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Why Statistical Universals are Better than Absolute Universals

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0. Introduction

Over the years, I have had discussions with many people in which I have found myself comparing the value of statistical universals, crosslinguistic generalizations claimed to be true of most but not all languages, with that of absolute universals, crosslinguistic generalizations claimed to be true of all languages. In much of this discussion, I was defending the value of statistical universals, but my goal in this paper is not only to defend statistical universals but to argue against the value of absolute universals. The arguments I will give will be of two sorts, arguments based on metatheoretical or methodological considerations, and arguments based on empirical evidence. My discussion of actual examples of putative universals of both types will be primarily universals regarding word order, both because this is an area where a considerable number of universals of both types have been proposed, in particular by Greenberg (1963) and Hawkins (1983), and because my own research over the past 15 years has involved collecting data from over 850 languages on a range of typological characteristics many of which involve word order.

Examples from Greenberg (1963) of each of these two types of universals are given in (1) and (2), the universal in (1) formulated as an absolute universal ("always"), the universal in (2) as a statistical one ("with overwhelming greater than chance frequency").

(1) Greenberg's Universal 3
Languages with dominant order VSO are always prepositional.

(2) Greenberg's Universal 4
With overwhelmingly greater than chance frequency, languages with normal SOV order are postpositional.

Before proceeding to a specific discussion of the relative merits of these two kinds of universals, it is worth comparing two views of the set of existing languages that are implicit in different work by linguists. These two views are represented schematically by the two different diagrams in Fig. 1 on the next page. The diagram in Fig. 1a is a scatter diagram representing the idea that languages tend to cluster around a certain type and that they become increasingly infrequent as we move away from the core type. We can think of the diagram in Fig. 1a as a two-dimensional slice of an *n*–dimensional typological space, for some very large *n* representing all of the possible dimensions of typological variation. The diagram in Fig. 1b represents the idea that there is a well-defined set of possible human languages, that existing languages fall within the boundaries defining that set, and that they are distributed evenly within the boundaries of that set. Many linguistic theories are formulated in ways that assume, or seem to assume, the model in Fig. 1b. Such theories focus on defining the set of possible human languages, and set as their task the discovery of the boundaries of that set. Such theories typically assume an even distribution within that set in that they treat the issue of distribution within the set as something that falls outside what the theory is designed to cover.

I would claim that much of the empirical work of linguistics makes it clear that what we actually find is a distribution of types that is much more similar to the

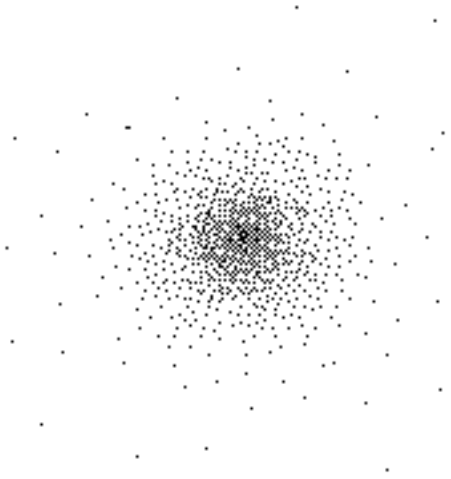

Fig. 1a

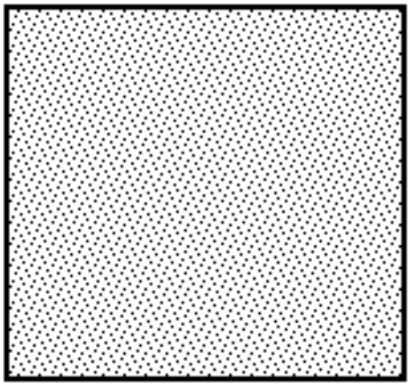

Fig. 1b.

model in Fig. 1a than that in Fig. 1b. Over the past thirty years, linguists have postulated hypotheses regarding what is a possible human language, only to have some other linguist demonstrate the existence of an exception to the hypothesis. Typically, the exception is indeed exceptional, and most languages do conform to the hypothesis. One finds instances of this phenomenon at all levels of grammar. For example, it was once thought that bilabial trills were not found in the phonetic inventories of the world's languages, but a bilabial trill is found in Kele, spoken in New Guinea, and a number of other languages, as has been made known by specific attention to such sounds in the past few years. In phonology, it was once thought that one would not find languages with a four-way phonological contrast among stops in the general area of dental sounds, but in Nunggubuyu (Heath 1984), a non-Pama Nyungan language of northern Australia, one finds a contrast between dental, alveolar, palato-alveolar, and retroflex stops.

In morphology, it was once thought that where singular and plural differ in that one is phonologically null, it would be the singular that would be null. But in Imonda (Seiler 1985), a language of Papua New Guinea, an overt affix is used to indicate singular and dual, while the absence of that affix indicates plural. Note as well that the Imonda system is also unusual in grouping singular and dual together in contrast to plural. This grouping likely is relevant to explaining the exceptional number marking in Imonda, but the grouping itself is counter to what many would think to be a possible number system. Another example from morphology is presented by Greenberg's Universal #43, given in (3).

(3) Greenberg's Universal #43: If a language has gender categories in the noun, it has gender categories in the pronoun.

But Turkana, a Nilotic language spoken in Kenya has gender on nouns, but not on pronouns (Dimmendaal 1985).

Finally, an example from syntax involves the possible orders of subject, object, and verb. Pullum (1977) argued that at that time there was no evidence for the existence of object-initial languages, and proceeded to offer a possible

explanation for their nonexistence. Shortly thereafter, Derbyshire (1977) published evidence that Hixkaryana, a Carib language spoken in Brazil, is an OVS language, as illustrated in (4).

(4) toto y-ahosi-ye kamara
man 3,3-grab-DISTANT.PAST jaguar
'The jaguar grabbed the man.' (Derbyshire 1979)

The general empirical evidence, in short, is that if one examines enough languages, one often finds exceptions to proposed absolute universals, except for ones which are 'trivial' in the sense that it seems obvious on a priori grounds, quite apart from the empirical evidence, that such universals should hold, such as 'All languages have consonants'.

The fact that there are so many instances of crosslinguistic generalizations which hold of most but not all languages represents one empirical argument for statistical universals over absolute ones. It means that what we typically find among the set of existing languages is a distribution more like the scatter diagram in Fig. 1a than the model in Fig. 1b, in which there is a well-defined boundary around the set of existing languages. But even if the model in Fig. 1a is a more accurate model than that in Fig. 1b of the set of existing languages, that in itself does not mean that absolute universals are uninteresting or undesirable. Even if we assume a distribution like that in Fig. 1a, the contrast between absolute and statistical universals can be seen as reflecting the difference between the two diagrams in Fig. 2.

