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Review of *The Mouton Atlas of Languages and Cultures* (Gerd Carling ed. 2019)
Author: Olivier Bondéelle

"The Mouton Atlas of Languages and Cultures", Gerd Carling (ed.), Berlin / Boston: Walter De Gruyter. 2019 (21x30cm, xxxii + 727 pp.) focuses on the changes in time and space of the languages of the cultural macro-area of Eurasia. It is based on the DiACL database (Diachronic Atlas of Comparative Linguistics), which can be consulted online (<https://diacl.ht.lu.se/>), and which includes 500 languages from 18 families of the macro-areas of Eurasia, the Pacific and the Amazon.

SUMMARY

Chapter 1 ("Introduction": 1-13) explains the objectives and principles that guide the volume. It begins by positioning the book within existing research in the field by explaining that it can be seen as a continuation of research on the distribution of languages according to typological features (Haspelmath et al. 2005, Michaelis et al. 2013), and also as a renewal of older studies in historical and comparative linguistics of Indo-European languages (Buck 1949). The general objective of the book is to contextualize the linguistic changes observable in cultural systems in Eurasia, taking into account environment and usage, in order to uncover the patterns of convergence, divergence, and advergence of this linguistic area, due to processes of relocation and inter-linguistic and cultural contacts. This chapter specifies that empirical grammatical and lexical data are extracted from DiACL, which served as the basis for the research, and that the results are reproduced on maps and graphs throughout the volume.

Chapter 2 ("Theoretical backdrop: words, things, and humans in their environment": 14-16) provides an overview of the theory and methodology adopted. It explains that the research makes extensive use of statistical and quantitative methods. A number of theoretical prerequisites follow: the uniformitarianism of evolution (historical processes attested in the present must have taken place in the past, even if not attested: the present reflects the past); the formulation of hypotheses about the behavior of traits that must be tested statistically and thus lead to the establishment of models of linguistic and cultural change, depending on the salience of the factors that constrain such change. The results are integrated into a two-dimensional space-time matrix, where the lexicon reflects socio-cultural changes and where grammar helps to trace the directions of these changes.

Chapter 3 ("Language: classification, reconstruction, and principles of change": 17-22) provides a synthesis of models of classification, language reconstruction and linguistic change. It returns to the two main models, the tree and the wave, structured by the three principles of convergence, divergence and advergence. It then explains that the two main methods of reconstruction, the comparative method and the evolutionary method, are complementary in that they adopt two different points of view on the linguistic features that are observed and analyzed. The evolutionary method tracks the similarity of comparative concepts through the traits' homoplasy, whereas the comparative method tracks the sharing of cognates through the homology of phonemic structures.

Grammar poses a particular problem for the comparative method in that not all features of grammar can be considered as cognates (word order for example). A distinction must therefore be made between paradigmatic features such as conjugation or gender systems for which reconstruction is fairly satisfactory, and non-paradigmatic (syntactic) features which

give rise to more discussion. The evolutionary method now makes extensive use of typological traits to establish models of linguistic change. But there are also debates about whether grammatical structures are valid instruments for language evolution.

For the lexicon, reconstruction and evolution are conditioned in this work by colexification (lexicalization of more than one concept by the same form), and by semantic changes (metaphor, metonymy, substitution). While the direction and regularity of semantic changes are highly disputed issues in the literature, they are nevertheless important metrics for measuring the salience of socio-cultural and environmental concepts.

Chapter 4 ("Description of the database Diachronic Atlas of Comparative Linguistics": 23-26) describes the infrastructure of the comparative database on which the work is based. It explains that DiACL conforms to the principles of research: the constitution of data sets is established by a selection of features that can be used in synchrony and diachrony, using computational methods at different levels. For each language, metadata includes its extensions in time and space, and its level of documentation. The language table is linked to three other tables: the language tree table, which defines the position of languages in relation to one another, the macro-areas table, which defines geographical positions, and the geographical presence table, which establishes the presence of a language through focal points or polygons on maps.

Chapter 5 ("Grammar": 27-178) examines datasets in four typologically important areas: nominal morphology, verbal morphology, word order, and alignment (the marking of subject, object, and agent). The results are analyzed in section 5.7 and discussed in section 5.8, with the objective of providing information on the history of the macro-area and on language contacts. The analysis is initially synchronic and is independent of phylogenetic relationships, making it possible to visualize clusters of languages in space according to the distribution of grammatical features. The analysis then adopts a diachronic perspective, proposing a model of a reconstruction of the evolution according to a model based on the statistical probability of the presence or absence of a morphosyntactic trait at a specific level of a phylogenetic tree.

