, within the conceptual field of kinship, siblingship was decisive in generating the structural properties of the descriptive versus the classificatory kinship terminologies. What is clever and innovative is to have brought into the argument concepts of a non-genealogical nature along with their logical and linguistic articulations, from which – also bringing into play logical constants like the principles of isomorphism and reciprocity – the kinship terminologies are built up within the cultural crucible. This theory grants a large generative and structural autonomy to idea systems whose owners are the culture bearers. This provides the explanation according to which the classificatory systems have their foundation in the product of the primary terms, parent and sibling ($F \circ B = F$), which terminologically reflects the conceptualization of sibling in terms of common parentage, but it does not answer, it seems to me, the ultimate question which can be formulated as follows: Why does the kinship cultural background of some societies includes this conception of sibling, whereas other societies include a sibling conception based on the idea that sibling is the *son of father* ($S \circ F = B$) who is not me? (see observation 9).

DR: Prior to my demonstration that the classificatory terminologies derive from having both a sibling generating term and an ascending generating term, there was no reason to connect classificatory terminologies with “a sibling conception based on shared parentage,” hence the question now posed by AM could not have been posed before this generative property of classificatory terminologies had been worked out. Even after it was worked out, it still was not immediately obvious that the condition for having a generating sibling term was a sibling conception based on shared parentage. Now that this connection has been established, the next important research question is the one AM has posed here. Sci-

ence, as it finds answers to old questions, forms new questions based on properties made evident by the answers to old questions.

5. Here is another question: What is the status of the kin term product $S \circ F = B$, which expresses the idea that my brother is the son of my father who is not me, and, within the classificatory system, what, if anything, can actually be its context of use, knowing that this is not the sibling conception that culture bearers have in those circumstances? I say this because, as we shall see in Observation 8 below, Read uses this equation for reducing the kin term product, $S \circ S \circ F \circ F \circ F \circ F$, from a classificatory system to the term *father*.

DR: AM discusses further the reduction of $S \circ S \circ F \circ F \circ F$ in Observation 8 and makes the important observation that including the equation $F \circ F \circ F = F \circ F$ as a structural equation appears to lead to contradictions. I address both the reduction of $S \circ S \circ F \circ F \circ F$ and the contradictions he observes in my reply to Observation 8. As for his specific question about the status of $S \circ F = B$, this brings to the surface the issue of single-valued versus multi-valued kin term products. Within the theory of abstract algebraic structures, it is usually assumed that operations on the set of symbols for the algebra are single-valued. This is not necessarily the case for genealogical products or for kin term products. Thus, for English speakers, the genealogical product, parent's child, can either be genealogical brother or genealogical sister. Further, parent's child can also be speaker, though this not a likely reply if someone is asked "Who is the child of your parents?" Or, again for English speakers, father of first-cousin-once-removed is either first cousin or great aunt/great uncle. Which of these is meant would be determined from context.

However, having multi-valued kin term products when generating the core terminology structure is unlikely due to the inherent ambiguity of multi-valued products, so multi-valued kin term products are more likely at the periphery of the terminology. For this reason, the kin term product, child of parent, is usually taken as referring to sibling and not to self by English speakers, thereby making it single-valued in practice. Since sibling is not a primary kin term for English speakers, it is reasonable to exclude self as a possible value for a kin term product such as child of parent.

The situation with classificatory terminologies is more complex since 'sibling' is a primary kin term and so the kin term product, 'son' of 'father,' must be (male) self. But for culture bearers with classificatory terminologies, 'son' of 'father' can also be 'ascending brother'/'descending brother.' Yet it does not seem likely that any terminology has kin term products of primary kin terms, such as 'son' of 'father' that are multi-valued. The solution to this seeming anomaly, where 'son' of 'father' needs to be (male) self as part of the generating logic of the terminology, and 'son' of 'father' needs to also be 'ascending brother'/'descending brother' from the perspective of the use of the terminology, can be found by recognizing that the generation of the ascending structure involves two steps.

The first step is the generation of the lineal structure by first generating the lineal ascending structure using the generating set $\{I, F\}$, then adding the de-

scending lineal structure using the generating set $\{I, S\}$, along with the structural equation $S \circ F = I$ and the reciprocal equation $F \circ S = I$. In the second step, the ascending collateral structure is formed by augmenting the generating set with the primary ascending sibling generating term B^+ and with the primary descending sibling generating term B^- . Here, the equation $S \circ F = B^+/B^-$ is introduced, making the kin term product, $S \circ F$, multi-valued. In the context of lineal relations, $S \circ F = I$ and in the context of collateral relations $S \circ F = B^+/B^-$. The default context is that of lineal relations, hence from the perspective of generating a terminology, $S \circ F = I$. Consequently, $S \circ S \circ F \circ F \circ F = S \circ (S \circ F) \circ F \circ F = S \circ I \circ F \circ F = S \circ F \circ F = I \circ F = F$.

6. I also wonder if the demonstration pertaining to the generation of a (classificatory) system will still be valid if it starts with descending generations. Is there any compelling reason why generating a kinship terminology should start with the ascending kin terms? Suppose we start with the descending terminological generating set (*i.e.*, the generating set for the core descending structure) composed of *male self* (E), *descending brother* (B^-) and *son* (S), and the equations $S \circ S = GS$, $S \circ S \circ S = GGS = S \circ S$ (thus = GS if applicable), $B^- \circ B^- = B^-$, and $B^- \circ S = S$, which has for its reciprocal $F \circ B^+ = F$. However, the equation $S \circ B^- = S$, *the son of my younger brother I call son*, that appeared when starting with the ascending generators as the descending equation isomorphic to the ascending equation $F \circ B^+ = F$, *the father of my elder brother I call father*, can only be introduced as an axiomatic equation; that is to say, as an unexplained given, a cultural given reflecting the way people interpret filiation. This outcome is a little frustrating.