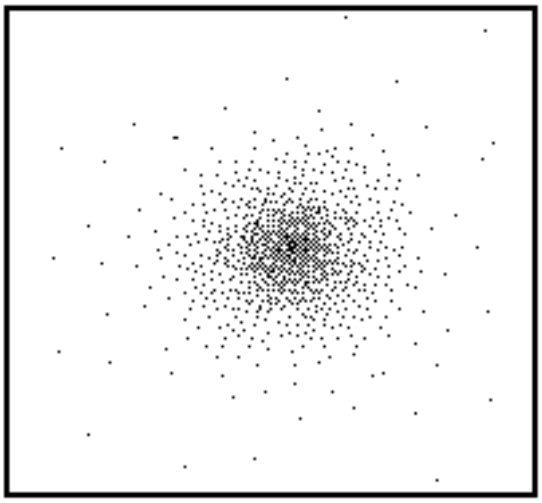

Fig. 2a

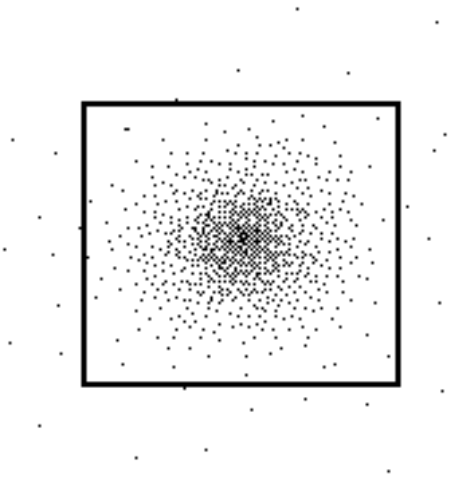

Fig. 2b

In Fig. 2a, the square that is drawn outside the set of existing languages corresponds to an absolute universal, while the square in Fig. 2b corresponds to a statistical universal in that it is drawn around the core of more frequently attested types but still in a position that some existing languages fall outside of. In the discussion that follows, I will compare absolute universals with statistical universals in terms of a comparison of generalizations taking the form in Fig. 2a with generalizations taking the form in Fig. 2b.

Before proceeding, it is worth summarizing arguments that I have heard expressed as arguments in favour of absolute universals over statistical universals:

(5) Potential arguments against statistical universals:
   a. Absolute universals are in principle falsifiable; statistical universals are not.
   b. Absolute universals *explain* why particular languages exhibit the property in question; statistical universals do not.
   c. Absolute universals tell us more about language; knowing that an absolute universal is true means knowing more about language than knowing that a statistical universal is true.
   d. Statistical universals may be based on distributions that reflect historical accident.

In the remainder of this paper, I will address each of these arguments in turn and will argue that all of them are flawed and that in some cases, the alleged problem presented for statistical universals is an even more severe problem for absolute universals.

1. The argument that absolute universals are falsifiable

The first argument in (5) is that absolute universals but not statistical universals are falsifiable. The argument goes as follows. If one offers an absolute universal as an hypothesis, a single exception will falsify the generalization as an absolute universal. In this sense, absolute universals are clearly falsifiable. In contrast, if one offers a statistical universal as an hypothesis, then a single exception will not falsify the generalization, nor is it clear how many exceptions one would need to falsify it.

The first response to this argument is that while it represents a way in which absolute universals are indeed more easily falsified than statistical ones, it does not follow that statistical universals are not falsifiable, only that they are more difficult to falsify. Consider the generalization in (6), a claim that one often finds in the literature.

(6) OV languages tend to place adjectives before the noun rather than after the noun. (OV languages tend to be AN.)

The generalization in (6) is clearly intended as a statistical generalization, as indicated by the use of the verb "tends". It is well-known that there are exceptions, OV languages which place the adjective after the noun. The examples in (7) and (8) illustrate each of the two orders of adjective and noun among OV languages, from two different Sepik languages spoken in Papua New Guinea. The examples in (7) are from Alamblak, the example in (7a) illustrating the OV word order, the example in (7b), the AN order.

(7) Alamblak (Sepik; Papua New Guinea): OV&AN
   a. yima-r yën-t gëbrërna-më-r-t
      person-3SG,MASC child-3SG,FEM rub-PAST-3SG,MASC-3SG,FEM
      'A man rubbed a girl' (Bruce 1984: 186)
   b. ind fëh bro-r
      the big pig-3SG,MASC
      'the big pig' (p. 90)

The examples in (8) are analogous examples for Autuw, except that Autuw is NA, as illustrated in (8b).

(8) Autuw (Sepik; Papua New Guinea): OV&NA
a. yæn piyren-re du-puy-i
child dog-OBJ FACT-hit-PAST
'A child hit a dog.' (Feldman 1986: 90)
b. tiyl yankeyke
stone small
'a small stone' (p. 128)

Data from my database (see above, as well as Dryer 1989, 1992) shows that there is no evidence for a preference for AN order among OV languages. The data in (9) is data from my database on the frequency of AN and NA order among OV languages. The data is presented in a format that first divides the languages into six continental-sized areas: Africa, Eurasia, Southeast Asia & Oceania, Australia-New Guinea, North America, and South America (where Eurasia excludes Sino-Tibetan languages and other languages of southeast Asia, which are included in the next group, Southeast Asia & Oceania). Second, the languages are grouped into what I call *genera,* genetic groups roughly comparable to the subfamilies of Indo-European, and the numbers in (9) represent numbers of genera, rather than numbers of languages.

(9)	Africa	Eurasia	SEAsia&Oc	Aus-NewGui	NAmer	SAmer	Total
OV&AN	7	[28]	4	7	4	7	62
OV&NA	[25]	6	[9]	[22]	[15]	[19]	96

The '7' under Africa on the first line in (9), for example, means that there are 7 genera in Africa containing OV languages in my database that are AN, while the '25' below that indicates that there are 25 genera in Africa containing languages which are NA. The more frequent type in each area is enclosed in a box. To illustrate, the genera of each of these types in Africa are listed in (10) and (11), the names of the genera in uppercase, with the particular languages exhibiting the type in question in lowercase and enclosed in parentheses after the name of the genus.

(10) OV&AN languages in Africa
CENTRAL KHOISAN (Korana, Nama)
IJOID (Kolokuma Ijo)
KOMAN (Shabo)
OMOTIC (Ometo, Zayse)
CENTRAL CUSHITIC (Kemant)
EASTERN CUSHITIC (Afar)
SEMITIC (Tigre, Amharic, Gouragué, Chaha).

(11) OV&NA languages in Africa
OMOTIC (Aari, Dime),
CENTRAL CUSHITIC (Bilin)

EASTERN CUSHITIC (Arbore, Geleba, Somali, Harar Oromo, Waata Oromo)
SOUTHERN CUSHITIC (Iraqw)
SEMITIC (Akkadian),
KORDOFANIAN (Rashad)
NW MANDE (Vai, Mandinka, Gambian Mandinka, Bambara, Mende)
SE MANDE (Mano, Dan)
KRU (Seme),
DOGON (Dogon)
GUR (Tenyer, Supyire)
BANTOID (Tunen)
NUBIAN (Dongolese Nubian, Kunuz Nubian)
SONGHAI (Songhai)
SAHARAN (Kanuri, Tubu)
MABAN (Maba, Masalit)
FUR (Fur)
NERA (Nera)
NYIMANG (Nyimang)
TAMA (Tama, Miisiirii)
DAJU (Sila)
NILOTIC (Pari)
KUNAMA (Kunama)
MEROITIC (Meroitic)

Note that it is possible for a particular genus to contain languages of both types. For example, the last four genera in (10) containing OV&AN languages (Omotic, Central Cushitic, Eastern Cushitic, and Semitic) also occur in the list in (11) of genera containing OV&NA languages. Typically, however, the languages within a particular genus are identical with respect to their particular word order characteristics.

