



The methodological incompatibility between an innate grammar and a bottom-up approach

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Abstract

For Universal Grammar (UG), the identification of substantial universals seems unprincipled, because it is indeterminable, with solely bottom-up assumptions, whether a category advanced in UG is entailed by the notion of innateness, or on that basis, what sufficiently evidences its presence. Unable to constrain the theorization of UG, innateness only seems to be inexplicable, that is, it must be questioned how UG is framed within an innate blueprint. I contend that bottom-up assumptions hardly create an innate universal grammar. A theory resulting from bottom-up assumptions is contingent whereas UG must be a promise that the hypothetical Language Faculty (LF) is epistemologically unique (necessary truth). From bottom up, the identity of a linguistic item always points to multiple possibilities and is ad hoc, as no one has real access to the way that a linguistic item naturally exists in LF. Therefore, unless the principle(s) of how categories are recognised and organised in the LF can be genuinely set out for UG, so that its categorisation inputs all linguistic items methodically and outputs their identities uniquely, the putative substantial inventory of UG is unlikely to be complete and systematic: categories in it are merely opportunistically thrown up on random grounds.

Keywords Categorisation · Epistemological significance of grammar · Innateness · Language universal · Methodology

Abbreviations

AGR	Agreement
ANT	Anterior
EPISTEM	Epistemic
EVID	Evidential
NOM	Nominative

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PASS Passive
Q Question

Introduction

Difficulties in cross-linguistic identification of a category

In reviewing the generative literature on the sentence derivation of both Mandarin Chinese and Modern Standard Arabic (henceforth referred to as Chinese and Arabic, respectively), something remarkable needs to be noted. Many authors have attempted to establish Tense¹ nodes in these languages (Chinese: Lin 2015; Sybesma 2007; Tsai 2008 among others; and Arabic: Aoun et al. 2010; Benmamoun 2000; Fassi-Fehri 1993, 2004; Soltan 2011 among others), uncritically subscribing to the cross-linguistic applicability of this term *Tense*, despite the usual view of Chinese and Arabic being tenseless (see Binnick 1991; Lin 2012a, b; Ouali 2018), as well as the fact that the presence of it is originally proposed on account of tense morphology, which is typically seen in Western languages. In this regard, this article is primarily an attempt to specify the unavoidable technical difficulties that are dominant in the cross-linguistic establishment of a putative UG category only arbitrarily based on particular languages, and more crucially, those difficulties, I argue, result from a conflict between UG's prospect of an essentialist grammar and its non-essentialist methodology. Plainly, the generative theoretical unfolding, especially in having a linguistic universal, can be encapsulated as follows: on one side, the 'leading' generative linguists, in a non-essential way, pick out a term from the Western grammatical tradition and attach to it much significance that cannot be borne out, and on the other side, the adherents of generative grammar who investigate non-Western languages are not showing reluctance to follow, even though there is no necessity for that. In line with this, Chinese and Arabic, clearly not involved as the original sources in creating the Western grammatical tradition, can be seen as good illustrations of the theoretical inequity (UG's theoretical extension from English to languages such as Chinese and Arabic is a transition from the center of UG's theorization to the periphery of it, details below) that appears entrenched in UG's methodology (see also Croft 2001; Haspelmath 2007). In addition, Chinese, English, and Arabic seem to represent distinct degrees of morphological richness, that is, Arabic can be regarded as a heavily inflected language whereas Chinese is said to show minimal amount of inflection, with English being intermediate (see Watson 2007; Lieber 2016; Moravcsik 2013). Since formal properties, including morphology, are usually taken to be the direct evidence of underlying categories (see Haegeleman 1997), it is thus expected that the challenge of essentially unifying a putative substantive universal among these languages, as will be shown with Tense (it has different motivations and functions), can be thought to be a common one rooted in

¹ As a syntactic construction, Tense, with an uppercase *T* is differentiated from morphological tense with a lowercase *t*.

the methodology of UG. Meanwhile, the focus on Tense is justifiable in that, first, it reflects the typical procedures of depicting a putative UG category, where one assumes the existence of an underlying syntactic category as corresponding to an overt formal clue and postulates a null counterpart of it, and secondly, the Tense node has become a key derivational pivot bearing much of the well-formedness of sentences according to the main generative theorization (see Chomsky 1986; Radford 1988; Pollock 1989; Adger 2002; Radford 2004; 2009; Radford et al. 2009, among many others), and thus the cross-linguistic confirmation of Tense can be crucial for the generative theorization of sentence derivation. As is indicated, Tense is not an essentially definable concept in UG—neither are many other ones—and as a result, it has varying intensions and extensions in different languages, which is the reason why the term Tense can spread widely. Understandably, in a generative perspective, the tenselessness of Chinese or Arabic is only the surface absence of tense morphology, which is not unusual globally although unlike most Indo-European languages (see DeCaen 1995), and it is hardly a negation of the presence of Tense in the Deep Structure of a language, because a syntactic head is allowed to be realized as invisible. A tense morpheme is predominantly treated in the generative literature as a warrant for the existence of a Tense head but not vice versa, and it is unknown what exactly conditions the overt vs. covert realization of a categorial head. It is always possible, therefore, to speculate that Chinese or Arabic sentence derivation contains a covert tense morpheme. Yet those attempts to identify Tense can still be quite baffling on multiple levels.

It seems that the motivation behind those attempts to establish Tense nodes is primarily to take part in the construction of UG (see Chomsky 1995), for, by having Tense, Chinese or Arabic can be used to bear out the language-independent nature of Tense, a structure raised elsewhere, and enrich the parametric content of it. This is often called a bottom-up, as opposed to a top-down, style in pinning down linguistic universality (see Boeckx 2014; Haspelmath 2021c)—note that being bottom-up is the only choice in UG. To a generative linguist, this does not seem problematic, as is noted by Kayne (2005):

Comparative syntax necessarily involves work on more than one language, but it is not simply that. On the one hand, it attempts to characterize and delineate the parameters that ultimately underlie cross-linguistic differences in syntax. On the other, it attempts to exploit those differences as a new and often exciting source of evidence bearing on the characterization and delineation of the *principles [emphasis mine]* of Universal Grammar (UG), of the properties that, by virtue of holding of the (syntactic component of the) human language faculty, will be found to hold of every human language. (p. 3).

However, having a role in contributing to UG comes at the cost of theoretical transparency, because the presence of Tense cannot be shown to be necessary in either Chinese or Arabic—it is impossible to specify the sufficient and necessary conditions, from bottom up, for the application of any category in UG (cf. Haspelmath 2010)—since the beginning, *Tense* has been a gamble, and no one ensures that it must pay off. A serious problem ensues from Kayne's note above, as it implies that the order in which languages are studied is an important factor in the shaping of UG. To repeat, UG's being bottom-up indicates that the universality of

Tense is unsupported initially and expected to be tested out later in a cross-linguistic stage. Then, it is irrefutable that if UG's theorization started from languages where tense morphology is minimally detectable, Tense would not be submitted for consideration for a universal, in which case what is currently thought to fall within the Tense domain in English or any other Western language could be said to provide—to borrow Kayne's words—new and exciting evidence for other categories. That is, the bottom-up style of UG needs to set up a structural reference that cannot be justified, and in this Tense-hunting process, Chinese and Arabic are not deemed to be self-sufficient in their own structures but in need of an external template to illustrate what is missing from them. Thus, it is not guaranteed that all languages contribute in an equally constructive way for UG. Clearly, Chinese and Arabic are secondary contributors in the composition of UG, since the theorization of them must subscribe to some already existing theoretical judgments, and there is a hazard that investigations into Chinese or Arabic are teleological.