DR: The core ascending structure is generated from the set of ascending generating terms and the core descending structure is isomorphic to the ascending structure. Since isomorphism is symmetric, if the core descending core structure is isomorphic to the core ascending structure, then the reverse is true as well: the core ascending structure is isomorphic to the core descending structure. Thus, one can begin by either generating the core ascending structure or the descending core structure and the combined ascending-descending structure will be the same in both cases. AM argues, though, that the equation $S \circ B^- = S$ would have to be introduced axiomatically if one begins by generating the core descending structure. He correctly recognizes that, when starting by generating the ascending structure, the equation $F \circ B = F$ ('father' of 'brother' is 'father') is introduced as a kinship idea regarding how the 'father' term relates to the 'brother' term. In contrast, when starting by first generating the descending structure, the descending equation, $S \circ B^- = S$, is not an a priori kinship idea, but is instead a property to be derived, if at all, through the generative logic of the terminology. Initially, then, when generating the core descending structure, the equation $S \circ B^- = S$ is not part of the descending structure that is being generated. In the next step, when the ascending structure is introduced, then (and as AM observes), from the equation $B^- \circ S = S$ that is part of the descending structure, and via reciprocity, the ascending equation, $F \circ B^+ = F$, is introduced. But by the re-

quirement of isomorphism between the core descending structure and the core ascending structure, the isomorphic version of the equation $F \circ B^+ = F$ must be part of the descending structure, hence $S \circ B^- = S$ must be part of the descending structure. Consequently, there is no need to axiomatically introduce the equation $S \circ B^- = S$ into the descending structure since it will be part of the combined descending-ascending structure that is being generated.

7. Read (2007: 14, 21) specifies that generating a classificatory kinship terminology involves, both in the ascending and descending structures, generating *all* possible kin term products from the system's primary terms. In the masculine ascending structure, whose generating set is *myself* (E), *father* (F) and *elder brother* (B^+), we also have the equations: $F \circ B^+ = F$ and $F \circ F = F \circ F \circ F$ that reduce the kin term products $F \circ B^+$ and $F \circ F \circ F$. As we can see, there is one product that is not reduced by a structural equation, namely $B^+ \circ F$. A structural equation that reduces this kin term product only appears, indirectly, at the end of the structural demonstration. Why is the result of this equation $B^+ \circ F = F$ (*the elder brother of father is a father*) not also considered as axiomatic, hence a cultural given without explanation? In (6), the equation $S \circ B^- = S$ has to be introduced axiomatically, so why cannot this also happen here? The demonstration is supposed to conclude that there is no need to axiomatically introduce this equation within the ascending structure because it logically results from the isomorphic reversal of an equation, followed by its structural reciprocal, which is to say from an entirely structural process. I confess experiencing some difficulty in admitting this solution.

DR: The concerns expressed in this observation have already been answered by my comments in Observation 6 indicating why the equation $S \circ B^- = S$ is not introduced axiomatically. Absent axiomatic introduction of the equation $S \circ B^- = S$, there is no reason to ask why the equation $B^+ \circ F = F$ is not introduced axiomatically, and so there is no issue as to why it is introduced since, as AM comments, it is introduced "from an entirely structural process."

8. In the last part of his article of 2018a, *Resolution of the extension problem* (pp. 103-106), Dwight Read deals with the problem of the extension of a term – the example chosen is *father* – referring to a relation in the direct ascending line to one or several collateral relationship(s). Starting from the ethnographic observation about how, in a classificatory system, the genealogical category $fffss$ (= $ffbs$) is generally referred to as *father* (F), Read (2018a: 103-4) verifies that the kin term product corresponding to this genealogical expression, namely $S \circ S \circ F \circ F \circ F$, built up by associating each genealogical term in the genealogical product $fffss$ with the kin term it instantiates, equals *father* (F). This result is obtained, as I mentioned earlier, by doing a mathematical reduction of the kin term product to an irreducible kin term by means of the kin term products $S \circ F = B$ and $F \circ B = F$. From this, Read (2018a: 104) concludes that every product (or sequence) of genealogical terms (or genealogical strings) in the form, $f(n \text{ times})s(n - 1 \text{ times})$ corresponds to a kin term product that reduces to F .

Read (2018a: 104) goes on:

In a similar manner, we may determine the predicted assignments of *any* (emphasis in the original) genealogical string to a kin term by reducing the corresponding kin term product with the structural equations for generating the kinship terminology to a kin term K that is irreducible, then assigning the genealogical string to K.

Read (2018a: 104) concludes that he has

... an *explanatory argument* [my emphasis] (see Read 2008) for the categories of genealogical relations associated to the kin term in a classificatory kinship terminology.

There are, however, other ways to reduce the corresponding kin term product. It is possible to use the product $F \circ F = FF$ in order to reduce the kin term product $S \circ S \circ F \circ F \circ F$. Thus:

$S \circ S \circ (F \circ F) \circ F$, which can be written as

$S \circ S \circ FF \circ F$, which can be rewritten as

$S \circ (S \circ FF) \circ F$, which can be reduced using the equation $S \circ FF = F$.