The data in (9) above shows that overall there are more genera containing OV&NA languages than there are genera containing OV&AN languages, by a ratio of over 3 to 2, with 96 OV&NA genera and only 62 OV&AN genera. Furthermore, the OV&NA type is more common in 5 out of the 6 areas (in fact by a ratio of over 2-to-1), while only one area, Eurasia, has more genera containing OV&AN languages. The map in Fig. 3 illustrates the distribution of the two types, the black circles representing OV&AN languages, the white squares representing OV&NA languages.

The data here shows that there is no evidence for a tendency towards AN order among OV languages. In fact, the numbers exhibit a trend in the opposite direction. This illustrates how it is in fact possible to falsify a proposed statistical universal. Admittedly, it is logically possible that data from a greater number of languages might shift the trend found in this sample, but given the size of the sample, this is exceedingly unlikely. Furthermore, even if this were to happen, it is no different from demonstrating that an alleged exception to an absolute universal is not in fact an exception. It is always possible that evidence falsifying a generalization will be refuted by further evidence.

A second problem with the argument that absolute universals are falsifiable while statistical universals are not is that it ignores a distinction between what I will call *testability* and falsifiability, characterized in (12).

(12) a. An hypothesis is *falsifiable* if it is formulated in such a way that there is conceivable data which would entail that the hypothesis is false.

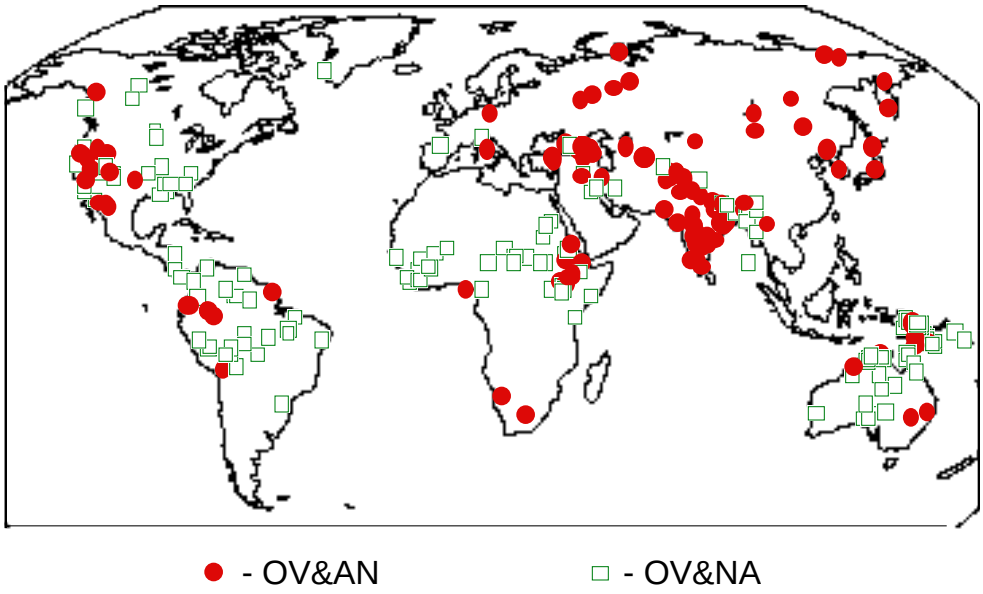

Fig. 3

b. An hypothesis is *testable* if it is formulated in such a way that there is conceivable data which would entail that the hypothesis is false, and conceivable data which would entail that the hypothesis is true.

If we conceive of absolute universals as generalizations about the set of documented or documentable languages, then they are testable, since it is conceivable that we might examine every such language and find no exception, and therefrom conclude that the universal is true. But if we conceive of absolute universals as generalizations about the set of *possible* languages, then they are not testable, since it is not possible to have data from every possible language. In fact, it is not possible to have data from actual languages which are no longer spoken and for which we have no documentation or limited documentation without data on the relevant question. In other words, no matter how many languages we examine and find conforming to an absolute universal, we can never know that there is not another language that fails to confirm to the universal, either one that was once spoken or a hypothetical language that is possible but never actually spoken due to historical accident. What this means is that absolute universals are never testable. If they are false, we may or may not find evidence that they are false, but if they are true we can never find evidence that they are true. No amount of data conforming to the generalization provides any reason to believe that there are no languages that do not conform. And no evidence from attested languages can provide any basis for believing that exceptions are not possible.

It is important to emphasize that this argument that absolute universals are not testable is not simply a logical argument, but one that is based in part on the empirical evidence supporting the view that existing languages are distributed in a pattern like the scatter diagram in Fig. 1a above, with languages decreasing in

frequency as one moves away from the core, rather than in a pattern like that in Fig. 1b, in which we find languages attested up to a particular point, and then a complete absence of languages beyond that point, with a well-defined boundary distinguishing attested languages from unattested languages. In physics, for example, we find that a wide range of phenomena seem to be governed by invariant laws, with physical phenomena exhibiting a pattern akin to the diagram in Fig. 1b, with a well-defined boundary. If it were the case that we normally found a similar sort of distribution among languages, with well-defined boundaries, then we might be justified in concluding from such a distribution that hypothetical languages outside that boundary probably were impossible. But given that we find a distribution like the scatter diagram in Fig. 1a, the appropriate inference is that language types simply decrease in probability as we move away from the core types, and that in at least some cases, hypothetical languages further out may still be possible but unattested only because they have a low probability of occurrence. Looking at the diagram in Fig. 2a above, we can see that languages become increasingly infrequent as we approach the boundary corresponding to a proposed absolute universal. But this ought to lead us to conclude that the boundary may simply be an arbitrary line around the types actually attested and that hypothetical languages outside that boundary may in fact be possible. In fact, we might even conclude from the general evidence for distributions like that in Fig. 1a, that even in the absence of an exception to a proposed absolute universal, the excluded type is probably possible and hence the absolute universal is probably false.

In contrast to absolute universals, statistical universals *are* testable, since we can always conceive of data from the set of existing languages which would lead us to conclude that the universal is false and other data which would lead us to conclude that the universal is true. Consider, for example, Greenberg's Universal 4:

(13) Greenberg's Universal 4
With overwhelming greater than chance frequency, languages with normal SOV order are postpositional.

This universal is not exceptionless: while the example in (14) from Alamblak illustrates the typical type, OV with postpositions, (15) illustrates how Latin is an example of the exceptional type.

(14) Alamblak (Sepik; Papua New Guinea): SOV&Po
tik-t-pnë yurak wa-hegirtwa-n-t
table-3SG,FEM-REF above IMPER-hang.up-2SG-3SG,FEM
'Hang it above the table' (Bruce 1984: 203)

(15) Latin: SOV&Pr
pecūnia-m ad vˆlla-m mˆsi-t
money-ACC to villa-ACC send,PERF-3SG
'He sent money to the villa.' (Taylor and Prentice 1966: 27)

The data in (16) provides evidence from my database bearing on Greenberg's Universal 4.