In line with this, Kayne's (2005) use of the word *principles* above is obviously suspicious, for there are not any uniform, systematic guidelines for locating a principle in UG. It is, therefore, necessary to question Kayne's confidence in claiming to obtain a principle with merely bottom-up assumptions. Apparently, a generative linguist goes about searching for new and exciting evidence as if she or he did truthfully find a principle. This is misleading, because again, Tense, or any other category in UG, is no more than a blind try-out, which can certainly fail. It is not reasonable to believe that generative linguists are exceptionally lucky that whatever they put forward must be universals, not to mention that universals in the generative sense are not ad hoc conceptual grounds created only for the purpose of language comparison but have a much deeper epistemological root (see Sect. “[Inexplicable innateness](#)” below). Even if the term *universal* is simply taken to mean being applicable to all cases, from bottom up, the two questions cannot be answered in principle: among the vast empirical demonstrations observed in individual languages, which of them may potentially lead to a language universal, thus worth being singled out? And how can it be properly (conceptually) rendered to be suitable for all languages? In short, procedurally, from bottom up, it is an arbitrary process to attempt to obtain a language universal from a language particular. This is echoed in Haspelmath (2021c) where he believes that it is a confusion between general linguistics and theoretical linguistics (cf. Dryer 2006), saying: “... in recent decades, there has been a strong tendency to base general claims on the study of particular languages, or on a small non-representative set of languages, rather than on language universals.” Especially, as generative linguists have no other choice but to *guess* where and what language universals are, by no means can they conclusively prove their random postulations, because it is extremely challenging to confirm any two syntactic units from two different languages as instantiations of one category. On this empirical basis, I claim, the cross-linguistic identification of a category in UG is unprincipled.

To illustrate, as with *Tense*, one cannot gather a conceptual core for it from the original syntactic making of it in English (see Sect. “[Game vs. hydrogen vs. tense](#)”), nor essentially link it to some stable formal manifestation(s). Thus, in the cross-linguistic attempts to corroborate the universality of Tense, the arguments for Tense in Chinese and Arabic, for instance, cannot be based on any concrete idea about what

Tense is, i.e., what empirical demonstration must stem from the presence of Tense (to be fair, neither are the arguments against Tense in them, see Grano 2017; Lin 2006, 2010), nor do they aspire to ultimately lead to the revelation of the essence of Tense. Both locally or globally, it is impossible to tell where the conceptualization of Tense justifiably begins and ends since nothing anchors Tense's intension or limits its extension. Tense thus has changeable motivations and boundaries. Ominously, this can be true for any other label employed in UG (see Baker 2003), and yet the indefinability of them serves in favour of UG, for it means that the establishment of a category such as Tense² does not need to abide by any rigid terms. In this respect, Hudson (1999) comments on the ill-foundedness of Functional Category in UG: “[any notion of Functional Category] has been accepted more or less without question and has become part of mainstream theorizing simply through frequent mention by leading figures” (p. 8).

Particularly, Tense supporters in both Chinese and Arabic have no choice but to adopt a strategy based on arbitrary resemblance, since they must show that their versions of Tense are somehow comparable to a ‘verified’ version, mostly that of English, which is the point of the presumption of Tense as a language-independent conception. For instance, Lin (2011, 2012a, b, 2015) contends that the hint of Chinese having Tense is that it seems plausible to raise a finite vs. non-finite contrast in Chinese (note that *finiteness* itself does not have a clear definition either, see Adger 2007; Klein 2018), which happens to fall within the Tense domain in English; Aoun et al. (2010) defend their Tense constructions for Arabic by citing that Arabic subjects are normally in nominative case (again, is this nominative case in Arabic the same as that in English?), allegedly a Tense function [see Radford et al. (2009: 265) for case assignment conditions in English]; a slightly radical instance is in Sybesma (2007), where he believes that Chinese is just like Dutch in showing an agreement pattern between past adverbials and past tense morpheme, the only difference being that Dutch has an overt tense morpheme but Chinese has a covert one. In short, Tense supporters need to conduct their empirical considerations deliberately towards a pre-set target, via whatever is reminiscent of a more ‘obvious’ Tense, yet without attending to the real cause(s)—if there is any—by which Tense arises, hence the teleology. However, once an arbitrary resemblance is flagged (presumably as a ‘principle’ of Tense), the description of Tense is allowed to differ from the ‘original’ one freely (as new ‘parameters’ of Tense). The question that must be posed is: are those Tenses truly one entity (other than, for instance, different ones overlapping in different areas)? It is imaginable that two Tenses accounts can vary hugely to the point that nothing in fact unifies them. That is, arguments for Tense only give rise to various constructions with family resemblance [similarly, Hinzen and Sheeran (2013: 60) think that cross-linguistic nouns and verbs are categories with family

² Note that the proposal for Tense to come to the fore to replace its theoretical antecedent Inflection may originate in Pollock's (1989) elaborate argument about splitting InfP into TenseP and AgreeP (see also Chomsky 1986; Ouhalla 1991; Rizzi 1990). But sometimes TP and IP seem to be interchangeable (see Adger 2002). The current study does not seek the ‘correct’ representation of a functional domain between TP and IP, because that is pointless before one can ascertain the genuine presence and essence of a category in UG.

resemblance]. In that circumstance, Tense is vacuous, in that the efforts to either approve or disapprove a Tense are non-essential³, and the vacuity naturally conflicts with universality. Surely, UG's unsatisfactory categorization is not unnoticed, as no procedure has been laid out for it to ensure that its products match up to the significance pursued in it (see Croft 2001, 2003; Evans and Levinson 2009; Haspelmath 2007, 2010, 2020, 2021c; Tomasello 2005). Thus, it must be doubted that overall, a bottom-up theory is methodologically irreconcilable with the goal of setting out an innate grammar.

Inexplicable innateness

Clearly, it would be much less urgent to seek out the significance of a UG category if it were intended as nothing but a conventional descriptive tool. But UG is tied to *innateness*, wherein the scientific value of UG is expected to reside. If all possible patterns of languages are internalized by the hypothetical Language Faculty (LF) common to all humans (Chomsky et al. 2019; Hauser et al. 2002), then linguistic universality boils down to the reality of the natural content of the LF, to be presented ideally in the format of Principles and Parameters (PP) (see Chomsky 1981; Jackendoff 2002; Lohndal and Uriagereka 2014). By appealing to innateness, UG proponents seem to believe that the theorization of UG is tantamount to the revealing part of the (mental) truth about our world (see Chomsky 2000, p. 75). Fundamentally in this sense, UG has a different theoretical orientation from what has stemmed from the work of Joseph Greenberg (see Croft 2003; Holmberg 2016; Song 2018). Nonetheless, assuming language universals from bottom up evinces that innateness is an oxymoron in UG. On one hand, the description of the LF must not be arbitrary as what it contains must be part of reality, i.e., other than being something made up, a category in UG is a natural part of the LF, and it cannot exist only for the sake of some linguistic analyses. On the other hand, bottom-up assumptions as UG's only source for universality indicate that innateness is methodologically inexplicable, and thus categorization cannot truly be based on innateness, meaning that there is no way to uniquely map a linguistic element to its identity as naturally intended, in which case the ascription of a category to the LF is always non-essential and contingent—UG proponents could come up with a different set of categories, yet still claiming to have deepened our understanding about language.