We then obtain

$S \circ F \circ F$, thus

$S \circ FF$, which equals F.

But for a number of classificatory kinship terminologies, like the Tongan terminology (Read 2018a: 93), it should be possible to reduce the kin term product

$S \circ S \circ F \circ F \circ F$

to

$S \circ S \circ F \circ F$

by virtue of the equation stating that $F \circ F \circ F$ equals $F \circ F$, meaning that the individuals (here masculine in the paternal line), situated beyond the second ascending generation in relation to ego, are referred to by using the paternal grandfather term.

$S \circ S \circ F \circ F$ can be written

$S \circ S \circ FF$,

and by the reduction of $S \circ FF$ to F , we can write

$S \circ F$, which equals B.

The product thus reduced does not yield F , but B ($B+$ or $B-$).

Now suppose that, like in a number of terminologies, such as the Kariera, a male speaker applies the same term to his genealogical paternal grandfather (ff) and to his grandson (ss), thus $FF = SS$. Then the product

$S \circ S \circ F \circ F$

obtained through reduction of $F \circ F \circ F$ to $F \circ F$ would be further reduced to

$SS \circ FF$.

Provided that such a product exists, its result would also be *elder brother* ($B+$) or *younger brother* ($B-$) but not *father* (F). The consequence is that the equation $S \circ S \circ F \circ F \circ F$ does not verify the extension of F to $fffss$ (= $ffbs$), when we use the axiomatic equation $F \circ F \circ F = FF$ to reduce the product $S \circ S \circ F \circ F \circ F$.

DR: AM has brought to the surface what seems to be a contradiction in the reduction logic of kin term products. His argument highlights the fact that boundary conditions such as $F \circ F \circ F = F \circ F$ need to be spelled out carefully with regard to how they relate to kin term product reductions. In addition, his maeli example illustrates that kin term nomenclature and kin term products are not simply interchangeable.

Consider the latter first. Maeli is a self-reciprocal term in the Kariera terminology since it is the name for both $F \circ F$ and for $S \circ S$, but this does not mean that $F \circ F = S \circ S$ as a consequence of the generative logic of the terminology. Instead, there may be reasons, outside of the generative logic of the terminology, why the ‘grandparent’/‘grandchild’ terms are self-reciprocal, having to do with aspects of the kinship system other than just its generative logic. In the AKT, first-cousin-once-removed is both the name for the kin term product $C \circ C \circ C \circ P \circ P$ and for the kin term product, $C \circ C \circ P \circ P \circ P$, but the generative logic of the terminology does not imply that $C \circ C \circ C \circ P \circ P = C \circ C \circ P \circ P \circ P$. The self-reciprocity of cousin terms seems to stem from the kinship idea that the concept of cousin is self-reciprocal: “If I am cousin to you, then you are cousin to me.”

*For the former, as AM points out, assuming $F \circ F \circ F = F \circ F$ is literally a structural equality leads to the contradiction that $F = B+$ or $B-$. However, AM (2019: personal communication) observes that while $F \circ F$ is named maeli in the Kariera terminology, Radcliffe-Brown (1913: 154) notes, critically, that maeli is not only self-reciprocal, but *mama* (‘father’) of genealogical father’s father is referred to, by a man, as *maiñga* (‘son’), hence not only are $F \circ F$ and $S \circ S$ named the same way, but $F \circ F = S \circ S$ is a structural equation since this equation implies that $F \circ (F \circ F) = F \circ (S \circ S) = (F \circ S) \circ S = I \circ S = S$. Nonetheless, for illustrative purposes regarding boundary conditions, and since $F \circ F \circ F$ is, in fact, named the same as $F \circ F$ in some classificatory terminologies, let us assume temporarily that $F \circ F \circ F$ is named maeli. With this assumption, the boundary condition is that *mama* \circ maeli = maeli, not that structurally $F \circ F \circ F = F \circ F$. Thus, writing $F \circ F \circ F = F \circ F$ for the boundary condition should be read as meaning that these two kin term products are named the same way, not that there is a structural equivalence. Hence, $F \circ F \circ F = F \circ F$, as a boundary condition, does not literally mean that the product $F \circ F \circ F$ is the same as the product $F \circ F$, but only that, in the case where $F \circ F$ and $F \circ F \circ F$ have the same kin term name, the kin term that is the name of these two products is mapped back onto itself when taking the kin term product of ‘father’ with that kin term.*

In a situation where the products of the generating term F with itself are all named the same way, this can be graphed by a diagram like the following:

$I \rightarrow F \rightarrow F \circ F \rightarrow F \circ F \circ F \rightarrow \dots$

male mama maeli maeli ...
 self

Consequently, to reduce the product $S \circ S \circ F \circ F \circ F = S \circ (S \circ (F \circ F \circ F)) = S \circ (S \circ \text{maeli})$, it is the kin term product, $S \circ S \circ \text{maeli} = SS \circ \text{maeli}$, that we need to reduce, but to do this we first need to know which maeli we are referring to. Are we referring to maeli as the name of $F \circ F \circ F$, or to maeli as the name of $F \circ F$, or ... ? For the first of these, $SS \circ \text{maeli} = \text{mama}$, but for the latter, $SS \circ \text{maeli} = \text{kaja}$ or margara . The fact that maeli is the name for $F \circ F \circ F$ and maeli is the name for $F \circ F$ does not mean, then, that we can replace $F \circ F \circ F$ by $F \circ F$ (or vice-versa) since this substitution involves the syntax of the product $S \circ S \circ F \circ F \circ F$, whereas naming two kin term products the same way relates to the semantics of the kin terms.