(16)	Africa	Eurasia	SEAsia&Oc	Aus-NewGui	NAmer	SAmer	Total
SOV&Postp	20	25	9	20	21	17	112
SOV&Prep	2	4	0	1	0	0	7

The data in (16) shows that in each of the six areas of the world, the number of genera containing SOV languages with postpositions is not only higher but considerably higher than the number of genera containing SOV languages with prepositions, and overall, the former type outnumber the latter by 112 genera to 7. If we assume that each of these six areas is independent of the others, then the chance of all six areas having more genera containing languages of the former sort is 1 in 32. In other words, we can apply statistical tests to determine the likelihood of finding one type being more frequent than the other type if there were not some preference for that type. No such procedure is possible for absolute universals. No matter how many languages we examine, we cannot calculate the probability of there being some language not yet examined which is an exception to the universal.

The map in Fig. 4 illustrates the geographical distribution of the two types of SOV languages.

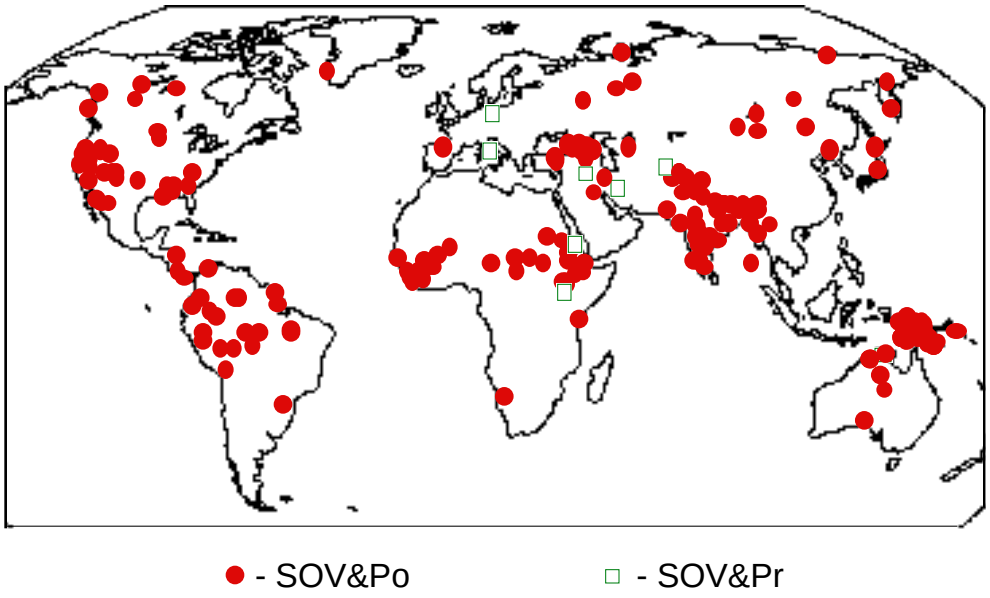

Fig. 4

The 7 genera containing exceptional SOV&Pr languages are listed, with the relevant languages, in (17).

(17) SOV&Pr:

Africa:	SOUTHERN CUSHITIC (Iraqw)
	SEMITIC (Akkadian, Tigre).
Eurasia:	INDIC (Pali)
	IRANIAN (Kurdish, Persian, Tajik)
	ITALIC (Latin),
	SLAVIC (Sorbian)
Aust-N.Guinea:	GUNWINYGUAN (Gunwinggu)

It is worth emphasizing that although we cannot test absolute universals *as* absolute universals, we can sometimes test them as *statistical universals*. Consider Greenberg's Universal 3:

(18) Greenberg's Universal 3
Languages with dominant order VSO are always prepositional.

In (19) are listed exceptions in my database to Greenberg's Universal 3, VSO languages with postpositions.

(19) VSO&Po:

Africa:	SURMA (Majang).
North America:	PIMIC (Northern Tepehuan)
	CORIC (Cora)
South America:	TUPI-GUARANI (Guajajara)
	PEBA-YAGUAN (Yagua).

The examples in (20) from Yagua illustrate how it is an exception to this universal, (20a) illustrating the VSO word order, (20b) the use of postpositions.

(20) Yagua (Peru)

a. sa-suuta rospita-[níí Anita].
3SG-wash Rospita-3SG Anita
'Rospita washes Anita.' (Payne 1990: 31)

b. ra-tyúúchu váturụy jísąą.
1SG-converse woman with
'I talked with the woman.' (Payne 1990: 124)

In (21) is given the relevant data from my database for the two types of VSO languages.

(21)

	Africa	Eurasia	SEAsia&Oc	Aus-NewGui	NAmer	SAmer	Total
VSO&Pr	[7]	[1]	[2]	0	[9]	1	20
VSO&Po	1	0	0	0	2	[2]	5

While the data in (21) shows that VSO&Pr languages are more common than VSO&Po overall by 20 genera to 5, this preference is found in only 4 areas, since I have data for no languages of either sort in Australia-New Guinea, and the VSO&Po type outnumbers the VSO&Pr type by 2 genera to 1 in South America. However, the map in Fig. 5 illustrating the distribution shows how the VSO languages in question in North America are found in two quite distinct areas (the Pacific northwest and Mesoamerica) and those in Africa fall into two geographically separate families (Afro-Asiatic and Nilo-Saharan). While this evidence is weaker than that for the two adposition types among SOV languages, the overall preponderance of VSO languages with prepositions suggests that there is an overall preference for this type.

Similarly, consider the universal in (22), a slight variation on part of Greenberg's Universal 22.

(22) If the normal order in comparative clauses in a language is StMAdj (standard-marker-adjective), then the language will be postpositional.

The examples in (23) from Ika, a Chibchan language spoken in Colombia, illustrate a language conforming to (22).

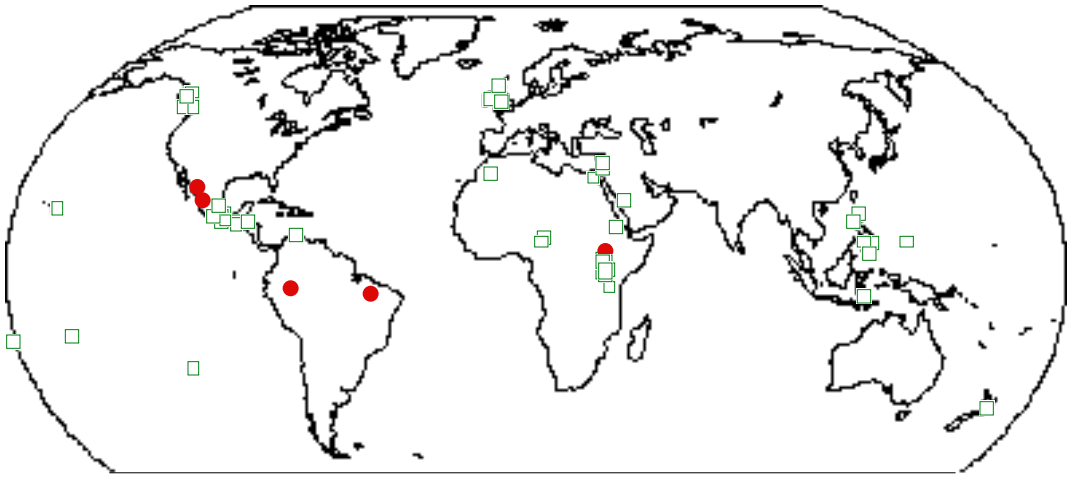

Fig. 5

(23) a. nʌʔʌn Juan guasi ingumʌ́n nʌ-nzɨn-ni
1SG Juan than more 1SG-old-EVID
'I am older than Juan.' (Frank 1990)

b. [aʔkʌtti awʌnʔ kawa nuk-ž]-ekɨ itšor-eʔ-ri
cave big seem COP-MEDIAL-LOC go.up-then-TOPIC
'He went up to where there is a big cave.' (Frank 1990: 40)

The number of languages for which I have data on their comparative construction and adposition type (144 languages) is smaller than the number of languages for which I have data for many other characteristics, but among the 50 languages which I have coded as StMAdj and which I have coded as postpositional or prepositional, all 50 languages, spread over 33 genera, employ postpositions, as given in (24).