The results show that Proto-Indo-European is in agreement with the canonical model applied since the reconstructions of the neogrammarians of the 19th century: a nominative-accusative, highly synthetic system. But this three-gender system (masculine / feminine / neutral) goes against the traditional view of the two-gender system (animate masculine / inanimate neutral). Moreover, the initial head also seems to be confirmed in Proto-Indo-European (Noun-Adposition, Possessive-Noun or Adjective-Noun), with a high probability of the Subject-Object-Verb order in the main and subordinate clauses. But here again, the high probability of the Noun-Relative Clause order goes against the implication that a Verb-Object language has the Relative Clause-Noun order (Greenberg 1963).

Section 5.8 discusses the results. It identifies five types of grammatical zones (dispersal, accretion, historical development, conservation, boundaries or hybrids) that explain 10 language clusters (Medieval Germanic, Central Indo-Iranian / West Iranian, Basque / Caucasian, Greek, Ancient Indo-European, Goidelic, Central Asian, Scandinavian, Romance, Slavic) and 7 hybrid areas (Medieval Northwest Germanic, Brythonic, Uralic, Balkan, Northeast Caucasian, Iranian, Insular Indo-Aryan). The western clusters are more homogeneous than those in the east, which are more difficult to interpret, mainly due to gaps in data: they do not follow tree sub-branches in language families (unlike the west). The Basque / Caucasian cluster should be mentioned. The results contradict the notion of the

accretion zone as an area of high diversity according to Nichols 1992. Rather, the results here illustrate an ancient stable zone that prevails over the dispersal zone for Indo-European, Uralic and Turkic. As far as ancient Indo-European is concerned, the results show surprisingly little indication of the division of most languages into other clusters, which argues for considering this zone rather as one of historical development. This interpretation is reinforced by the distribution over time of gains and losses of the traits examined. The peaks coincide with the major migrations and dispersions of most branches of Indo-European (Chalcolithic 4th millennium BCE, Late Age Bronze 2nd millennium BCE, end of the Iron Age 1st millennium BCE, Migration period 5th-8th ACE).

How should we interpret the fact that the ancient Indo-European cluster tends to cluster with eastern rather than western languages? This question has consequences for the discussion about the homeland of Indo-Europeans and the chronological evolution. But what should be noted is that the east represents a conservation area.

Chapter 6 ("Atlas: lexicon": 179-377) explores the comparative lexical database of cognates that constitutes the lexical module of DiACL, where lexical concepts refer mainly to the modes of subsistence of populations (hunting, agriculture, natural environment). They were extracted from DiACL in the form of hierarchical taxonomies whose categories represent innovations during the two Neolithic revolutions (agriculture and technology). Numerous subdivisions are made among the list of the 100 main concepts (see Tables 34 p. 188 and 35 p. 190-191). For example, the main category of hunting and capture is subdivided into game, predatory animals and predatory birds.

The objective is to retrace the various paths of these concepts by examining three aspects of lexical change: the potential borrowings of this or that concept, the productivity of cognates for this or that concept, and lastly the regularity of the semantic changes corresponding to the concepts examined.

The results are presented by different visualizations: geographical maps for the concepts and the corresponding cognates, graphs of semantic changes, statistical graphs of the rates of borrowing and semantic instability. One map (37b pp. 376-377) recapitulates borrowing flows throughout Eurasia, and five graphs give an overview of the statistical tests carried out on the main categories of the concepts examined (see Appendix 3c).

The results are discussed in Section 6.13. The authors identify three types of lexical concepts according to the stability of cognates, borrowing rate and semantic stability. The first type, considered to group the most salient concepts, is characterized by a high stability of cognates, a low rate of borrowing, and a high semantic stability: these are products (honey, wax, mead, milk, salt, wool) and different trees (elm, ash, birch), but also verbs denoting cultural activities (sowing, planting, weaving), domestic animals (dog, cat) and names of seasons (summer, autumn, winter, spring). The second type is characterized by a low stability of cognates, a low rate of borrowing, and a strong semantic instability. It includes most domestic animals (pig, cow, ox, horse), metals (iron, copper, silver, gold, bronze), crops (wheat, oats, barley, rye, grain), the words of ploughing and those of predatory birds (eagle, hawk, crow). The third type is characterized by a high rate of borrowing and high semantic instability. It groups together wild animals including predators (lion, lynx, panther), game (deer, wild boar, bison) as well as the products of hunting (fur, fat, meat).