Now consider the actual Kariera situation where $F \circ F = S \circ S$ and so $F \circ F \circ F = S$ (male speaking). AM (2019: personal communication) shows the following reduction:

$$\begin{aligned} S \circ S \circ F \circ F \circ F &= S \circ S \circ S \\ &= F \circ F \circ S \\ &= FF \circ S \\ &= F. \end{aligned}$$

Thus, the genealogical relation $fffss$ is included in the category of genealogical relations associated with the kin term *mama* ('father').

Now consider the genealogical relation $ffss$. It follows that $ffss \rightarrow (S \circ S) \circ (F \circ F) = SS \circ FF$. However, whereas $SS \circ FFF$ is equal to F and so is single-valued, $SS \circ FF$ is multi-valued and can either be equal to I or to B , hence $SS \circ FF = [I, B]$; that is, $SS \circ FF$ is a covering term for both I and B , where $B = [B+, B-]$. It follows that $[I, B]$ is instantiated by the set of males who share the same parents, namely those persons instantiated as male self, ascending brother of male self or descending brother of male self. This means that $[I, B]$ can be viewed as a formal way to express (in the case of male siblings) Radcliffe's idea of the Equivalence of Siblings. Hence the Equivalence of Siblings is equivalent to viewing siblings as those persons who share the same parents, and since the latter leads to the classificatory terminologies, we now have a formal argument relating Radcliffe-Brown's idea of the Equivalence of Siblings to classificatory terminologies, a connection that was lacking in his argument for relating the Equivalence of Siblings to classificatory terminologies.

Finally, we can map $ffss$ to kin term categories using the reduction $S \circ S \circ F \circ F = SS \circ FF = [I, B]$. Since in the Kariera terminology B corresponds to a covering term for *kaja* or *margara*, it follows that the genealogical relation $ffss$ is mapped to each of the genealogical categories associated with *kaja* and *margara*, respectively.

9. It is the assumption that the terminologies are neither directly reflecting the actual family structures nor the descendance that results from them, as well as the

dismissal – as an explanatory principle – of the extension and equivalence rules developed by Scheffler and Lounsbury, that prompted Read to seek an answer from the internal logic of the terminologies themselves, and ultimately to explain the structural forms of the descriptive and classificatory systems as resulting from cultural conceptions regarding the sibling relationship (the two conceptions that are described above). The question that arises, invariably, is to understand the reasons why a given culture developed one conception rather than the other, knowing also that the number of classificatory terminologies in the world's cultures far exceeds the number of descriptive ones. Another question is to wonder if the options that are observed within contemporary cultures may have been subject to change in a more or less remote past. This is not, apparently, Read's first option. In his article from 2007 (p. 25), he puts forward the idea that there can be no transformation from a descriptive terminology to a classificatory terminology and vice versa that is founded on adjunction or suppression of structural equations:

For this reason, descriptive and classificatory terminologies are both logically and structurally distinct. Any historical/evolutionary account of kinship terminologies will require *at least* (emphasis added) two root terminologies and not a single root terminology as the terminology from which all other terminologies are derived.³⁶ (note added)

I emphasize “at least” because Read does not preclude the possibility that new researches will lead to the discovery of new structural forms.

This view prompts me to make the following observations. Comparative linguistics is a powerful instrument allowing semantic and phonetic reconstruction of the kinship terminologies from linguistic families in their proto-stage and, potentially, to determine their form in remote periods. It thus appears plausible to contemplate the existence of classificatory terminologies during the proto-stages of a number of language families – Morgan predicted this a long time ago – and to show how the terminologies from modern languages derive from anterior terminologies, and along their respective linguistic branches – some of them known from written documents – they have terminologically, phonetically and semantically (structurally) shifted away from the ancestral terminology. This is a task that a number of anthropologists with linguistic expertise or linguists with anthropological expertise have set for themselves. Another, vastly more complex task, is to show why they have made these structural shifts.

This view of a general orderliness needs to be evaluated against the results reached by recent anthropo-linguistic studies that generally point out the existence of a classificatory stage during the proto-phase of a number of linguistic families, followed by a more or less clear cut evolution of a number of branches and languages belonging to these families towards descriptive forms. Let me quote Kryukov's article (1998) about the evolution of the kinship terminologies from some Chinese dialects that highlight the Dravidian character of the

³⁶ *Contra* Nicholas Allen, who predicts an evolution of the kinship terminologies stemming from an ancestral tetradic model. To develop this issue further would lead us too far astray. I refer the reader to his articles of 1989, 1998 and 2008. Read (2007: 25), by arguing that the studies of terminological structures are not yet completed, leaves the door open to the possibility that fundamental (ancestral) terminological structures need not be limited to the descriptive and the classificatory systems.

archaic Chinese kinship terminology (ca. 3.000 BP), along with a transformation of these Chinese dialectical terminologies towards a form coined “bifurcate collateral,” displaying, at the parental generation, the $FB \neq F \neq MB$ and $MZ \neq M \neq FZ$ equations.