(24)	Africa	Eurasia	SEAsia&Oc	Aus-NewGui	NAmer	SAmer	Total
StMAdj&Po	4	15	7	0	4	3	33
StMAdj&Pr	0	0	0	0	0	0	0

Although there are no exceptions to (22) in (23), we cannot conclude from this data that (22) is true as an absolute universal, that there are no exceptions. In fact, I suspect that the only reason that I have found no exceptions to (22) is that I have data on the order in comparative constructions for fewer languages than I have for many other characteristics. But it would appear that we *can* conclude that (22) is valid as a statistical universal, that StMAdj languages *tend* to be postpositional. Although this preference is found in only 5 of the 6 areas (since I have no

languages in my database from Australia-New Guinea with the relevant characteristics), the fact that all 50 languages, in 33 genera, have postpositions justifies our concluding that there is at least a tendency for StMAdj languages to be postpositional. The wide distribution of these languages shown in the map in Fig. 6 further supports this conclusion.

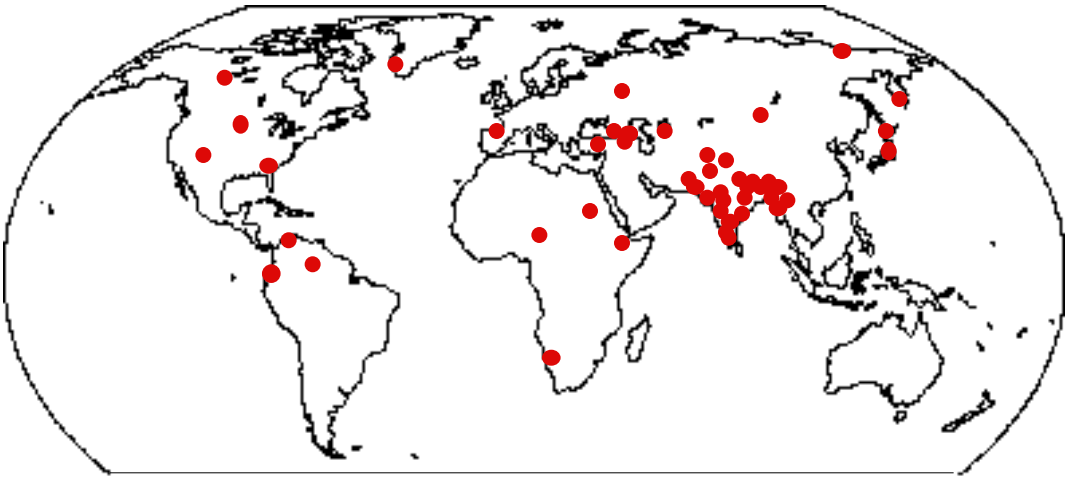

Fig. 6

This shows that although absolute universals are not testable, we may be able to conclude that the putative absolute universal is probably true at least as a statistical universal. What this means, ironically, is that hypothesized absolute universals may be of value as a statistical universals, since so interpreted they are testable.

2. The argument that absolute universals explain particular instances

The second argument that is sometimes offered in favour of absolute universals and against statistical universals is that absolute universals *explain* instances that conform to the universal, while statistical universals do not. The logic of this argument is that an explanation must entail the particular facts it explains. Absolute universals do entail for each conforming language that it will exhibit the facts it has, while statistical universals cannot do this. The statistical universal that OV languages tend to be postpositional does not entail particular instances of OV languages with postpositions, since there are a few OV languages with prepositions.

Part of the problem with this argument is that it is based on a view of explanation that works well in sciences like physics, but less well in sciences involving complex systems, like biology. The view of absolute universals as explanations is to treat them as scientific laws of some sort. But even if there are no known exceptions to the universal in (22), that StMAdj languages are postpositional, it is not clear whether we would want to say that (22) explains particular instances of languages conforming to it. First, many linguists want to know *why* StMAdj languages are, or tend to be, postpositional. This situation is unlike that of basic laws in physics, where science can offer no deeper explanation, where the only answer that science can offer to a question of why the universe is that way is that that is simply the way it is. Second, the interest in deeper

explanations applies just as much to statistical universals as it does to absolute universals. The fact that object-initial languages exist does not alter the fact that their rarity needs to be explained. And whether or not StMAdj languages are always postpositional or simply are typically postpositional, the generalization is in need of explanation. And various hypotheses as to why OV languages tend to be postpositional and to have various other word order properties would explain why StMAdj languages tend to be postpositional, whether it is a matter of consistent ordering of heads and dependents, as is often assumed, or consistent direction of branching (as argued by Dryer 1992).

3. The argument that absolute universals tell us more about language

There is a sense in which, if we know that all languages have some property *p*, then we know more about language than if we know that *most* languages have property *p*. In that sense, absolute universals tell us more about language. But this provides little argument for absolute universals.

One problem is that the choice between absolute universals and statistical universals is rarely a choice between a generalization of the form "all languages have property *p*" and a generalization of the form "most languages have property *p*". If we find that most but not all languages have some property *p*, then clearly the generalization "all languages have property *p*", for the same property *p*, is not a better generalization, since it is false. At best, the claim would be that there might be some other property *q* such that it *is* true that all known languages have property *q*.

But typically a property *q* such that all known languages have property *q* will be one such that the claim that all languages have property *q* is a *weaker* proposition. To see this, consider again the diagrams in Fig. 2 above, with the larger area in Fig. 2a corresponding to a proposed absolute universal, and the smaller area in Fig. 2b corresponding to a statistical universal. The proposition corresponding to the smaller square is a stronger proposition in the sense that it defines a smaller set of states of affairs. In other words, in order to achieve a generalization with no known exceptions, one must weaken the proposition so that it is true for all attested languages. But in so far as it is a weaker proposition, it tells us less about language.

Another way to express this point is to ask the question: which boundary tells us more about language, the boundary in Fig. 2a corresponding to an absolute universal with no known exceptions, or the boundary in Fig. 2b corresponding to a statistical universal? While there may be a sense in which the proposition that *all* languages fall within the boundary in Fig. 2a tells us something about language that the proposition that most languages fall within the boundary in Fig. 2b does not tell us, the opposite is at least equally the case. The boundary in Fig. 2a fails to tell us that languages inside the boundary are not evenly distributed, that they cluster around an area that falls within the smaller boundary in Fig. 2b. Thus each universal tells us something that the other fails to tell us. But I would further claim that the fact that most languages cluster within the area in Fig. 2b will generally be telling us more about the essence of language and will more likely be a clue to something fundamental about language.