Maps show that the center of Western Europe is an area of intense borrowing dominated by Latin and Greek, then by Proto-Germanic and Proto-Balto-Slavic. The northern and western peripheries of Europe are less prominent in terms of source languages, while the eastern part is relatively isolated from the west (few arrows connect them) and more connected to the south and far east. West Asia and Anatolia have had contact, but this aspect suffers from the lack of data on Semitic languages here.

Chapter 7 ("Concluding chapter: an integrated view of the linguistic and cultural histories of Eurasia": 378-386) analyzes the results of the two previous chapters. It recalls that this atlas selected 35 grammatical features (120 variants) and 100 lexical concepts that were considered important in Eurasia.

The lexicon reveals the following facts. At the level of methodology, the metrics used make it possible to distribute the lexical concepts into four classes, which themselves belong to the two opposite fields of nature and culture. The lexical concepts that make up the domain of culture refer to domestic space (what is eaten, drunk and manufactured on a daily basis, domestic animals and small livestock); outdoor activities (agriculture, animal husbandry) and farming; technology and materials used for manufactured products (artefacts, wood, stone). The concepts that make up nature refer to the animate (game or predators), but also to the inanimate (metals, seasons, trees). The organization of these four classes is interpreted by the authors as an interior / exterior structure (fig. 58 p. 383) with inside: the clan, the habitat, women and children; and outside: the farming activities of the men who tame nature. At its opposite is the domain of nature.

By gathering grammatical and lexical data, a number of areas characterized by specific behaviors in terms of changes and mutual contacts can be identified (map 58 p. 385). The strongest trend is a cleavage between east and west. The Central Asian migration zone (Map 58, Zone 1) extends from Mongolia to Eastern Europe and the Caucasus, first affected by the dispersal of Indo-Iranian in contact with the Uralic to the north, and then by the impact of Turkic and Arabic (Map 57). The South Asian Development Zone (Zone 2 Map 58) contains many Indo-European languages in the data, which are characterized by deviant patterns in vocabulary and grammar (Map 27). The West Asian contact zone (3 map 58) is characterized by very old written sources and intense contacts between very diverse languages and populations. The Caucasian accretion zone (4 map 58) is located between the Black and Caspian Seas and includes very diverse and independent non-migratory languages, with Turkic playing the role of contact with the West Asian and then Central Asian zone (map 57). In comparison, the Eastern European periphery (5 map 58) has little diversity and a tendency to diverge between West and East, as well as a certain conservatism. This is why this area is referred to as the periphery (borrowings are more towards this area than from it, map 57). The south-central European development zone (6 map 58) maintains intense contacts and much borrowing, especially from south to north. The Northern European periphery (7 map 58) includes local conservation areas and has a general tendency to borrow rather than to be the source of borrowing. Finally, the Atlantic periphery (8) borrows heavily from the south-central development zone and contains the Basque accretion zone.

After a bibliography (387-399), the 322-page appendices list in alphabetical order the languages of the book (Appendix 1: 401-404), the grammar data (2a: the list of traits: 405-410, 2b: state combinations: 411-413, 2c: state combinations in the languages: 414-425, 2d: solutions by structure : 426-429), lexical data (3a: the list of concepts: 430-432, 3b: lexical data: 433-694, 3c: statistics: 695-702, 3d: data sources: 703-704), sources (4a: language

consultants: 705-706, 4b: literature sources: 707-718, 4c: geographical sources: 719-722). The book is completed by credits for maps and three indexes (by subject: 723-726, by authors and resources: 726, by languages: 726-727). The general presentation of the work (v-xxxii: preface; list of contributors; set of conventions; listing of tables, maps and graphs; table of contents) is given at the outset.

EVALUATION

The publication of this book is important because the volume breaks new ground in the field of linguistic change by contextualizing languages in their spatial (geographical) and temporal (historical) environment. It exploits the most advanced resources in the typology of languages and societies (Murdock 1967, 1981), through large databases covering an impressive set of languages and territories, offering an extensive and innovative set of visual analysis tools (maps, polygons, networks) extracted from an online searchable database. It is also important to stress the benefits of consulting DiACL in open access, which is very user-friendly and allows each trait and each language to be individually queried for more focused studies.