DR: Kryukov (1998) observes that there is extensive documentation for the Chinese kinship terminology for the past 3,000 years. He points out that the Erya language vocabulary, dating back to 1,000 BC, includes kin terms such as sheng whose genealogical referents include fzs, mbs, wb and zh, which matches precisely the structural diagram shown in Read (2010a: Figure 11) derived through working out the generative logic of a Dravidian terminology. The generative logic establishes that a prescribed ‘cross-cousin’ marriage is structurally necessary when joining together a consanguineal and an affinal structure to form a complete Dravidian kinship terminology. Kryukov goes on to observe that while the genealogical equations $f = fb$, $m = mz$, $wf = mb$ and $wm = fz$ that are part of a classificatory terminology would have been present in a Dravidian terminology ancestral to the Erya terminology, the Erya terminology is transitional, he argues, since it has different terms referring to f and fb , to m and mz , to wf and mb , and to wm and fz . Missing, though, in his argument (and missing in general in arguments regarding historical changes in the terms making up a kinship terminology [Read 2013]) is how these changes in equations would arise from modification of the generative logic of the terminology.

To see how these changes from a classificatory terminology relate to modification in the generative logic of a terminology, consider first that the kin term product equations $F \circ W = B \circ M$ and $M \circ W = (Z \circ F)$ from which the genealogical equations $wf = mb$ and $wm = fz$ are derived, are introduced in the last step of the generative logic when joining together a consanguineal structure and an affinal structure in order to form a single, complete terminology (see Read 2010a for details). This implies that the equations $F \circ W = B \circ M$ and $M \circ W = (Z \circ F)$ would not be introduced if the generative logic does not include the last step in the generation of a Dravidian terminology, and this would leave intact the generative logic of the terminology except for the last step in that generative logic.

However, the removal of the equations $F = B \circ F$ and $M = Z \circ M$ from a Dravidian terminology occurs at a deep structural level and requires redefining the sibling relation as no longer being a primary kinship relation. In effect, it would essentially require replacing the generative logic of a classificatory terminology with the generative logic of a descriptive terminology and this, on the face of it, does not seem plausible.

Alternatively, the equations $F = B \circ F$ and $M = Z \circ M$ that, according to Kryukov, were part of a posited classificatory terminology ancestral to the Erya terminology, may have been introduced in the same manner as these equations are introduced into the Fanti terminology even though the terminology is based on the generative logic for a descriptive terminology (see my comments below for details). This, coupled with using the same procedure for joining together a consanguineal and an affinal structure as occurs with a Dravidian terminology (see

Read 2010a for details), would give rise to the prescriptive ‘cross-cousin’ marriage rule required for the properties of the ancestral terminology. What would be absent from the ancestral terminology are terms translated as ‘elder brother/sister’ and ‘younger brother/sister’.

Next, Kryukov points out that around 200 AD the kin term sheng no longer referred to fbs and mbs, hence there was no longer a term whose translation would be ‘cross-cousin.’ This is consistent with the Fanti terminology, as it also lacks kin terms for ‘cross-cousin’ (Kronenfeld 2009 [1980]). Lastly, Kryukov notes that by the time of the third to fifth centuries AD, the terminology would now be classified as a bifurcate collateral terminology like the present-day Chinese terminology, and not as a Dravidian terminology.

The historical account for the Chinese terminology, then, shows the need to bring the historical linguistic argument into accord with the structural logic of the terminologies in question, and by doing so, a fuller and richer account of the historical changes in a kinship terminology will be the end result. This comment applies to the other examples of historical changes in terminologies discussed by Kryukov. However, there is one case where Kryukov’s argument has been shown to be incorrect. Kryukov argues that the Crow-Omaha terminologies, since they are asymmetric terminologies, would have been derived from an asymmetric prescriptive system, hence the Crow-Omaha terminologies were not derived from the symmetric, non-prescriptive Iroquois terminologies. However, Read (2018c) demonstrates that what Lounsbury (1965) considers to be the archetype of the Crow and Omaha terminologies derives in a straightforward manner from the Iroquois terminology, thus showing the need to relate historical changes in terminologies to the underlying generative logic of the terminologies in question.

Kryukov (1998: 295-6, 298) also points out how the Russian and Latin kinship terminologies both changed from bifurcate collateral (possibly derived from anterior classificatory structures) towards “lineal” structures (e.g., modern Russian or modern French where $[FB = MB] \neq F$ and $[MZ = FZ] \neq M$, thus in French *oncle* vs *père* and *tante* vs *mère*). Kryukov also demonstrates, on the strength of terminological surveys collected in the village of Bongu (on the Ray coast of New Guinea) over a period of a century, that the terminology in use in this region had also evolved from a classificatory structure into a bifurcate collateral one. Lastly (1998: 302-310), he shows – and this is what constitutes the body of the article – how the terminologies from the languages (or dialects) of the Lolo language branch that belongs to the Sino-Tibetan family have evolved from an ancestral Dravidian-like system into Iroquois-like systems, or systems still close to the Dravidian model, by splitting affinal equations like $FZ = EM = MBW$ and $MB = EF = FZH$ in two; thus, $FZ = HM$, $MBW = WM$ and $MB = WF$, $FZH = HF$.