To be clear, the inexplicability of innateness lies in that it is hard to account for how innateness has any bearing on the categorization in UG, or in what way innateness implies a restriction on it. Therefore, a methodological problem of UG is that innateness can only be granted groundlessly: not truly knowing what qualifies innateness, UG proponents haphazardly advance their theorization as though innateness were proven automatically in it (see also Borsley and Müller 2021; Tomasello 1995). Figuratively speaking, innateness in UG can be likened to a stamp on a blank piece of paper: whatever turns out to be written on it would carry the stamp all the

³ But UG proponents are not reluctant to engage in pointless arguments of this kind (see Haspelmath 2021b for his comments on the NP vs. DP debate between Bruening 2020 and Preminger 2020).

same. To be equipped to perform categorization that results in innate categories, UG proponents must truly decipher the LF's natural principle(s) in recognizing and organizing categories. Basically, that is an effort to reveal the epistemological significance of innateness. It is not appropriate for UG proponents to take advantage of innateness to freely promote its putative explanatory adequacy, while disregarding the responsibility brought on by claiming innateness. After all, it is only fair that a theory about innateness is one that 'knows' innateness. Otherwise, there is no reason to believe that a category like Tense is in any way superior to a descriptive tool. With this said, linguistic categorization in UG is not truly reformed in accordance with any constraint of innateness, thus not to be set apart from the traditional taxonomic grammar, which can be contrary to the generative point of view (see Chomsky 1957, 1965; Radford 2004; cf. Valin et al. 1997).

To clarify, in the current thesis, I take issue with the failure of UG proponents to consolidate innateness to the categorization in UG. Certainly, grammatical knowledge can be innate, and just as Dąbrowska (2015) puts it, nobody is disputing that (see also the recent blog exchange between Haspelmath 2021a, 2021b and Adger 2021). When UG proponents habitually use general observations in human language acquisition or evolution, such as poverty of the stimulus, human speciation and so on (see Berwick et al. 2016; Chomsky 1972; Fitch et al. 2005; Lasnik and Lidz 2016; cf. Mendiivil-Giró 2021), to support language's innateness, a methodological discontinuity is overlooked. That is, the idea of innateness, in response to 'Plato's Problem' (see Chomsky 1986), cannot be factored into solving more humble but real grammatical problems (cf. Boeckx 2014; Tomasello 1995), and no evidence specifies what impact innateness has on the theorization of language. In this regard, Haider (2019) points out: "[t]he idea that humans are endowed with a richly structured, innate language capacity has served as a **tentative** [*emphasis mine*] solution to the argument from the poverty of stimulus in language acquisition", but "[n]obody has ever been able to produce immediate and compelling evidence in favour of the strong nativist hypothesis" (p. 367).

The current paper unfolds as follows. In Sect. "[Game vs. hydrogen vs. tense](#)", it is contended that an innate category in UG ought to have an inherent intension, independent of human will; in this sense, it is supposed to be in parallel with a natural category, such as hydrogen, but in practice, it is like an ordinary category, such as game, resulting from family resemblance, without a common ground but with arbitrary boundaries. In Sect. "Categorization function" and Sect. "[A contingent theory with confusing causation](#)", it is emphasized that to maintain the LF as a necessary truth, innateness must be formalized as a categorization function, taking all linguistic elements as equal arguments, and uniquely projecting their identities, so that a UG category can be essentially anchored; otherwise, arbitrary parameterization of a category's content is contradictory with the goal of UG in presenting linguistic universality. In Sect. "[Ideal: completeness and systematicness](#)" and Sect. "[Reality: opportunism](#)", it is asserted that as UG proponents forsakes the pursuit for the epistemological significance of innateness, the putative universal inventory of categories in UG can never be set out in a complete and systematic fashion. In this connection, Sect. "[Cartography that can be neither complete nor systematic](#)" and Sect. "[Final remarks on completeness and systematicness](#)" show that the cartographic efforts to

lay out all functional categories of UG only produce chaotic, endless lists, having no value in prediction. Sect. “[Conclusion](#)” concludes the current paper.

Categorization without access to innateness

To put it briefly, innateness indicates commonality that all human beings are subject to. Particularly, it is assumed in UG that we are born with the same initial state for language generation (Chomsky 2000), and in an abstract (or holistic) sense, the LF therefore must be uniquely accountable, since it is supposed to undertake the non-arbitrariness (or falsifiability, see Evans and Levinson 2009) of UG so that it is a scientific drive with explanatory adequacy. In other words, language is explained in UG in terms of the LF’s being as such. Thus, one’s commitment to UG should not be taken seriously without articulating a methodology granting her or him the access to what constitutes innateness synthetically (pure intuition does not shed light on it), because the account of the LF ought not to amount to some arbitrary choices of possibilities among alternative ones. Fundamentally, announcing anything to be innate is equivalent to picking out the only possibility of the natural being of part of the LF, which must be defended with sufficient reason.

Game vs. hydrogen vs. tense

From above, an implication is that an arbitrary category with an arbitrary definition cannot be accepted gratuitously as part of the necessary truth of the LF, and the only defence of a category belonging to the LF is UG proponents’ access to the synthetic constitution of innateness, which is precisely the access to the natural principle(s) (linguistically analysable) of the LF in recognizing and organizing inherent categories. That is, a category, if it is indeed innate, can only be identified in accordance with the system that is inherently set up in the LF for syntactic configuration, and the system must be a stable one, in which a category is definitively positioned in relation to others. It follows that categories belonging to the LF must have rigid boundaries, and the rigidity is an important part of the necessity of the LF. Note that the rigidity of categories’ boundaries does not mean that a category cannot show cross-linguistic variation, but that a category’s variation (parameter) makes sense only when it has essence (principle) (see Sect. “[A contingent theory with confusing causation](#)”; cf. Boeckx 2014).

To elaborate on this point, it is beneficial to compare an ordinary (contingent) category, such as a *game*, and a natural category, such as hydrogen [see Sect. “[Ideal: completeness and systematicness](#)” for Baker’s (2001) conception of a periodic table of languages]. Clearly, it is far less extraordinary to argue for the truth or falsity of something being in an ordinary category (see Moravcsik 2016) than a natural category. This is because the ordinary category *game* is not set out with an inherent intension (it is invented), thus not bound by necessity but open to multiple possibilities with respect to its boundaries; by contrast, hydrogen must be bound by necessity, for the definition of it represents the only possibility that

we can experience, devoid of any conventional decisions. That is, to know hydrogen is to find out how it is naturally as a limitation on us. Therefore, in explaining an ordinary category, one simply needs to report the availability of it among all other possibilities, whereas in explaining a natural category, one needs to provide sufficient reason. Particularly, being a *game* does not have a right scope to be brought to light, i.e., we would never know beforehand what must be or must not be a *game*, meaning that *game* has changeable motivations. Thus, as is made well-known by Wittgenstein (1958), what holds together various *games* is not a common conceptual ground, but *family resemblance* (see also Taylor 1994; Evans and Green 2006). For instance, Chinese speakers tend to deny the gameness (the quality of being *youxi* ‘game’) of highly competitive activities such as sporting events in view of their seriousness, hence the term *Olympic Games* can be slightly strange to them at first blush. But ultimately it is penetrable if Chinese speakers can map out how the term *Olympic Games* is reached through a resemblance route—it is just a matter of choosing a cooperative perspective. Thus, to explain why *Olympic Games* are *games* is to explain in what way *Olympic Games* possibly connect to some other kinds of *games* (yet not all of them). The negotiability of the boundary between *gameness* and *non-gameness* is evidence of the non-essentialness of the term *game* in English or *youxi* ‘game’ in Chinese, in that, the two terms only happen to referentially overlap to some extent. But that cannot be the case with hydrogen: simply, any atom with only one proton must be a hydrogen atom and any atom with more than one proton must not be—no room for negotiation. To echo my argument, the rigidity in drawing the boundary for hydrogen is premised on knowing in what terms chemical elements are divided from *top down*, just as ‘intended’ by nature, in the sense that this is not a matter that human beings decide on in any ad hoc way.