But a more serious problem with the argument that absolute universals tell us more about language is that it requires that we *know* that an absolute universal is true: it is based on the claim that if we know that a particular absolute universal is true, that means we know more than we know if we know that a particular statistical universal is true. But I have argued above that we can never *know* that

an absolute universal is true, since we can never know that an exception exists that we have not discovered yet, or that an exception *could* exist, but doesn't due to historical accident. We can know that a statistical universal is *probably* true, but we can never even know that an absolute universal is probably true. Hence, this alleged advantage of absolute universals, even if it were true, is for practical purposes moot.

4. Statistical universals may reflect differences in frequency that are due to historical accident

A final type of argument that I have heard directed against statistical universals is that the different frequencies of occurrence on which the universal is based may simply reflect historical accident rather than a linguistic preference. If one linguistic type is more frequently attested among the set of attested languages than a contrasting type, the difference might be due to either of two sorts of explanations.

First, it might be that the more frequently attested type is in some way linguistically preferred, in the sense of being more "natural" or of there being some linguistic explanation for that type being more frequent. It is widely assumed, for example, that the rarity of object-initial languages reflects some linguistic dispreference for this type, not a dispreference strong enough to prevent the existence of the type, but strong enough to make it infrequent, or at least less frequent, than subject-initial languages (cf. Tomlin 1986). Similarly, the higher frequency of pulmonic stops as opposed to ejective stops is presumably due to articulatory and/or perceptual factors.

In other instances, however, differences in frequency are probably due to historical accident or random variation. If two linguistic types are such that there is no linguistic preference between them, that does not entail that they will occur with equal frequency among the world's languages; one may be more common simply because of random variation. An experiment flipping a coin 100 times may result in 55 heads and 45 tails; if the coin is unbiased, then this difference is simply due to random variation. Similarly, differences in frequency between two linguistic types might similarly reflect random variation, particularly when the difference is small. Small differences in frequency might reflect a weak linguistic preference, though they could just as easily reflect random variation. For example, among the languages in my database, genera containing OV languages outnumber genera containing VO languages by 164 to 112, a difference of approximately 3 to 2. This might reflect a weak linguistic preference for OV order or it might reflect random variation. With differences of this magnitude, it is difficult to determine which is the correct explanation.

In some cases, the frequency of a linguistic type may reflect nonlinguistic factors that are more systematic than random variation, what we can call historical accident. As discussed in Dryer (1989), for example, the frequency of SVO languages in the world is higher than it might otherwise have been because of two large genetic groups, Bantu and Austronesian. The size of both these two groups reflects known historical and geographical factors. In the case of Bantu, for example, the rapid southern expansion reflects the development of technology that allowed them to employ agricultural techniques in the African rain forest and to the south. If this development had occurred more recently, say 500 years ago rather than something on the order of 2000 years ago, the spread of Bantu at this point would have been at a much earlier stage and the different dialects would not have diverged to the point of being distinct languages and the number of Bantu languages

would have been considerably fewer. But the spread of Bantu occurred sufficiently long ago that the separation among dialects has been extensive enough to lead to their being distinct languages, over 400 in number, and probably accounting for over 20% of the languages of the world. Similarly the earlier spread of Austronesian from the mainland of southeast Asia starting approximately 6000 years ago reflected the development of navigational technology that allowed them to spread eastward, with further development of this technology to inhabit most of the islands of Indonesia, the Philippines and the Pacific. The geographical fact that the area into which they spread was one involving a large number of islands further contributed to the large number of Austronesian languages, since the separation of dialects spoken on different islands lead to more rapid divergence into distinct languages and to more limited further migration patterns of the sort that were common on large land masses. The vast majority of the modern Austronesian languages are VO, the majority of them SVO, the minority which are OV apparently reflecting contact with non-Austronesian languages on and around New Guinea. But the overall size of Austronesian, close to 1000 languages, coupled with the fact that the majority of them are SVO, has contributed to a higher frequency of SVO languages among the languages of the world than there might otherwise have been. In fact, if not for the historical accidents that led to the large number of Bantu languages and Austronesian languages, the number of SVO languages in the world might have been only half of the number that actually exist among the world's languages.

A different sort of example involving a possible role for historical accident is the distribution of languages with phonological clicks, which are apparently restricted among the world's languages to Khoisan languages in southern Africa and a number of Bantu languages in the same region (e.g. Zulu, Xhosa) which have apparently acquired the use of clicks only within the past couple of thousand years as the result of contact with Khoisan languages. If one assumes that language - or users of language - spread out from an area in northern Africa, the use of clicks among speakers of Khoisan languages arose among people who spread southward in Africa. What might have happened, one might ask, if the use of clicks had arisen among people who spread northward? Might we then not have found clicks commonly among languages is many parts of the world, so that they might have occurred in the majority of languages in the world today rather than the small minority we actually find them in? Is it reasonable to infer from the relative infrequency of languages with clicks in the world that there is some dispreference for them? Or is it not at least possible that their relative infrequency is due to historical accident? And if this is possible in the case of clicks, is it not also possible in the case of object-initial languages?

If differences in frequency in general might be due to random variation or historical accident, then one might object that we can never know whether the differences in frequency that form the basis for statistical universals are due to such nonlinguistic factors, in which case the statistical universal would not be describing a linguistic preference. Consider, again, the rarity of object-initial languages. Do we have some reason for believing that this reflects a linguistic dispreference, in other words a linguistic preference for other word order types, rather than random variation or historical accident? One consideration is that object-initial languages are not only less frequent than other word order types but *much* less frequent. The table in (25) gives the number of genera in my database containing languages of each of the three possible types.

(25)

Subject-initial	202
Verb-initial	48
Object-initial	4

We find only 4 genera containing object-initial languages compared to 202 containing subject-initial languages.

Furthermore, subject-initial order vastly outnumbers object-initial order in each of the six continental areas, as illustrated in (26).

(26)

	Africa	Eurasia	SEAsia&Oc	Aus-NewGui	NAmer	SAmer	Total
S-initial	54	34	24	29	35	26	202
O-initial	1	1	0	1	0	1	4

If we assume that each of the six continental areas are independent of each other, then there is only 1 chance in 64 of S-initial order being more frequent than O-initial order simply due to random variation. On the other hand, one might argue that the six areas might not be independent of each other, that early language might have been subject-initial (or with word order pragmatically determined in a way that lead subject-initial to be more frequent in languages, a greater frequency that became grammaticized in many languages) and that this is a word order characteristic that might simply be more frequent now because of the nature of language spoken at the time our species spread over the globe. However, given the frequency with which languages change their word order type, it would seem that if the low frequency of object-initial languages were due entirely to early language being subject-initial, we would not expect object-initial languages to still be so rare. Furthermore, an important difference between the case of object-initial languages and languages with clicks is that object-initial order occurs as a possible order in most languages (as in English *Beans, I like.*) Since changes from one word order type to another involve a possible but less frequent word order becoming the most frequent order, the fact that object-initial order is so rare means that it is rare for object-initial order to change from a less frequent order to the most frequent order. But it is not as if object-initial order itself, as an order in particular sentences, is crosslinguistically rare, the way clicks are. If there is a linguistic dispreference for object-initial order as the normal order in a languages, this would explain the infrequency of changes to object-initial order.

Consider as a second example the difference in frequency shown in (25) between subject-initial languages (202 genera) and verb-initial languages (48 genera)? Because verb-initial languages are not particularly rare, just less frequent, random variation is at least more plausible than it is in the case of object-initial languages. Furthermore, the greater frequency of subject-initial languages is independently attested in all six continental areas, as shown in (37).