Kryukov (1998: 310-13) proposes a multilateral evolutionary direction from ancestral Dravidian systems that, on the one hand, evolve into Iroquois systems which, in turn, evolve into generational (Hawaiian) systems and next into lineal (descriptive) systems, and, on the other hand, into bifurcate collateral systems that also change ultimately towards lineal systems.

Other approaches have been developed in other regions of the world. Among these I will only mention – may all the authors not mentioned forgive me – the pluridisciplinary one about Aboriginal Australia, under the auspices of the Austkin project of whom Patrick McConvell, Laurent Dousset and Harold Koch are the main conceptors.³⁷ A final element that needs to be added to this discussion is the theoretical possibility, based upon the existence of kinship terms of global distribution, like those referring to the parents, *papa* or *tata*, *mama* or *nana*, but above all *kaka* whose meaning ‘maternal uncle’ or ‘spouse father’ is remarkably recurrent worldwide, thus suggesting that all kinship terminologies of the world ultimately derive from one African pre-dispersal proto-terminology (*Proto-sapiens* as we coined it), whose classificatory nature leaves little doubt (Bancel and Matthey 2002, Matthey and Bancel 2002 etc.).

DR: The scenario outlined by AM implies kinship terminologies based on kin term products being formulated around 50 – 60 kya in Africa since Homo sapiens traces back to at least 50 kya in Australia. Hence, conditions that would have led to selection for the cognitive complexity of symbolic computational kinship terminology systems must already have been in place in pre-dispersal Africa, yet the archaeological evidence does not suggest conditions that would have led to selection for complex forms of kinship systems and associated forms of social organization. Prior to 50 kya, there is scant evidence of a significant difference in the adaptation of the Homo sapiens populations in comparison with the Neanderthal populations in the geographical area of the Middle East, with the exception of the use of ochre and of shell bead necklaces by Homo sapiens populations. Yet the worldwide distribution of terms “referring to the parents, papa or tata, mama or nana, but above all kaka whose meaning ‘maternal uncle’ or ‘spouse father’” strongly suggests that these terms originated in pre-dispersal Africa.

A solution to these two contrary lines of argument lies in the deep history of kinship (Read 2019). The deep history identifies the development of kinship terminology systems as having taken place in three phases. The first was the transition from the phenomenal level to the ideational level through the introduction of the concept of a mothering relation between a female and her offspring. The second phase was the formation of a conceptual system of genealogical relations based on the logic of recursion, acting initially on the concept of a mother relation and subsequently also on the concept of a father relation. The functionality at the group level that would arise through the completeness and consistency of a system of genealogical relations would lead to selection for the

³⁷ The aims of the “Austkin project” (<http://www.austkin.net/index.php?loc=project>) is to develop a data base bringing together all the kinship terms, the social category names (sections and subsections etc.) from the Aboriginal languages and dialects through multiple sources, old or recent, for their analysis and comparison. The current but necessarily incomplete result of this endeavor is summed up in the conclusion of the project itself: “We now have new models of past migrations, land connections and cultural change, providing fresh insights into how Aboriginal people have organized social interaction and created enduring societies.” One needs to also mention, as one of the crucial aims of the project, the linguistic and semantic reconstruction of the kinship terminology from Proto-Pama-Nyungan, an Aboriginal language family of more than 200 languages, covering almost three quarters of Australia.

development of what we now refer to as the institution of marriage. The third phase, of introducing a symbolic computational system of kin terms, would resolve the conceptual complexity that arises in a system of genealogical relations based on the logic of recursion when extending genealogical connections horizontally by tracing genealogically to conceptually more distant ancestors and then back to the current group members. The first phase may have developed in the time period from 500 – 100 kya. The second phase may have developed in the time period 100 – 50 kya and the third phase in the time period 50 – 30 kya. If so, pre-dispersal Homo sapiens would have already had a genealogical system of relations that they brought with them to Australia, but the third phase would have been worked out after their arrival in Australia.

For the second phase, genealogical relations may have been specified, as occurs today, by a sequence of father-child and mother-child relations (and/or their reciprocals) connecting one individual to another, or some of the more frequently utilized genealogical relations may have been shortened by naming them; e.g., by saying “He is my kaka” rather than “He is my mother’s brother.” The term kaka, then, may initially have gained currency among the members of a group of pre-dispersal Homo sapiens as the name for the mother’s brother genealogical relation even though no symbolic system of kin terms yet existed. Later, when terminologies in the form of a symbolic computational system (in place of, or adjunct to, a system of genealogical relations some of which were named) developed, the names for close genealogical relations may have been exapted as names for corresponding kin term products; thus, kaka as the name for the genealogical relation, mother’s brother, may have been exapted as the name for the kin term product ‘brother’ of ‘mother’ for which the genealogical relation mother’s brother would be a genealogical relation, but not the only one, referred to by the kin term ‘brother’ of ‘mother.’

In sum, if we follow Read, we are faced with two systems of kinship relations reckoning different in their logic. One, the genealogical, is based on recursive reasoning, implying parent to child sequences and reciprocally, the other, the terminological system, is based on the generation of kinship relations and kin terms through algebraic computing of kin terms. Everyone agrees that neither of the two system needs the other in order to be operative. But between the two of them, though, there are gateways, allowing us, as Read says, to instantiate the kinship terms with genealogical relations; that is to say, to bring out the possible corresponding genealogical categories, and the concrete individuals who incarnate them.