In this connection, an innate category, which UG proponents suppose themselves to be entitled to, must be obtained in parallel to a chemical category, as hydrogen, along with all other elements, is innate to our world as well. In short, an innate category shows uniformity in the sense that it cannot be otherwise stated. Alternatively, uniformity is a necessary but not a sufficient condition for innateness. In practice, UG proponents have difficulty in proving the necessity of a category proposed for UG, which stands for some conventional decision but not an inherent intension. Recall that a bottom-up method is forced upon UG proponents because none of them truly comprehend how categories belonging to the LF are naturally recognized and organized. Moreover, when a category cannot be bounded with necessity, its uniformity can be easily denied, as its formation is liable to family resemblance, which is a clear sign of a category’s non-essentialness. Indeed, the categorization in UG dominantly give rise to categories.

analogous in nature to *game* other than to *hydrogen*, as family resemblance is often the only ‘principle’ that one can depend on in delineating a category for UG, both locally and globally.

By way of illustration, Tense is like the category of *game* for there is no such thing as *Tenseness* that is essentially explicable to set up the natural boundary of it, and thus its formation is inevitably an arbitrary extension along family resemblance. As is briefly discussed in Sect. “[Difficulties in cross-linguistic identification](#)

of a category”, the cross-linguistic varieties of Tense bear witness to that: the wider the Tense node is spread, the less likely it is to be anchored as it becomes increasingly heterogeneous in its content. Apart from that, family resemblance is what puts up the local construction of Tense. In the case of English, often respected as the language of reference in generative theorization, nothing in the making of Tense suggests natural rigidity—the collection of the purported Tense heads, namely tense morphemes, modals⁴ and the infinitival particle *to* (see Adger 2002, ch. 5; Carnie 2002, p. 45), appears far-fetched, in that it does not follow a coherent line of reasoning to crystallize certain Tenseness which must stand for a necessity to be innate. All that can be said about Tense is that its lexical heads may be connected in one way or another (there is no uniformity let alone necessity). Therefore, it is impossible to outline the condition(s) on which Tense heads are structurally equivalent, i.e., there is not a syntactic environment that allows them to substitute one another. Tense is thus a category which is neither internally consistent nor externally private, meaning that not only does one need to shift perspectives when observing them on a par, but also need to purposefully cut off some other equally relatable but undesired elements. See the examples in (1–11).

- (1) Lily **finished/could finish/can finish** her work in time.
- (2) a. *Lily wanted **to finished** her work in time.
b. *Lily **could finished** her work in time.
- (3) a. *Lily **could to finish** her work in time.
b. *Lily wanted **to can finish** her work in time.
- (4) a. I believed [Lily **could finish** her work in time].
b. I believed [Lily **to finish** her work in time].
- (5) a. *Lily **can in** the house.
b. *Lily is **in can** the house.
- (6) a. *Lily wants **to in** the house.
b. *Lily wants **in to** be the house.
- (7) a. *Lily **could finishing** her work.
b. *Lily **could** her work.
- (8) a. *Lily wanted **to** her work.
b. *Lily wanted **to finishing** her work.
- (9) a. Lily wanted **to finish** her work in time.
b. *Lily wanted **can finish** her work in time.
- (10) a. Lily can imagine her boyfriend’s furious **reaction** to the election result.
b. Lily can imagine her boyfriend **will** furiously **react** to the election result.

⁴ In generative literature, there is no agreement on whether auxiliaries, such as the aspectual ones *have* and *be*, belong to Tense as well. In the present paper, I shall follow Adger (2002) in not including them in Tense, as it is even more challenging to think of the infinitive particle *to* as a structural equivalent to auxiliaries. For instance, unlike what is shown in (3b) below, the infinitive particle *to* can co-occur with aspectual auxiliaries *have* and *be*.

- c. Lily can imagine her boyfriend furiously **reacting** to the election result.
- (11) a. Lily **can** finish her work.
 b. Lily **must** finish her work.
 c. *Lily **can must/must can** finish her work.

It is often reported by generative linguists that both modals and the infinitive particle can be related to tense in English (see Wekker and Haegeman 1985, pp. 46–47; Uriagereka 1998, p. 111 among others): modals themselves inflect for tense (yet tensed modals may not have the typical tense values) as in (1) and the infinitival phrase cannot comprise a tensed verb as in (2a). To create affinity between them, it is further posited that the infinitive particle covertly marks a non-finite, abstract, or unspecified tense (Haegeman 2006, p. 181; Radford 2009, p. 5; Radford et. al 2009, p. 251), implying that the infinitive particle is opposite to modals yet under one kind, analogous to the relationship between *the* and *a/an*, for example, which are both articles but one is definite and the other indefinite. That is, the infinitive particle and modals are deemed as a complementary pair in the generative literature. However, there is much to be clarified about the term *complementary*. Overall, it surfaces as a distinction but must be underlain by uniformity. In this regard, the antithesis between *the* and *a/an* is validated by the observation that they must occur in the same syntactic position (in front of a singular noun) to replace each other. But family resemblance does not unite a distinction as a complementary pair.

Notably, there is an inappropriate shift of the conceptual grounds in understanding the term *tense*, which is clearly intended as the medium between the infinitive particle and modals, to justify the label of Tense on them. Obviously, the overt tense marking on modals is a morphological feature, which is selectively manifested among languages and often treated as expressing primitive values in the generative literature, e.g., *past* or *non-past* (Adger 2002, ch. 5), but the so-called unspecified tense with the infinitive particle refers to temporal interpretation in general, a more compelling and broader concept as the understanding of any event is unlikely to dispense with it, and it is to be synthetically computed by the overall context (see Stowell 1982), yet not necessarily involving visible formal signals. Contextual information cannot be disregarded even in interpreting events that are overtly tensed (see Klein 1994). That is, the so-called unspecified tense ‘marked’ by the infinitive particle and the overt tense inflection do not replace each other since there is not an unequivocal ground to unite them in the first place. For instance, in English, the verbal form ‘complementing’ a preposition must end in *-ing* (e.g., *in doing so*), thus unable to carry tense morphemes, but it certainly has a temporal reading afforded by its context. It is not methodical to state that a preposition aligns with any tense marking elements simply for rejecting a tensed verbal form (what empirical demonstration proves the sameness of them?). Similarly, that neither modals nor the infinitive particle precedes tensed verbs (see Adger 2002: 128, 130) is not an indicator of sameness of them, as shown in (2). This is random: neither of them precedes, for example, a noun or a gerund either, as shown in (7) and (8), and the elements that do not precede tensed verbs form a wider set than merely modals and the infinitive particle. More critically, this alleged connection is not defined within the same syntactic environment: modal and the infinitive particle are not in parallel positions

in (2), and it is thus hard to attribute the ungrammaticality in (2a) and (2b) to a unified cause, supposedly Tenseness. On the other hand, as in (10), if the infinitive particle marks an empty tense morpheme, then an action noun or a gerund must be treated likewise (see Brown and Miller 2016; Burton-Roberts 2016 for the so-called non-finite clauses), for the action noun in (10a) and the gerund in (10c) justifiably have an abstract tense value, like the infinitive particle in (4b) or (9). This strongly suggests that the combination of modals and the infinitive particle under Tense is a preconceived idea in English.

