Typology in the 21st century: major current developments[1]

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1. TYPOLOGY AS A DISCIPLINE. Traditionally, typology was used as an alternative method in pursuing one of the same goals as generative grammar: to determine the limits of possible human languages and, thereby, to contribute to a universal theory of grammar. The paradigm result was the absolute universal law that would rule out as linguistically impossible what would seem logically imaginable, e.g. a language with a gender distinction exclusively in the first person singular.

Over the past decade, typology has begun to emancipate itself from this goal and to turn from a method into a full-fledged discipline, with its own research agenda, its own theories, its own problems. What has reached center-stage is a fresh appreciation of linguistic diversity in its own right, and the new goal of typology is the development of theories that explain why linguistic diversity is the way it is — a goal first made explicit by Nichols's (1992) call for a science of population typology, parallel to population biology. Instead of asking "what's possible?", more and more typologists ask "what's where why?" Asking "what's where" targets universal preferences as much as geographical or genealogical skewings, and results in probabilistic theories stated over sampled distributions. Asking "why" is based on the premises that (a) typological distributions are historically grown and (b) that they are interrelated with other distributions.

Understanding distributions as historically grown goes back at least to Greenberg's (1965; 1978) and Givón's (1979) early calls for diachrony in typology and means that synchronic distributions, whether universal preferences or geographical clusterings, are seen as the product of type transitions and diachronic processes in general[2] (also see Bybee 1988 and Hall 1988 for strong argumentation in this direction). It is a matter of current debate whether universal preferences result from preference principles that guide (or 'select') the result of diachrony (as assumed by, e.g. Nettle 1999, Kirby 1999, or Haspelmath 1999) or from locally motivated preferred pathways of change (as in the work of, e.g. Croft 2000, Bybee 2001, Blevins 2004, and in much of grammaticalization theory). On either view, the current distribution is understood as the product of history and the objects of inquiry are probabilities of change and the principles behind them.

Understanding typological distributions as interrelated with, and partly grounded in other distributions reflects the finding that linguistic structures tend to be systema-

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[2] Some typologists (e.g. Plank and Schellinger 2000) reserve the term diachronic universal (preference) for cases where an implicational universal directly translates into diachrony (e.g. 'OV preferentially implies postpositions (rather than prepositions)' translates into 'O-V preferentially develops into NP-P (rather than P-NP)'). Type transition preferences, by contrast, summarize all historical factors that lead from a universally dispreferred to a preferred pattern (e.g. from VO order with prenominal to VO order with postnominal relative clauses).

tically interrelated among themselves and with other anthropological patterns. Some of these findings gave rise to theories that predict close correlations between universal preferences in structure with universal preferences in cognition and communication (e.g., processing preferences, as most extensively argued for by Hawkins 2004), and these have been at the top of typology's agenda. But in line with the new enlarged perspective on distributions, correlations of local structures with local preferences in cognition or social interaction have also drawn increasing attention. This is illustrated first of all by the rapid growth in linguistic relativity research over the past decade (e.g. Lucy 1992, Gumperz and Levinson 1996, Roberson et al. 2000, Niemeier and Dirven 2000, Levinson 2003, Bickel 2003, etc.) and in the analysis of the local cultural underpinnings of specific linguistic structures (e.g. Bickel 2000, Enfield 2002, Evans 2003). More recently, neurolinguists have started to look into relativity effects of local structures on local processing routes in language comprehension ('neurotypology': Bornkessel et al. 2005, Bornkessel and Schlesewsky 2005). And last but not least, most typological distributions reveal distinct geographical patterns, and these can only be understood against models of population movements and language contact, systematically informed by what is known from population genetics and archeology (e.g. Nichols 1992, 1997, Fortescue 1998, Bickel and Nichols 2005, Dunn et al. 2005).

In order to capture and test distributions, typologists develop variables that measure similarities and differences between languages.[3] Typological variables are (if well-crafted) crosslinguistically applicable in formally precise ways, entail analyses of language-specific structures with clear predictions, and define an explicit ontology of similarities and differences (a *tertium comparationis*). In order to explain why the values of these variables are distributed in the world as they are, typologists develop theories of areal skewings or universal preferences grounded in various anthropological domains. As argued by Dryer (1997) and Nichols (this issue), the variables and explanatory theories developed in typology have ontological commitments to language-specific structures and to observable similarities between them, but, unlike work that aims at defining the absolute conditions of human language, there is no necessary commitment to universal entities in grammar (a 'Universal Grammar', UG) beyond the most general design features. Moreover, typological theories are about probabilities of distributions, not about possibilities, and so they go far beyond the UG goal of defining what is possible (cf. Bell 1978, Newmeyer 1998, Dryer 1998, Haspelmath 2004, Nichols, this issue).