The imbalance of the chapters is quite consistent with the work insofar as not each of the fields explored requires the same tools and the same presentations. The scope of Chapter 6, which deals with the lexicon, is all the more understandable if we bear in mind that it is based on graphs that require graphic space for consultation. Similarly, the mass of data undoubtedly required the lists and tables included in the appendices to which the reader can refer at any time. Nevertheless, one may wonder whether it would not have been more economical to link them to the online database. Yet the chapters complement each other remarkably well. Chapter 5 on grammar offers a fairly clear and detailed areal view of the similarities between languages or groups of languages according to their families and contacts, and Chapter 6 on the lexicon enriches it with a socio-cultural history that bears the traces of contacts prolonged by shared semantic changes or by the geographical distribution of cognates. The areas of contact appear precisely thanks to this conjugation.

The quantitative method adopted by the authors of the book is unquestionably one of the strong points of the research. It first of all confirms the results of previous research, some of which are old since they were based on comparative grammar for proto-Indo-European. It also produces significant new results to reconstruct the gender system and the word order system in proto-Indo-European. It makes a significant contribution to the much-disputed question of the Indo-European homeland: the different areas of dispersion and development highlighted by this vast survey give credit to a multi-areal approach to Indo-European, which helps to move the debate forward.

For the lexicon, the measurement of the stability of semantic changes, cognates and the rate of borrowing undoubtedly presents very interesting models of linguistic changes in this macro-area, and provides an overall vision of a remarkably cohesive Eurasia.

However, some of the analyses proposed in this book to explain these processes would nevertheless merit discussion, and perhaps confrontation with other points of view. The sketch of the general profile of the Eurasian cultural area is significant in this respect. The analysis of the book traces a two-dimensional space for the Eurasian cultural area in which the vocabulary of artefacts is the meeting point of the two opposite dimensions of nature and culture. The authors explain this by the need to tame nature through technology. In response, it can be said that the nature / culture opposition emerges quite naturally from the lexical

concepts selected by the authors, who themselves state that social concepts such as kinship structures or marriage were not taken into account, whereas they could have given a different view of the cultural area (see 6.2. and Appendix 3b). It is nevertheless true that the nature / culture opposition is a good heuristic in anthropology to show the differences and variations between cultural macro-areas (Descola 2013). But it is presented here in a way that is probably too general to characterize the very ancient culture of Eurasia. It would therefore be interesting to examine the organization of lexical concepts in other cultural areas and to compare it with that of Eurasia, which is possible thanks to the wide coverage of DiACL. Subsequent editions of comparable volumes on the Amazon and Pacific areas would be welcome.

The aim of the whole undertaking presented in the book is very ambitious not only in terms of the spatial and temporal scope of the subject under study, but also and above all in terms of the dynamic perspective adopted on the processes of linguistic change. As such, the notions of migratory / non-migratory languages can be useful in explaining differences in language change in Eurasia. The lexicon here offers an interesting example.

Caucasian languages (non-migratory languages) illustrate a strong tendency towards shared cognates, whereas semantic changes are more frequent in the Indo-European family (migratory languages). The type of semantic change itself differs. There are more metaphors in migratory languages and more metonymy in non-migratory languages. This could be explained by the relocation of populations of migratory languages that have had to adapt to their environment. Explanations for grammar remain more difficult to formulate. This work clearly shows that the properties of morphosyntax are more genetic, less areal than those of syntax, and less sensitive to changes because they are less frequent. But the authors acknowledge (p. 379) that the processes that lead to these results remain obscure.

While the book finally gives a clear and precise idea of the environmental context of linguistic macro-area and prolonged contacts in Eurasia, it has not managed to formulate precise hypotheses about the processes that constrain patterns of linguistic change. For grammar, the authors stick to internal arguments of linguistic systems according to the principle of Occam's razor that would favor change (economy and frequency), although this is not really justified by the authors. For the lexicon, the salience, functionality and accessibility of concepts are invoked without the need for cultural change being demonstrated or the chain of causality being made explicit. This remains insufficient to trace the evolution of a linguistic area in its socio-cultural context (Nettle 1999, Testart 2013, 2012). It is also significant that the authors repeatedly use the word classification in contexts where the subject is clearly evolution (Chapter 3). However, this remark should be qualified: it is addressed to DiACL users, for whom it constitutes a research horizon, rather than to the authors of this impressive work.

In conclusion, the mass of structured data in the DiACL database constitutes a solid set of resources for researchers (linguists, anthropologists, specialists in human cognition) working on grammar, lexicon or more generally on the cultural area of Eurasia. It presents a strong potential for advanced research with fine analysis on contact areas. The multiple associated visual tools make this book valuable pedagogical material for teachers of language and social sciences.

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