To emphasize, saying that the infinitive particle and modals are different exponents of the same category first means that their sameness is prior to their difference, for which evidence must be provided. Often, a mutual repulsive effect is mentioned to enhance the ‘complementary distribution’ with the infinitive particle and modals in generative literature (see Adger 2002, p. 130; Chomsky 1977, p. 87; Radford 1988, p. 304), as is demonstrated in (3). Critically, not co-occurring is not necessarily evidence of sameness but possibly of remoteness between linguistic elements, depending on what constitutes the comparability of them. For instance, (5) and (6) demonstrate that the preposition *in* is in ‘complementary distribution’ (does not co-occur) with both modals and the infinitive particle, but this must be a result of remoteness, i.e., they are too remote to establish direct syntactic connection to be adjacent to each other, because this ‘complementary distribution’ is not pinned down on one structural ground: a preposition can never replace a modal or the infinitive particle in equivalent syntactic units. Members of the same syntactic category do not co-occur on the premise that they substitute each other within a defined syntactic scale. For instance, the modals *can* and *must* cannot be adjacent to each other in (11c) [in accordance with Adger (2002, p. 126), modal adjacency is acceptable in certain English dialects], but (11c) does not suffice to account for the two items *can* and *must* belonging to the same category unless it is in conjunction with (11a) and (11b), which brings out the structural equivalence of them. Therefore, if one intends to render the sameness of the infinitive particle and modals in English, the core is to evidence that they play the same role in a given structure. For instance, the ungrammaticality of (9a) ought to be reserved with the infinitive particle replaced with a modal. But as is shown in (9b), modals do not follow verbs immediately as does the infinitival particle⁵.

Radford (2004, p. 51; 2009, p. 6) and Radford et al. (2009, p. 250) insist that the infinitive particle *to* and a typical auxiliary (mainly a modal) are in certain structural correspondence, in view of the contrast in (4) where the bracketed parts substitute each other as a unit. However, the equivalence between the two bracketed parts in (4a) and (4b) lies in their entirety, for being the ‘complement’ of the verb *believed*. It does not indicate that an embedded clause and an infinitival structure must constitute

⁵ Both Radford (1988, p. 304), credited to Bresnan (1976, p. 17), and Haegeman (2006, p. 183) mention the point that VP ellipsis is possible after modals and the infinitive particle, but not after lexical verbs. However, this similarity cannot be shown to be a Tense-related property, and among other dissimilarities between modals and the infinitive particle, such as (9), why this similarity need be particularly noted is inexplicable.

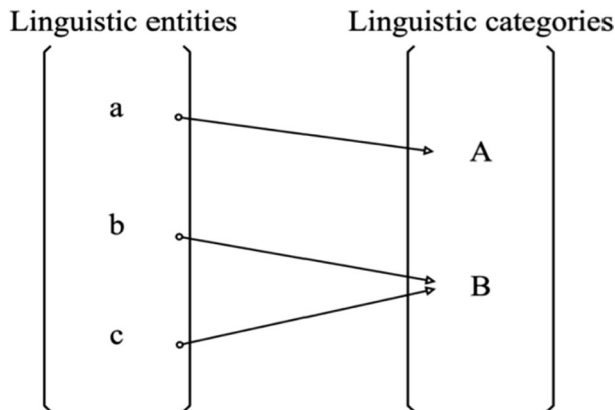


Fig. 1 Unique mapping by a uniform categorization function

a lexically one- to-one correspondence. (10) shows that in complementing the verb *imagine*, an embedded clause as a whole is equal to a simple noun phrase or a gerund phrase, but it is absolutely not necessary to equate the modal *will* of (10b) with any single element of (10a) or (10c). Thus, (4) does not prove the structural equivalence between a modal and the infinitive particle, because the substitution is not specifically narrowed down to these two elements.

Indisputably, in terms of measurability or comparability (see Haspelmath 2021c; Round and Corbett 2020), the category Tense is indeterminate, as the construction of it is contingent on unstable, arbitrary connections. Apparently, it is nonsense to suggest there is an inherent intension (innateness) for Tense, because nothing subsumed under Tense can be said to be a result of necessity nor can the existence of Tense itself. This, however, is the general practice of categorization in UG.

Categorization function

To get rid of family resemblance, there should be general conditions laid out for innate categorization. In accordance with the design of UG, however different, all individual languages must converge on the same ‘initial state’ (see Chomsky 2000). (Note ‘initial state’ is to be understood as not only the starting point of language acquisition, but also that of sentence derivation.) Thus, UG’s theorization about LF is ideally the reduction of all the kaleidoscopic empirical demonstrations to the singular truth of LF. In terms of categorization, UG must be equipped with a methodology able to map all linguistic elements to what LF naturally possesses, i.e., a fixed inventory of categories. Imaginably, to obtain the constant initial state of LF (as is said, this is why the revelation of LF is a valid scientific drive), the most essential requirement is that UG’s categorization be equivalent to a function, which associates linguistic elements to categorial identities, in that it must satisfy uniformity and uniqueness. That is, all linguistic elements must be equal arguments of the function, and via it, each one of them must uniquely correspond to only one categorial identity, as is shown in Fig. 1. Specifically,

when linguistic entities *a*, *b* and *c* are under categorization, they must be put on a par and the mapping from the linguistic entity *a* to the linguistic category *A*, for instance, must be proven to be the *only possibility*. To connect to what is aforesaid, the categorization function of UG is the formalization of LF's natural principle(s) in recognizing and organizing innate categories. With this said, the major responsibility UG proponents must assume is to find out the universal variable among all linguistic elements that is decisive of their categorial identities.

Again, I would like to illustrate the categorization function by contrasting ordinary categorization and natural categorization. In that, identifying a *game* does not (and cannot) depend on a uniform function as the definition of *game*, not innate to anything, inexorably varies among speech communities or even individuals; without a solely correct definition of *game*, mapping one entity to both *game* and *non-game* simultaneously is not forbidden (for instance *Olympic Games*). But in stark contrast to *game*, a chemical element can only have one determinate identity: nothing can be both hydrogen and oxygen (i.e., not hydrogen) at the same time—this is the basic character of necessary truth (see Kment 2021; Kripke 1980). Although more than one hundred chemical elements exist, their definitions are not individually, randomly put forward, but unifiable on one common ground, which is the number of proton(s) in their nuclei. In terms of the categorization function, therefore, the number of protons is the universal variable that is decisive of all elements' identities. Importantly, this is independent of human will but imposed on it.

Vitality, the contrast between identifying an ordinary category and a natural category, concentrating on the explication of the categorization function, mirrors the contrast between inductive description and deductive explanation in linguistics. That is, only when necessity (sufficient reason) lies at the heart of UG, methodologically, can UG proponents be eligible for claiming explanatory adequacy. In theorizing, saying something to be Tense in UG, for example, means Tense is the only possibility that it can point to. This does not mean that mistakes are not tolerable with UG, but that UG's categorization must boil down to an explicit principle that consistently and exclusively projects linguistic elements' identities. The presence of the categorization function would be the evidence of UG proponents having access to innateness, for it is only derivable from how the LF is naturally upholding a stable universal inventory of categories, and the absence of it, on the other hand, evinces the non-genuineness of UG proponents in the quest for innateness. Stranded by family resemblance, UG proponents can only produce categories such as Tense, and due to that, they are finally portraying the LF as an inefficient and incoherent organization that does not have a uniquely determinable way of presence. Thus, it is not convincing at all that UG followers are having a rational LF in mind as a goal when they do not know the sufficient reason for innateness.