Would modern typology have more in common with UG research, if UG predicted typological distributions from stochastically defined principles, as suggested by Bresnan (this issue; also cf. Jäger 2004)? Not much, for two reasons. First, the worldwide frequencies of types are substantially influenced by population history, and this makes it problematic to try and predict them by principles of grammar alone. If a language has a rare pattern, this clearly does not imply that the language is any less optimal or should quickly 'improve' through diachronic change. Some deviations from universal trends, e.g. deviations from combining OV order with postpositions (Iranian; Stilo 2005) or VO order with prenominal relative clauses (Sinitic; Dryer 2003), can be quite stable and tend to occur at what Stilo (1987; 2005) calls buffer zones between spread areas

[3] As Nichols (this issue) notes, in terms of publication output this is the most prominent kind of typological day-to-day business. And it is the foundation for everything else.

with opposite typological profiles (Masica's 1976 'Indo-Altaic' vs. Southwest Asia in the case of Iranian; Indo-Altaic vs. Southeast Asia in the case of Sinitic). Such contact pressure can affect distributions because it competes with language-internal factors (e.g. parsing ease) in historical development. Another important population factor is relative isolation at the fringes of major spreads (typological enclaves: Bickel and Nichols 2003), and this too can produce robust deviations from macro-areal or universal trends. Nettle (1999) adds population size as a factor favoring rarities, assuming that variants are more rapidly stabilized in small populations. A second issue is that predicting typological distributions from UG models presupposes that the model is grounded in universal probabilities of discourse structure. But many discourse preferences are themselves subject to substantial typological variation, as scores of studies in the Ethnography of Speaking tradition have shown, and as can also be shown experimentally for core patterns like pro-drop (Bickel 2003). This again would suggest that typological distributions need to be understood on many different anthropological dimensions, far beyond any idea of UG.

The general picture emerging from this is that UG issues are largely irrelevant for modern typology. Newmeyer (1998; 2004) and Haspelmath (2004) add that, in turn, typology is also irrelevant for UG research. This may be true under some conceptions of UG, but not if a universal theory of grammar aims at typological adequacy (e.g. Dik 1978, Van Valin and LaPolla 1997, Baker et al. 2005, and generally in Optimality Theory) in the sense that the ontology of typological variables (not their distributions) should fall out from the architecture of the theory. It is also sometimes suggested that universal theories are well-advised to check their claims against more than one existing language (e.g. Van Valin and LaPolla 1997, or Baker and McCloskey in this issue), and indeed many such universal claims have been falsified by newly described languages (for records, see the Konstanz Universals Archive and *Raritätenkabinett:* Filimonova and Plank 2002ff, Plank 2003ff). But extending our dataset by describing languages is not and should not be exclusively the task of typologists — especially not in these times of mass extinction of languages!

To conclude, typology has shifted from a method used in UG research to a discipline seeking to answer "what's where why" by developing probabilistic theories of crosslinguistic similarities and differences. But not everything has changed: most prominently, as in the past, typologists find it useful to develop variables as close to observable data[4] as possible and close to fieldwork. This is first of all a practical decision, because very abstractly defined variables are difficult to survey in sufficiently large samples, and samples can often only be completed by doing additional fieldwork. But the decision is also theoretically motivated because the definition of abstract variables is commonly tied to some UG model that itself seeks to abstract away from linguistic diversity, and less so to the kinds of anthropological or psycholinguistic hypotheses of interest.[5]

[4] Observable means that we have operationalized criteria to decide what some pattern is in a specific language. It does not mean 'surface', as opposed to 'underlying'. Typology, like any other kind of linguistics, is about structural patterns, not unanalyzed surface lists (cf. Nichols, Hyman in this issue)

[5] A similar trend away from abstract, UG-derived discussion or measurement of linguistic structure can also be observed in psycholinguistics and has always been characteristic of linguistic anthropology.

2. WHAT HAS BROUGHT US HERE? The overt signs of typology maturating into a discipline are the fact that, as the editors of this special issue point out, the field has now dedicated journals, professional associations and academic chairs and research centers. But what are the intellectual developments that lead to the new perspective on typology? I propose that two major developments are at the source: the discovery of what one might call universal areality and advances in methodology.

2.1 UNIVERSAL AREALITY. Since the late 1980's and most prominently through the work of Dryer (1989; 1992) and Nichols (1992), it has become clear that hardly any typological variable, and only some combinations thereof, is evenly distributed in the world. Most distributions are subject to nonaccidental geographical skewing. A simple example: I tested the hypothesis that verb-final or free word order correlates with dependent-marking in transitive subjects ("A") or objects ("P") or both (cf. Konstanz Universal Archive #447) against a genealogically balanced sample from AUTOTYP (Bickel and Nichols 1996ff) and WALS (Dryer 2005). Pooling all data together there is a significant association (Fisher Exact p = .014, N = 179), replicating earlier results by Dryer (2002) on a partially different dataset (p < .001, N = 257). But if ones examines the data continent-by-continent, it turns out that the association is significant only in Eurasia. Everywhere else it can be predicted from the marginal frequencies of the two variables. Such examples can easily be multiplied, and underline Dryer's (1989) warning that a statistical association does not support a universal preference hypothesis unless geographical factors (and other confounding factors, see below) are controlled for.