(27)

	Africa	Eurasia	SEAsia&Oc	Aus-NewGui	NAmer	SAmer	Total
S-initial	54	34	24	29	35	26	202
V-initial	8	1	6	2	26	5	48

The majority of genera containing verb-initial languages are in North America (26 out of 48), but subject-initial order still outnumbers verb-initial order there by 35 genera to 26. If we consider each of these six areas independent of each other, then

again there is only 1 chance in 64 of finding this pattern due to random variation. An appeal to historical accident is somewhat more plausible here, if subject-initial order was more common in early language (due to historical accident) and is simply more common today as a common retention. It is worth noting, however, that there are two families, Austronesian and Afro-Asiatic, in which verb-initial order is the most likely candidate for the proto-language but which now contain more subject-initial languages than verb-initial languages. This could be taken as suggesting that there is a preference for subject-initial order over verb-initial order, since such a preference predicts that verb-initial languages are more likely to become subject-initial than the other way round. Nevertheless, the possibility that the difference in frequency between subject-initial order and verb-initial order is due to a common retention of subject-initial order cannot be ruled out.

Random variation and historical accident are considerably less plausible as explanations for differences in frequency that involve correlations between two linguistic parameters rather than a single parameter. Consider the correlation between the order of object and verb and the position of adverbial subordinators, words marking adverbial subordinate clauses, like *when, because,* and *although* in English. Such words most commonly occur at the beginning of the clause in VO languages, like English, but at the end of the clause in OV languages, as illustrated for Yuchi (a language probably distantly related to Siouan languages) in (28).

(28) a. ʈot'ohá nǫ-dɛta-há ho-djuła
sand 1PL,EXCL,POSS-feet-PLUR INAN-burn
'the sand burned our feet' (Wagner 1934: 340)

b. di-tsɛhɛ́ wɛ́-wilɛ dodɛ́hɛ
1SG,POSS-mother 3-die after
'after my mother died'

The data in (29) illustrates this correlation.

(29)	Africa	Eurasia	SEAs&Oc	Aus-NGui	NAmer	SAmer	Total
OV&FinalSub	6	[14]	[5]	[4]	[8]	[12]	49
OV&InitSub	[8]	9	1	3	2	0	23
VO&FinalSub	1	0	0	0	0	1	2
VO&InitSub	[23]	[9]	[16]	[3]	[19]	[4]	49

The first two rows in (29) show how final subordinators are more common than initial subordinators in OV languages in all six areas, except for Africa (where initial subordinators are only slightly more common), while the last two rows show how initial subordinators are much more common than final subordinators in VO languages in all six areas.

There is no plausible explanation for the correlation in (29) in terms of early language being of a particular type that is more frequent today simply as a common retention. If the original type were, say VO with initial subordinators, that would leave unexplained why the majority of OV languages have final subordinators. Thus the possibility of historical accident is at best a problem with statistical universals that refer to a single typological parameter, and not a problem with more complex implicational universals that refer to more than one typological parameter.

I have conceded that in some instances differences in frequency that might form the basis of evidence for a statistical universal might reflect random variation or historical accident, but that in other instances this is less likely, particularly when the difference in frequency is very great or if the statistical universal makes reference to two typological parameters. But any argument against statistical universals based on the danger of differing frequencies of linguistic types reflecting random variation or historical accident, whether directed against statistical universals involving a single typological parameter or more than one, is irrelevant as an argument for absolute universals over statistical universals because there are reasons to believe that the problem of historical accident is a much more *serious* problem for absolute universals than it is for statistical universals.

The problem can be understood by again considering the diagram in Fig. 2a, in which an absolute universal can be viewed as a boundary surrounding all attested languages. The problem is this: if the region in which the boundary is located is a region in which the probability of languages occurring is low, though still possible, what that means is that even if a language type is possible, it is unlikely to show up in a sample of languages or even in the set of all attested languages. Since the model assumes that the region in which the boundary occurs or the region just inside where the boundary occurs will be sparsely populated by actual languages, the locations in this region where we find actual languages, as opposed to those locations where we don't find actual languages, is *entirely* a matter of random variation. Formulating absolute universals based on the actual location of attested languages means formulating them on the basis of facts that are almost entirely a matter of random variation or historical accident.

An example illustrating the problem is provided by the statistical universal in (30).

(30) If a language has verb-first order, then the genitive follows the noun; i.e., V-1 ⊃ NG.

The generalization in (30) is not valid as an absolute universal, since there are exceptions, such as Garawa (a non-Pama Nyungan language of Australia) as is illustrated in (31), (31a) illustrating the verb-initial order, (31b) the GN order.

(31) Garawa

a. dulaba-yi waḍaba-Ø djamba-nanji djibaři-wanji
remove-PAST goanna-ABS ground-ABL woman-ERG
'The woman pulled the goanna from the ground.'
(Furby & Furby 1977: 41)

b. ŋanji-ŋganji ŋaḍaŋanjdja-nji madjadja
2SG-REFR mother-REFR axe
'your mother's axe' (Furby & Furby 1977: 11)

But there is evidence that (30) is valid as a statistical universal. The data in (32) shows a preference for NG order among verb-initial languages, overall by 35 genera to 8, and in 5 of the 6 areas, the sole exceptional area being Australia-New Guinea, where the two verb-initial languages (Garawa, just illustrated in (31) above, and Wembawemba, a Pama-Nyungan language) are atypical verb-initial languages in a variety of ways.

(32)	Africa	Eurasia	SEAs&Oc	Aus-NGui	NAmer	SAmer	Total
V-1&NG	[8]	[1]	[6]	0	[17]	[3]	35
V-1&GN	0	0	1	[2]	3	2	8

And because this is part of a correlation – GN order is dominant among verb-final languages – there appears to be ample reason to believe that there is a real linguistic tendency for verb-initial languages to be NG, and that the higher numbers of V-1&NG in (43) are unlikely to be due to random variation or historical accident.

Compare now (30) with (33), which is proposed as an absolute universal by Hawkins (1983).

(33) If a language has verb-first order, then if the adjective follows the noun, the genitive follows the noun; i.e., V-1 ⊃ (NA ⊃ NG).

The generalization in (33) is similar to that in (30) except that it adds a reference to 'NA'. (33) can also be expressed in the logically equivalent form in (33').

(33') If a language has verb-first order and the adjective follows the noun, the genitive follows the noun; i.e., (V-1 & NA) ⊃ NG.

The form in (33') makes the difference from (30) somewhat more transparent in that it makes clear that it is adding a term that restricts the set of languages to which the universal applies, and is in this sense a weaker claim than (30).

Hawkins (1983) specifically argues for the universal in (33) on the grounds that it is exceptionless, and this example is one of a number that he formulates as part of a more general enterprise of finding absolute universals. He notes that one can often achieve absolute universals by formulating implicational universals with three or more terms, as in (33).

But if we compare (30) and (33) more closely, we find that the supposed advantage of (33) being valid (in Hawkins' data) as an absolute universal proves to be in illusion. The question is: is it the case that V-1&NA languages are more likely to be NG than V-1 languages in general, or V-1&AN languages? Certainly (33) seems to imply (or more specifically to implicate) this. If V-1&AN languages are just as likely to be NG as V-1&NA languages, then there is something misleading or infelicitous about the addition of the term 'NA' to (30) to yield (33). It turns out that Hawkins had only two instances of exceptions to (30), or V-1&GN languages, and both of these languages he classified as AN. Hence, by adding the term 'NA' to (30) he achieved a generalization that was exceptionless in his data.