A contingent theory with confusing causation

As stated, the objective of the theorization of UG is to input empirical demonstrations and output the necessary truth of LF, where elements on the surface must be registered into the Deep Structure with their unique underlying identities. This is the starting point of the generative linguists' enthusiasm of building the abstract realm of UG. In line with this, categorization with sufficient reason is an even stronger demand, because the entire theoretical expansion of abstractness in UG must be safely based on concreteness in order not to collapse. That is, for instance, if the identification of the modal *can* in '*cars can run fast*' as a Tense head only turns out to be an arbitrary possibility, then anything following that is also inescapably arbitrary possibilities—the theorization of UG is thus from one possibility to another possibility. Ultimately, as is suggested, how UG is set out is dependent on each arbitrary choice of possibilities. In this sense, UG is a contingent theory in nature, and imaginably, alternative versions of it exist across different possible worlds which share the initiative for UG—it is immaterial to tell which of them is better or worse than another.

A causal confusion ensues from the contingent nature of UG, since stating the necessary cause or effect of a category is never part of the categorization procedure of UG. In general, the determination of the content of the LF rests on finding out both the basic categories and the rules of interaction between them (see Chomsky 1965; Jackendoff 2002): basic categories are substantive universals, and the rules that configure them are formal universals, including governance and binding theory, X-bar theory, theta theory, case theory and so forth. UG proponents embrace a somewhat dualistic view in rendering the two kinds of universals as independently coexisting, with neither one causing or caused by the other (substantive universals and formal universals are not selective of each other). It is therefore fair to say that a UG proponent enjoys incredible freedom in proposing a category for UG, as she or he does not need to substantiate either the cause or the effect of a category. To be clear, a dualistic view is meant to point to the incomplete, unprincipled reasoning in UG, and it is an orientation internal to language, different from Chomsky's (2000) dualism, with which he refuses the reduction of language to physics, i.e., he does not endorse what he calls metaphysical naturalism (see also Jacob 2010). Certainly, it is not suggested that the content of LF, as the main body of the theorization of UG, must be composed of only one kind of reality, but without sufficient reason altogether, the arrangement of the two kinds of universals in a fixed cause-and-effect relation is at least an attempt to reclaim some rationality, even if it is only theory-internal. That the model of Principles and Parameters (PP) does not have a determinate format is a clear sign of LF lacking rationality. If a statement of PP presumably predicates something about a subject, then it is necessary to determine the right subject and the right predicate. This is unrealized exactly because where to place a category in a causal chain is unknowable. Ideally, all statements of PP are expected to add up to a meaningful whole, ontologically uniform. But what is being constructed in PP is far from foreseeable, and there is little hope of finally unifying the existing principles and parameters that are randomly advanced (cf. Dąbrowska 2015). A technical problem must be singled out in this regard. Instead of demanding that all

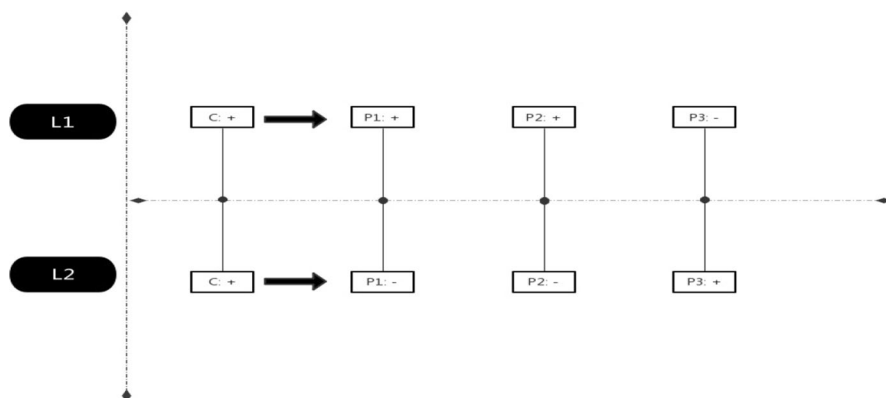


Fig. 2 The separation of a category's existence and its essence

languages have an identical set of categories, UG proponents find it more acceptable to suppose that the universal inventory is a category pool from which each language is free to make its own selection (see Cinque 1999; Haegeman 1997). It follows that whether a category is manifested or not is an option under each language's individualization, whereby an on/off switch is engendered. But at the same time, what internally makes up a category is also under each language's individualization, thus leading to a contradiction. That is, when a category's presence or absence is parameterized, it must be stable in its essence, which cannot be true since its essence is also subject to parameterization. Again, in UG, a category cannot be limited in what properties it has, and a property cannot be tied to any category. The following scenario—somehow extreme—is thus theoretically conceivable (see Fig. 2). Suppose a category *C*, and it is simply entered into the universal inventory based on a grammatical convention in a particular language *L*₁, where it is said to consist of properties *p*₁ and *p*₂ (this is exactly how UG proponents propose universal categories). Since parameterization of a category's existence and that of a category's essence proceed on separate tracks, a new language *L*₂ can be claimed to have the category *C* without displaying either of the original properties recognized in *L*₁, yet perhaps giving it a new property *p*₃. This shows that it is paradoxical for a UG proponent to simply assume the universality of a category while failing to spell it out, because the scheme of PP does not have a way of securing unsupported universality as a placeholder. Admittedly, authors can opt for arbitrary resemblance in reproducing a non-local category for a language (see Sect. “Difficulties in cross-linguistic identification of a category”), but that is not better in any essential way.

The separation of a category's existence and its essence is the irrefutable evidence of UG proponents' not having access to innateness. In practice, however, assuming uniformity for a category, yet without knowing what it can be, is commonly used as

a potent tool in UG, even before Chomsky's (2001, p 2) Uniformity Principle or UP⁶ (see also Cinque and Rizzi 2009), because it casts aside the need to stably ground an innate category. In lieu of stating sufficient reason for innateness, a UG proponent is permitted with UP to pick up any random category and enter it into UG's universal inventory directly. This explains why generative linguists have been excessively productive (see Sect. "Final remarks on completeness and systematicness") in filling up the supposedly concise universal inventory—the list of categories just keeps inflating with no clear sign for an end (see Newmeyer 2008; Boeckx 2014; Dąbrowska 2015). As Chomsky (2001) advocates UP "[i]n the absence of compelling evidence to the contrary" (p. 2), he perhaps presumes the uniformity of any category of UG to be self-evident, thus needless to be particularly explicit. But the reality is that by invoking UP, UG proponents easily disengage themselves from the responsibility of inducing the uniformity of a category, because they are in fact unable to do so. Plainly, with the most important part removed from a theory about linguistic universality, UP can be an abandonment of rationality, gradually reducing UG to being completely groundless.

Void epistemological significance of Universal Grammar

Ideal: completeness and systematicness

Understandably, if the LF (Language Faculty) encompasses all the possible linguistic patterns in the world (see Chomsky 1965, 1986; Huang and Roberts 2016; Radford 2004), a practitioner of UG may well be considered similar to a chemist in answering the question about what exists from their respective points of view. When Baker (2001) proposes an outlook of constructing a periodic table of languages (PTL) (see also Haspelmath 2021a, 2021b, 2021c), the bottom line for the similarity, he thinks, is the equivalence between parameters in linguistics and atoms in chemistry. In accordance with that, the PTL is a full list of basic parameters, as linguistic mutability is presumed to boil down to the interplay between them. (Baker does not discriminate between formal properties and substantive properties as objects of parameterization). Baker's conception of the PTL basically conforms to what has always been anticipated out of the theorization of UG. But in comparison with the uncritical, one-dimensional (single purpose) PP model, it is likely that Baker has hope in finding the epistemological significance in presenting language primitives, because the PTL in itself signifies some deep logic that dictates the existence of basic parameters and their connection. On that ground, Baker (2001) is confident that the PTL can clear up the chaos in cross-linguistic parametric settings, to finally render the expression of the PP model as *complete* and *systematic*. In that, he says:

The parametric theory of linguistics is built on the hypothesis that all grammatical differences among languages result from the interplay of a finite number of

⁶ It states "[i]n the absence of compelling evidence to the contrary, assume languages to be uniform, with variety restricted to easily detectable properties of utterances".

discrete factors. If this is correct, then those parameters should also be expressible in an exhaustive list. A periodic table of languages would be such a list, so that whatever exotic grammatical feature one might come across—a serial verb construction or an incorporated noun or an ergative case marker—it would be somewhere on the table of languages. (p. 158).