Another fact appears – and it appeared to Morgan at the dawn of his quest –, namely that kinship relations, defined through kin term products and embodied through the terms themselves, may look absurd in view of genealogical calculations. Morgan says as much. In view of the “nature of descent,” the genealogical absurdity can be seen in calling *father* someone who your paternal grand-uncle (your genealogical ffb) calls *son* ($S \circ B \circ F \circ F = F$), or calling, like the male Crow Amerindians do (see Read 2012: 24), *father* someone who their sisters call *son* ($S \circ Z = F$).

Yet another important point. Although very different in terms of logic, the two computing spaces –here I borrow Read’s phrasing – have a common conceptual basis. Both “derive” (Read et al. 2014) from positions and relations of the family space formed through the primary relations that are fundamental to all kinship relations. Up to this point, Read and colleagues remain faithful to Morgan. But the latter conceived this “derivation” in terms of kinship terms that *reflect* (or refer to) relations that are *real*, such as the family relations determined by descent from the married parents. From this he explained the gap between the terminological results of kin term products and of genealogical tracing (based on the nature of descent founded on the nuclear family, as it exists in a vast majority of societies), by the fact that the terminological order reflects a state of affairs belonging to a remote past. Thus, from a state of affairs where the family and the kinship relations stemming from it were different from what they are nowadays. Read for his part, explains that the terminological structure has an indirect relationship with its base. It derives from it, but it is not its exact reflection, only a culturally interpreted reflection.

Read provides a model for the family space (or structure), with a “nuclear” form, from which primary relations result, conceived from the self point of view. He acknowledges that the concrete forms that the family may take can be very different in practice, according to the culturally favored type of instantiation of the positions existing in the familial model (structure) of a given society, like a multiplicity of individuals susceptible to being assigned to each position. Insofar as the primary relations are modeled after procreative and affinal conceptions, the content for the relations of father, mother (parents), wife, husband (spouse), daughter, son (child), sister and brother (sibling) will reflect the type of instantiation particular to a given society. Read even includes the theoretical possibility of group-marriage, but this is just mentioned in passing. At the level of spouse relations, the only instantiations that are subject to consensus are monogamous, polygynous, and polyandrous ties, with the last ones being mostly of the fraternal type. There is no systematic connection between a form of marriage and a given type of terminology because the three named marriage varieties can occur, either all together or separately, in societies having either a descriptive or a classificatory terminology. There is no *a priori* causal relationship between one particular type of instantiation (one type of marriage) and one particular type of kinship terminology because all that counts, according to the author, is how primary relations are conceptualized in a given culture, notably the sibling relationship.

Two questions are relevant here. The first one relates to the conditions that motivated the different ways of conceptualizing a sibling, I already said this. The second is to determine whether the cultural conceptualization of sibling as someone sharing the same parents with the speaker -- so frequent in the world’s cultures -- results from a convergence process or is inherited from an ancient, common culture. These questions should be clarified. Admittedly, the results of the kin term product, $S \circ B \circ F \circ F$ thus *father* (F), may appear absurd with regard to genealogical tracing for a family based on monogamous marriage, but Morgan showed that this kin term result is congruent with relations resulting

from the marriage between a group of brothers and a group of women (possibly sisters). One cannot avoid this result except by denying to “group-marriage” any ethnographic reality, which is what most anthropologists have done for the past century. This position is seemingly strengthened by arguments from the evolutionary psychology perspective, pointing out the existence of a universal jealousy coupled with the imperious desire of males expressed in terms of reproductive certainty, hence for exclusive sexual access to their partner(s), which can only arise through monogamous or polygynous marriages. This, Warren Shapiro has emphasized a number of times in his publications, and in particular in his book about partible paternity (2009: 17).

Another difficulty appears if we follow Read’s reasoning and consider, on the one hand the equation $B \circ F = F$, thus

... the defining equation used typically to identify classificatory terminologies (Read 2014: 84),

as principled, while on the other hand, we take it as derived from, or generated by, or as a final consequence of reciprocity, from the kin term product $S \circ B = S$, itself being isomorphic to $F \circ B = F$. How can a principle at the same time appear as a cause and a consequence ?

*DR: There is no difficulty. What AM refers to as the “principled” equation is the genealogical equation $fb = f$, not the kin term product equation $B \circ F = F$. The complete sentence from which the quote is taken reads as follows: “It also follows that $margara \circ mama = mama$, hence genealogical brother of genealogical father will be referred to as *mama*, the defining equation used typically to identify classificatory terminologies.” That is, the defining equation is: genealogical brother of genealogical father is genealogical father, with the latter referred to as *mama*, or, written as a genealogical equation, $fb = f$, where f and b are genealogical kin types.*

AM’s question highlights precisely what is at issue. The genealogical equation $fb = f$ that others have taken as “principled” is obtained from a kin term product equation like $margara \circ mama = mama$ — itself derived from perceiving siblings as sharing the same parents — hence $fb = f$ is not principled but derived. Further, calling it principled can be misleading. Consider the Fanti terminology of Ghana studied extensively by David Kronenfeld (1980 [2009]). The Fanti terminology is said to be a classificatory terminology due to the equations $fb = f \neq mb$ and $mz = m \neq fz$ (Kronenfeld 1980 [2009]), but it is not a classificatory terminology since it does not have two kin terms referring to genealogical same sex sibling (with the terms typically translated as ‘elder sibling’ and ‘younger sibling’) and can be generated without assuming a sibling generating term, thus, making it a descriptive terminology (Read n.d.). So, the equation $fb = f \neq mb$ (and its counterpart, $mz = m \neq fz$) is better understood as a classificatory key, yet it is not even a satisfactory key as shown by its misclassification of the Fanti terminology, hence the supposedly principled equation fails to be indicative of the structural logic of a classificatory terminology.