It turns out, however, that this was essentially a coincidental property of these two languages. When we look at the exceptions to (30) in my own database, we find an approximately equal number of AN and NA languages, listed in (34).

(34) V-1&GN&AN: Wembawemba (Pama-Nyungan), Alsea (Oregon), Copainalá Zoque
V-1&GN&NA: Wolio (Austronesian), Garawa (Australia), Guajajara (Tupi-Guarani), Yagua (Peru)

The point is not just that there are four exceptions to Hawkins' alleged absolute universal in (33) (the languages in the second part of (34)), but that the very

strategy that he was employing, adding terms to statistical universals until he arrived at one that was exceptionless in his data, is one that is most likely to arrive at generalizations which, although perhaps exceptionless in the data at hand, are unlikely to represent significant observations about language.

It is important to understand what is going on in this case, because it reflects a general problem with the strategy of taking a simple statement that is true as a statistical universal and adding another term that results in the universal being exceptionless in the available data. Namely, when one has a statistical universal of the form 'If *p* then *q*', then the number of languages which are '*p* and not-*q*' will be small, since they are exceptions to a statistical universal. If we then take this small group of languages and find some property *r* that they all share, then we can formulate a universal 'If *p* and not-*r*, then *q*' which will be exceptionless in the available data. But since the size of the group of languages which are '*p* and not-*q*' is small, we will in general have no way of knowing whether it is just a coincidence that all of the languages in this group have property *r*, no way of knowing whether it has anything to do with the fact that they are exceptions to the original simpler statistical universal. Worse still, since the relevant language type is relatively uncommon anyway, we may never find one that lacks property *r*, despite the fact that the generalization, while exceptionless in the data, may actually be false, not only as an absolute universal, but even as a statistical universal.

An example that brings out the problem in a more dramatic way is the following example which I used in a talk at USC in 1988 and which is cited by Comrie (1989). The data in (35) shows the relative frequency of prenominal relative clauses and postnominal relative clauses among VO languages.

(35)

	Africa	Eurasia	SEAs&Oc	Aus-NGui	NAmer	SAmer	Total
VO&NRel	30	9	13	4	14	5	75
VO&RelN	0	0	1	0	0	0	1

The data in (35) shows that there is a strong tendency for VO languages to be NRel (placing the relative clause after the noun) rather than RelN. There is in fact only one genus containing languages in my database that are VO&RelN, and this genus is the Chinese languages, illustrated by Mandarin in (36).

(36) a. wó zài mái shū le
1SG DUR buy book CURR
'I am buying a book' (Li & Thompson 1981: 21)

b. [zhòng shuˇguǒ de] nóngrén
grow fruit MOD farmer
'farmers who grow fruit' (Li & Thompson 1981: 580)

The data in (35) thus provides evidence for a statistical universal of the form in (37).

(37) If a language is VO, then it is NRel.

But since the Chinese languages are the sole exceptions in my data to (37), it is easy to formulate a generalization that is a revised version of it in order to come up with a universal that will be exceptionless in my data. Namely, take any property shared by the Chinese languages, negate it, add it to the antecedent clause in (37), and the

result will be a universal that is exceptionless in my data. For example, a property shared by the Chinese languages is that they are tone languages. As a result, (38) is exceptionless in my data.

(38) If a language is VO and is not a tone language, then it is NRel.

But one ought to be suspicious of (38). It seems unlikely that whether a language is a tone language should influence the position of relative clauses. It illustrates the general point that striving for generalizations that are exceptionless in one's data need not lead to generalizations that tell us anything about language, since the exceptionless can be simply the result of random variation or historical accident.

5. Conclusion

I have given a number of arguments above why statistical universals are methodologically preferable to absolute universals. The thrust of these arguments on the whole has not been to deny that some of the concerns about statistical universals are valid, but to argue that there are even more severe concerns surrounding absolute universals. But I ought to note that in this discussion, I have glossed over a number of distinctions regarding what the universal, be it absolute or statistical, is intended to be. Among the possibilities are the following: (1) a summary of data observed to date; (2) an hypothesis regarding what might be found; and (3) a claim as to what actually will be found.

The arguments that I have given above that are directed against absolute universals are intended as arguments against them either as hypotheses or claims regarding what might be found. None of these arguments presents a problem for summaries of data that are formulated in exceptionless form if there are no exceptions in the data, if they are not intended as universals claims about what one might find, about what is a possible human language. Some of Greenberg's universals formulated in absolute terms may have been intended as no more than such summaries.

The distinction I intend between hypotheses and claims involves a different epistemological stance with respect to the generalization. One can offer an absolute universal as an hypothesis, not because one believes that it is true, but simply because one does not know of any exceptions and by offering it as an hypothesis, one hopes to find an exception if there is one to be found. Offering hypotheses in this way follows the common dictum of formulating hypotheses in the strongest possible form, consistent with the available data. If there are no known exceptions to a generalization, formulating it as an absolute universal hypothesis is making a stronger claim than formulating it as a statistical universal hypothesis. Since formulating an hypothesis as an absolute universal rather than as a statistical one is more likely to result in someone bringing an exception to the attention of other linguists, the absolute form is in general a better way to formulate an hypothesis.

On the other hand, it does not follow from this that it is always better to search for hypotheses that can be formulated in absolute terms. The examples discussed above in (33) (from Hawkins 1983) and (38) illustrate the danger of searching too hard for absolute generalizations as hypotheses, when there is in fact little reason to believe that the generalization expressed by the hypothesis is not simply an accidental generalization involving the use of a spurious term whose inclusion is motivated solely to obtain a generalization that is exceptionless in the observed data, and which there is no reason to believe is anything but an artifact of insufficient data.

A *claim* is different from an hypothesis in that the former is put forth as a prediction of what we will actually find. When one offers an hypothesis, one is not predicting that the hypothesis is true; one may put forth an hypothesis while strongly suspecting that it is false. When one makes a claim, one *is* predicting that the claim is true and one does so with the implicated belief that the hypothesis is true and that one will be surprised if it turns out to be false. The arguments in this paper are primarily directed at the problems with absolute universals as claims: claims made involving absolute universals are never justified. The advantage of statistical universals is that they *can* be justified as claims. While the value of absolute universals varies considerably depending on whether they are intended as summaries of data, as hypotheses, or as claims, linguists often ignore these distinctions. Often, what is initially presented as a summary of data is later taken to be a claim based on good evidence.

The examples of possible absolute universals that I have discussed in this paper have been mostly drawn from word order typology, and it might be thought that the arguments are irrelevant in other domains, particularly in the domain of formal theory. But I would argue that the problems that I have presented here for absolute universals are equally problems for theoretical approaches which explicitly or implicitly make claims as to what is possible and what is impossible in human language. Such claims are simply one type of absolute universal. While the problem with the example in (33) may seem obvious ("If a language is VO and not a tone language, then it is NRel"), I would argue that much theoretical work suffers from the same logical flaw, but is worse in that the implausibility of the hypotheses is not as obvious and the absence of exceptions leads many linguists to incorporate such propositions into their more deeply held beliefs about language.

Notes

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