Ideally, the same [*the systematic arrangement of elements*] should be true of a periodic table of languages. Not only should each parameter be listed, but the parameters should be presented systematically, in a way that expresses truths about their inherent nature and the relationships among them. (p. 160).

Baker's outline of the PTL provides a good perspective through which the innate grammar blueprint of UG can be assessed. On one hand, the PTL is an ideal for UG, in that, it can be potentially deemed as a call to add a deeper epistemological basis to UG, where innateness is grounded to sufficiently support the composition of UG. On the other hand, the PTL exactly points to the unattainability of this ideal for UG since it fails to raise awareness of an imperative methodological reform. Baker puts much emphasis on the formal analogy of the PTL to the periodic table of elements, without reflecting on the premise of finally achieving it. That is, the success of the PTL, i.e., the PP model's being complete and systematic, must involve the authentic command of innateness as the overall guideline for categorization. Again, one is not allowed to make up ad hoc bases to identify elements (or 'innate' categories), and an element must be uniquely recognized by the number of proton(s) in its nucleus, which amounts to, as emphasized, nature's way of presenting an element. In other words, that an element's 'innateness' has an undeniable proof is the premise of the success of the formulation of the periodic table of elements. By virtue of that, the periodic table of elements is complete and systematic. By contrast, as long as innateness remains inexplicable in UG, the PTL is doomed to failure. Baker (2001) himself notes that the neat pattern in the periodic table of elements is a result of the correlation between their relative atomic weights and their valence, but this is a point, he thinks, "irrelevant to the parameters" (p. 161). As such, Baker virtually dissociates the conception of the PTL with the pursuit of the epistemological significance for UG.

Reality: opportunism

Baker's conception about the PTL seems to have become obsolete (see Baker 2008, 2010; Baker and McCloskey 2007), as nothing suggests that the PP model is likely to be accomplished completely and systematically. In a more recent discussion on what he describes as 'Formal Generative Typology' (FGT), Baker (2010) admits that "[w]e [*generative linguists*] have usually not bothered to do the work we need to do to prove the genuine universality of our claims about Universal Grammar" (p. 299), but he defends the practicality of FGT in spite of that. Not surprisingly, incapable of touching on innateness to any extent whatsoever, Baker's defense concentrates on the abstractness of generative grammar, which, he believes, is the key to more profound findings about language (see also D'Alessandro 2019). For that, Baker puts forth an intermediate method (see also Baker and McCloskey 2007), to

invite generative linguists to enlarge their survey samples to an intermediate number of languages while adhering to the ‘advantageous’, massive abstractness. Nonetheless, this does not solve much of the problem, as a language typologist can have the largest sample of languages without claiming anything to be innate. It must be realized that how much UG’s abstractness can be tolerated is tied to how much generative linguists have knowledge of innateness. Simply, innateness is the concreteness whereby UG’s abstractness is allowed to arise at the outset. Thus, not truly knowing innateness, generative linguists’ excessive exploitation of abstractness is unwarranted, and for that, the constant emphasis on abstractness is a distraction from the fact that innateness is a mirage in UG, perhaps appealing but absolutely intangible.

In his overview about FGT, Baker (2010) says “[i]t is a relatively opportunistic approach” (p. 287). The word *opportunistic* is worth contemplating. In Baker’s sense, it can be synonymous with the word *eclectic*, but undeniably, it runs counter to the ideal of completeness and systematicness because it indicates little chance in actively discovering and defining innateness. Remarkably, Croft (2001) uses the same word as he suggests that categorization in UG is typical of what he calls cross-linguistic methodological opportunism⁷. But Croft’s use of the word is an utter criticism. In that, he concludes: “cross-linguistic methodological opportunism in identifying categories across languages is unprincipled and ad hoc. In other words, cross-linguistic methodological opportunism is not a rigorous scientific method for discovering the properties of Universal Grammar” (p. 31). Specifically, somehow echoing the current thesis, Croft points out the absence of an a priori way in UG (i.e., sufficient reason for innateness) to ascertain in what criteria a particular universal category is constructed, hence a categorization without balance, and in that case, “analysts can use whatever constructions they wish in order to come to whatever conclusions they wish” (p. 31). Croft’s rendering of the word *opportunistic* (or *opportunism*) is an authentic depiction of the so-called cartographic projects in UG.

Cartography that can be neither complete nor systematic

Currently, the term *cartography* is used to refer to the research line of spelling out the configurations of functional heads (see Belletti 2004; Cinque 2002; Cinque and Rizzi 2009; Newmeyer 2008; Rizzi 2013; Shlonsky 2010; Travis 2014). Just like the PTL, this cartographic enterprise is also an attempt to fully generate a list, determining functional categories and arranging them in the correct projection order. Again, it is worthwhile only because those functional categories and relations are assumed to be fixed, but it hints at no intention to go any deeper than throwing up random categories. Expectedly, cartographic studies in UG cannot bring up any useful guidelines, on the basis of necessity, in detecting either the presence or the essence of a functional head. There are some rather peripheral, procedural pieces of advice for practicing cartographic studies. For instance, Rizzi (2013, p 435) says that ideally a functional head is defined by one morphosyntactic property, which is expressed by

⁷ In that, Croft (2001, p. 31) says: “[b]ut cross-linguistic methodological opportunism is just that: opportunistic.”

a feature (cf. Haegeman 1997, p 47). Fundamental as Rizzi may suppose this to be, it does not address anything that lies at the core of the cartographic studies of UG. For anyone who is committed to this research line, it is required that she or he assure the genuineness (naturalness) of the presence and the essence of a functional head just as how it is in the LF. This then must go back to providing sufficient reason for innateness, otherwise, the cartographic studies in UG remain stranded with arbitrary opportunism, in which completeness and systematicness are too remote to reach.

Cinque's (1999, 2004, 2006) work is perhaps representative of UG's cartographic endeavor, allegedly aiming at placing all functional heads, as detailed as possible (note that Cinque does not take the null realizations of them into account), in a universal order. It results in schemes such as the following one.

- (12) Mood_{speech act} > Mood_{evaluative} > Mood_{evidential} > Mod_{epistemic} > T(Past) > T(Future) > Mood_{irrealis} > Asp_{habitual} > T(Anterior) > Asp_{perfect} > Asp_{retrospective} > Asp_{durative} > Asp_{progressive} > Asp_{prospective} / Mod_{root} > Voice > Asp_{celerative} > Asp_{completive} > Asp_{(semel)repetitive} > Asp_{iterative} (Cinque 1999: 76; cf. Cinque 2004: 133)

The outcome of Cinque's work, as is partly shown in (12), is difficult to be appreciated even for purely aesthetic reasons: it obviously lacks any underlying logic in arrangement. It is unquestionable that, first, Cinque does not set forth (12) because he has deciphered innateness, that is, to use Croft's (2001) words, the "a priori way to decide which criteria (if any) are relevant to deciding that a particular category is an instantiation of a universal category" (p. 31). Thus, Cinque throws up random categories without assuring any of them is a natural existence. Secondly, by virtue of Uniformity Principle, Cinque does not need to burden himself with the clarification of the necessary and/or sufficient conditions of the application of a category, yet readily assuming that there must be certain uniformity with it that he does not know (see Cinque and Rizzi 2009)—as concluded previously in Sect. "A contingent theory with confusing causation", this is paradoxical. Basically, one can confidently deduce nothing from looking at those equivocal labels in (12). After all, in what way does Cinque suppose his work to be valued? Suitably, he may hope to predict with (12), which, nonetheless, requires each category be spelt out for its essence, otherwise disagreement about what is what never ends (see also Croft 2003), and the complexity in that is much more than the Uniformity Principle can disguise.