I here interrupt the reflection that Read and colleagues work have prompted me, hoping I wasn't too long and I leave the floor to Dwight Read.

DR: AM has worked carefully through what I have written about the generative logic of kinship terminologies being a change in paradigm and in so doing has explored more deeply important parts of the argument. I am pleased to see that AM considers the argument to have passed the muster of a careful and critical reading.

AM's comments in Observations 5 and 8 have been especially helpful and have led, as I indicate in my comments on those observations, to discussion of multi-valued kin term products in kinship terminologies and clarification of what is meant by a boundary equation such as $F \circ F \circ F = F \circ F$. All human groups have worked out conceptual boundaries of their terminology. Boundaries, in general, relate to properties of what is being bounded and, in so doing, may introduce discontinuity in system trends. In this sense, a boundary need not be a generated property but can be a property introduced to terminate further extension of, in the case of terminologies, the terminology through the kin term product, unlike genealogical relations that extend indefinitely through repeated use of the logic of recursion.

I now go back to the ideas of Lewis Henry Morgan for a moment to see how my paradigm change relates to his ideas about the source for the descriptive and classificatory terminologies. Morgan assumed kinship relations arise either through reproduction or through marriage, but the former contradicts, as he realized with the Seneca terminology, the structural distinction between lineal and collateral genealogical relations arising through reproduction. He then hypothesized a marriage rule – marriage of a group of brothers with a group of sisters – to account for classificatory terminologies like the Seneca terminology. In so doing, Morgan was developing a theory: given his assumptions, if reproduction is not the source of the relations making up the classificatory terminologies, then they must have arisen through marriage.

The subsequent empirical rejection of Morgan's hypothesized marriage rule negated marriage as the source for the problematic kin terms in the classificatory terminologies, thus implying that the assumption of kinship relations arising through reproduction is also not tenable. What the latter has required for its resolution, though, is not David Schneider's (1984) rejection of kinship as a legitimate domain of study, but a change in paradigm, as discussed in Read 2007 (see also Read et al. 2014, Leaf and Read 2012), that has made it possible to identify, as Morgan put it, "the fundamental conceptions which lie, respectively, at the foundation of the two original systems" (1871:14).

We now know, through the change in the ontology for kinship relations (discussed on page 43) upon which the paradigm change is based, what those fundamental conceptions are: Are siblings perceived through descent as the offspring of parents other than self, or through ascent as those persons who share the same parent? The former leads to terminologies that keep the lineal kin term line distinct from the collateral kin term lines, at least for the central kin term generations. The latter leads to classificatory terminologies with their kin term

relations that crosscut the genealogical structure arising from reproduction. This theoretical result has been verified empirically (see Witowski 1972; Dziel 2007: 133).

As AM discusses, the next step in this paradigm change is, as he suggests, to ask: Why this difference in how siblings are conceptualized? Part of the answer is made evident through a deep history of kinship systems (Read 2019; see also Trautmann 2011) that considers the functionality arising from, and the adaptive consequences of, the different ways that sibling relations have been embedded into the social fabric of small scale human societies. Another part relates to the evolutionary transition from the face-to-face form of social organization of an ancestral primate to the relation-based forms of social organization that characterize human societies (Read 2012) that played itself out through the evolution of systematic, symbolic systems of kin relations, likely beginning with a mother relation based on primate mothering behaviors (see Read 2010b for details).³⁸

*The questions AM is asking exemplify science at its best. As answers to one set of questions are worked out, we are led to ask new questions whose content derives from the answers to those earlier questions. His questions also show that the formalism associated with the paradigm change, rather than taking us away, as some might suppose, from understanding ourselves in a humanistic sense, leads us to consider another aspect of what it means for us to be humans, namely the reasons we have different ways to conceptualize the kin relations such as the sibling kin relations. Our ancestors worked out these ideas as they dealt with pragmatic problems relating to both their interaction with external, ecological and physical environments from which the resources needed for survival are obtained, and to their internal social environments in which the social relations of one individual to another are conceptualized and worked out. Our ancestors, from around 50+ kya, had the genius to work out a system of kinship relations, not on the basis of categorization of external phenomena, but by symbolically creating a conceptual system of kin relations that are fundamental to what it means to be human. This had to be a conceptual system that could generate – drawing upon, but not directed by, the realities of biological reproduction – a system of interconnected relations that made it possible for group members to conceptualize their identity as a group in a way that transcends our biological heritage. The question AM asks, “Why this difference in how siblings are conceptualized,” draws our attention to what are the conceptual systems that we have created for ourselves and define for us what it means to be human. Thus, the title, *How Culture Makes Us Human*, of my book setting forth what I see as the evolutionary trajectory, through kinship, from our primate ancestors to our perception of ourselves as humans.*

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³⁸ Compare with Nicholas Allen’s (1989, 2008) fanciful tetradic model for the origin of kinship terminology systems that posits a hunter-gatherer society, not yet having a kinship system, somehow develops into a four-section social system from which the first terminology is said to emerge (Allen 2008), despite the latter being the reverse of what actually occurred in Australian Aboriginal societies (see McConvell 1996).

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