This should not come as a surprise. We know that large areas like Eurasia have an intricate history of type spread (Jakobson 1931, Nichols 1992), and we noted above that in general, the history of language and population movements substantially affects typological distributions. But the discovery of large areality effects all over has also had consequences that reinforce the historical turn in typology noted above.

First of all, pervasive areality effects make clear that many current typological distributions can only be understood as the result of actual (pre-)history, both local and global. In turn, typological distributions provide a plethora of historical signals waiting for exploration and comparison with findings from other anthropological and historical disciplines.

Second, the most plausible available explanations of statistically significant macroareas, such as those around the Pacific, or those covering Eurasia (Nichols 1992, 1997, Nichols and Peterson 1996, Fortescue 1998, Bickel and Nichols 2003, 2005) suggest that they are the surviving traces of distributions that were formed at early periods of large-scale population and language spreads. But if distributions can survive as long as some would seem, this, as argued by Maslova (2000), substantially raises the threshold above which we are now ready to accept universals that are due to the nature of language rather than to the nature of human population history: an association of variables (e.g. NP and PP order) must not only be statistically significant[6] in a representative sample and independent of known geographical and genealogical affiliation (Dryer 1989,

[6] Prospects might not be as bright as was generally believed in the 20th century: Bakker (2004) finds considerably less than 1% of all logically possible correlations among the variables in *The World Atlas of Language Structure* (Haspelmath et al. 2005) to be statistically significant, and only a fraction of these to be linguistically meaningful!

Perkins 1989), but it must also be shown to be independent of earlier (or even initial) stages at which there could have been significant skewing at work. In other words, associations can be taken to reflect strictly linguistic universals only if they can be shown to be sufficiently instable historically that we can assume a stationary distribution. This again requires a fundamentally diachronic understanding of what causes typological distributions, viz. different type shift probabilities.

2.2. PROGRESS IN METHODOLOGY. No doubt due to general technological advances, the past decade has seen an explosion in large typological databases. There are currently about two dozen research groups worldwide involved in developing databases (for projects in Europe, see the *Language Typology Resource Centre*[7]), and the large international collaboration behind the *The World Atlas of Linguistic Structures* (Haspelmath et al. 2005) has spawned additional database work. Large datasets almost invariably reveal exceptions to universals, and this, together with a substantial increase of newly described languages and assisted by prominent conceptual argumentation (e.g. Dryer 1998, Croft 2002: Chapter 8), has practically done away with notions of absolute universals and impossibilities. Modern studies of typological distributions involve statistical methods, from association tests (cf. Cysouw in press, for recent review) to multivariate scaling methods (e.g. Levinson et al. 2003, Croft and Poole 2004). On the side of the ever more important areality studies, typology has seen the introduction of new mathematical methods (e.g. the Isopleth Method: van der Auwera 1998), and current attempts to integrate Geographical Information Systems bring bright hope for progress in this domain.

One common property of all these methods is that they work with independently and narrowly defined variables, instead of the gross types ("active language", "agglutinative language") of classical holistic typology, or categorical notions of a *Sprachbund*. The general assumption is that if there are large-scale connections between linguistic structures, or between linguistic structures and geography, they consist in probabilistic (and therefore exception-ridden) correlations between independently measured variables; they are not expected to follow from absolutely defined or 'ideal' types. In a similar vein, modern typology has moved away from typologizing entire languages and instead takes individual structural patterns (constructions, rules, constraints etc.) as comparanda. Linguistic diversity is captured by large sets of fine-grained variables, not by grand type notions.

The analysis of such variables poses statistical problems shared by other historical population sciences — most prominently, we have access to only much less than 1% of all languages that have ever been spoken by our species, and so the current population, with all its historically-grown distributional biases, will always be overrepresented in our samples. Moreover, in typological sampling, we typically attempt exhaustive and well-balanced coverage of known genealogical diversity, so that signals of universal preference or areal population history are not disturbed by relatively recent inheritance effects. But exhaustive sampling makes classical statistical methods mathematically meaningless. In response to these problems, typologists are now adopting Monte-Carlo and exact methods, and first steps have also been undertaken

[7] http://www.lotschool.nl/Research/ltrc

towards randomization-based reliability tests on coding (Janssen et al. 2005). Unlike classical, distribution-based methods, these methods do not support statistical inference to an underlying population of all human languages. All statistical inference is limited to the current sample at hand. But this fits well with the new emphasis on "what's where", and challenges once more the use of typology in the quest of defining the absolute limits of human language.

3. CONCLUSION. Modern typology is a discipline that develops variables for capturing crosslinguistic similarities and differences (qualitative typology), explores universal and local skewings in the distribution of these variables (quantitative typology) and proposes theories that explain the skewings (theoretical typology). The ultimate goal is to understand "what's where why", and this makes it clear that the major contributions that typology offers are not confined to Cognitive Science as narrowly understood. The goals of 21st century typology are embedded in a much broader anthropological perspective: to help understand how the variants of one key social institution are distributed in the world, and what general principles and what incidental events are the historical causes for these distributions.

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