Cinque's categorization methodology is mainly ad hoc, not matching up to his lofty goal. Admittedly, Cinque attempts to draw empirical support from a wide range of languages for determining the universal order of clausal functional heads (see Cinque 1999, 2004; Shlonsky 2010; Travis 2014), but the unreliability, due to the incapability of identifying linguistic items in an inherent and coherent way, cannot be compensated by that. Specifically, a functional head, with Cinque's methodology, can only be derived from an unprincipled semantic analysis of an individual morpheme. Plainly, a functional head is what an overt morpheme conveys in meaning. This process, however, suggests that all the labels in (12) are given to isolated morphemes on a semantic ground, but not to the syntactic positions that are occupied by

them. As it often turns out, one syntactic position can be home to multiple semantic labels. Furthermore, as Cinque puts morphemes, one by one, under semantic investigation with varying criteria, it is impossible for him to assemble a holistic view of all the functional head that he reports. In that, he is unable to frame the internal conceptual connection between those putative functional heads. Notably, in (12), both subsumed under Tense, pastness is in fact connected to anteriority. In Arabic, for instance, the so-called perfective form of verbs is said to denote anteriority consistently, by which pastness can be conveyed (see Bahloul 2008). That is, due to the possible containment of pastness in anteriority (see Comrie 1985 for relative tenses vs. absolute tenses), the relation between T (Anterior) and T (Past) is naturally different from that between T (Anterior) and Voice, for arguably anteriority is much more likely to influence the occurrence of T (Past) than Voice. Thus, those labels listed in (12) cannot be truly methodical divisions of a conceptual whole, but random ones. Also, many functional heads in (12), having identical primary labels and different secondary labels, are distributed in a sporadic manner, and it is not clear how those heads are related in configuration. For instance, T (Anterior) is situated between two Aspect projections, far behind T (Past) and T (Future), giving rise to an unexplainable separation.

As emphasized, when innateness is formalized as a categorization function, the universal inventory of functional categories (if it is real) can be expected to obtain with its natural order and natural boundary, with all linguistic entities examined on a par and jointly mapping into a whole. Again, in chemistry, it is always incontrovertible about whether to put an element, either known or unknown, in the periodic table and where to put it exactly, for one element's identity is unique and knowable, and consequently its relationship with other elements is also unique and knowable. In stark contrast to this is UG followers' attempts to put together the panorama of linguistic parametric primitives, which are just full of accidents (see Smith and Law 2009). For the cartographic enterprise in UG, completeness and systematicness should be esteemed as much as, if not more than, the general canon of economy (simplicity). Certainly, this is not merely a concern for creating a sense of formal beauty, but as suggested, the irrationality in (12) points to the absence of epistemological significance in UG's cartography, as well as the fact that UG followers do not care about looking for genuine principle(s) that categories must abide by to be innate in the LF.

Worse still, in Cinque's (1999, p 53) analysis of a Korean sentence cited from Sohn (1994, p 300), as in (13) below, he mentions something in passing that must call for a lengthier reflection.

- (13) ku pwun-i cap-hi-si-ess-ess-keyss-sup-ti-kka.
 the person-non catch-pass-**agr**-ant-past-epistem-**agr**-evid-q
 'Did you feel that he had been caught?'

In (13), among the elements agglutinated after the verb cap 'catch', -si- and -sup- are two honorificsuffixes, with the first one being, in accordance with Sohn (1994, p 299), subject honorific and the second one addressee honorific. Oddly, not only does Cinque choose to ignore them but he also proposes that they both are likely

(addressee) agreements. No accepted principle explains the motivation of Cinque to preclude honorific suffixes from his universal inventory of functional heads, and to replace them with a term that is more familiar in Western grammatical tradition. Bear in mind that all the labels Cinque gives in (12) can be as strange to a non-Western language as the label honorific is to a Western language. Mysteriously, though, Cinque takes it for granted that a non-Western language should submit to the Western nomenclature that it is never a part of, but not vice versa.

The quote from Croft (2001) bears repeating at this point: “analysts can use whatever constructions they wish in order to come to whatever conclusions they wish” (p. 31).

Final remarks on completeness and systematicness

It has been stressed throughout this paper that for anything to be achieved in UG, innateness must be an explicit condition from top down. In terms of categorization, it should be formalized as a function with a determinable domain and codomain. For that, importantly, UG proponents are obligated to point out the variable prevalent among all linguistic items that is factored into the unique identification of them. Only by virtue of that can proposals of categories be constrained since there would be a specific threshold to be met for any category to enter the hypothetical universal inventory. As with the current practice in UG, however, no one ever knows by what standard Cinque’s list in (12), for example, reaches its fullest point. If category labels are only randomly thrown up without forming a knowable, meaningful whole, the number of them can go without an upper limit. The uncontrollable expansion of parametric options profoundly obscures the prospect of UG, which originally appeals to its advocates by projecting simplicity. In view of that, Boeckx (2014) warns: “[i]t is not at all clear that the exponential growth of parameters that syntacticians are willing to entertain is so much better a situation for the learner than a model without parameters at all” (p. 148). It is bewildering that the number of the categories (or parametric options) in UG that has obviously got out of hand (cf. F. Lin 2016) does not provoke much thought about the fundamental genuineness of an innate grammar, nor does it lessen the enthusiasm of UG proponents in advancing more and more parameters. For instance, more recently, the distinction between macro-parameter and micro-parameter (see Kayne 2005; Baker 2008) is brought into notice, focusing on the scope of the occurrence of a parameter. Kayne and Baker suppose that the localization of some parameters is due to relatedness of languages, and that local ones, by accretion, finally lead to more general ones. Predictably, the distinction encourages an even greater increase in the number of parameters (cf. Dąbrowska 2015), as parameters no longer need to be formulated for the sake of generality. Moreover, the distinction itself emerges from an envision of the PP model as a system with an internal organization, in that, plainly, principles engender parameters, and parameters continue to engender sub-parameters, and so on (see also Newmeyer 2005; Roberts 2019). As such, innateness must be spelt out to frame the hierarchy of principles and parameters, otherwise, the relativization of parameters can

develop into a two-way infinite extension. This is not unlike the recognition of isotopes of the same chemical element. In that, it is of paramount importance to know that only the number of protons is decisive of the identity of an element, with nothing overriding that, and consequently, the number of neutrons must be subordinate to the number of protons: without the latter, the former is invalid in identifying an element.

Conclusion

In a nutshell, the current paper calls for an imperative reflection on the methodological constitution of innateness. If one truly believes in innateness, one makes a commitment to the revelation of it. It is consequential to claim a grammar to be innate, because what accompanies that is a responsibility to consolidate innateness thoroughly into the making of that grammar. This is an urgent task for UG proponents to undertake. On one hand, innateness is supposed to lay the foundation for the theoretical expansion of UG, supporting the abstractness of it, and on the other one, it ought to be the overarching epistemological significance of UG—the genuine quest for innateness is the only chance for UG to be considered as part of the inherent truth of our world. Without true access to innateness, however, UG proponents have advanced in theorization much ahead of its premise. In that sense, UG amounts to building a groundless castle, liable to collapse at any time.

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