Explanation in typology

Diachronic sources, functional motivations and the nature of the evidence

Edited by

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Introduction

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The present volume addresses a foundational issue in linguistic typology and language science more generally. It concerns the kinds of explanation that typologists provide for the cross-linguistic generalizations they uncover, i.e. for so-called universals of language. The universals at issue here are usually probabilistic statements about the distribution of specific structures, such as the classic Greenbergian generalizations about word order and morphological markedness patterns. Some examples are given in (1)–(4) below:

(1) With overwhelmingly greater than chance frequency, languages with normal SOV order are postpositional. (**Greenberg1963**)

(2) A language never has more gender categories in nonsingular numbers than in the singular. (**Greenberg1963**)

(3) If a language uses an overt inflection for the singular, then it also uses an overt inflection for the plural. (**Croft2003**: 89, based on **Greenberg1966**: 28)

(4) In their historical evolution, languages are more likely to maintain and develop non-ergative case-marking systems (treating S and A alike) than ergative case-marking systems (splitting S and A). (**BickelEtAl2015**: 5)

As can be seen from these examples, cross-linguistic generalizations of this kind may be formulated in terms of preferred types in synchronic samples or in terms of higher transition probabilities for these types in diachronic change (see also **Greenberg1978**; **Maslova2000**; **Cysouw2011**; **Bickel2013** for discussion of the latter approach). But this is, strictly speaking, independent of the question we are primarily concerned with here, namely how to best account for such generalizations once they have been established.

The most widespread typological approach to explanation is grounded in functional properties of the preferred structural types: For example, typical correlations in the ordering of different types of phrases (e.g. object–verb and NP–postposition) have been argued to allow efficient online processing (e.g. **Hawkins1994**; 2004). Markedness patterns in morphology (e.g. the distribution of zero expression in case, number or person systems) have been attributed to economy, i.e. the desire to leave the most frequent and hence most predictable constellations unexpressed, or rather to a competition between economy and the motivation to code all semantic distinctions explicitly (e.g. **Haiman1983**; **Comrie1989**; **Aissen2003**; **Croft2003**; **Haspelmath2008**; among many others). The general idea behind this approach is thus that speech communities around the world are subject to the same kinds of cognitive and communicative pressures, and that the languages they speak tend to develop structures that respond to these pressures accordingly, or, as **Bickel2014** puts it, "in such a way as to fit into the natural and social eco-system of speakers: that they are easy to process, that they map easily to patterns in nonlinguistic cognition, and that they match the social and communicative needs of speakers."

There is a clear parallel to evolutionary biology here, in that languages are said to *converge* on similar structural solutions under the same functional pressures, just like unrelated species tend to develop similar morphological shapes in order to be optimally adapted to the specific environment they co-inhabit (**Deacon1997**; **Caldwell2008**; **EvansLevinson2009**; **Givón2010**). When applied to language, this line of explanation at least implicitly invokes what is known as "attractor states", i.e. patterns of structural organization that languages are drawn into in their course of development.[1] For this reason, one could also speak of a **result-oriented** approach to explanation.

There is, however, another way of looking at the same patterns, one that redirects attention from the functional properties to the diachronic origins of the linguistic structures in question. On this view, many universal tendencies of order and coding are seen as by-products, as it were, of recurrent processes of morphosyntactic change, notably grammaticalization, but without being adaptive in the above sense: There is no principled convergence on similar structural traits because these traits might be beneficial from the perspective of processing, iconicity or economical communicative behaviour. Instead, the current

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[1]The term attractor state (or basin of attraction) is adopted from the theory of complex dynamic systems (e.g. **Cooper1999**; **HoweLewis2005**; **Holland2006**), which has become increasingly popular as a way of viewing linguistic systems as well (see **BecknerEtAl2009** and **Port2009** for general overviews, and **Haig2018** or **Nichols2018** for very recent applications to typological data).

synchronic distributions are argued to be long-term reflections of individual diachronic trajectories, in particular the diachronic sources from which the structures in question originate. **Givón1984** and **Aristar1991**, for example, suggested that certain word-order correlations may simply be a consequence of a given ordering pair (e.g. Gen–N & Rel–N, or V–O & Aux–V) being directly related diachronically: Auxiliaries normally grammaticalize from main verbs that take other verbs as complements, and since these complements follow the verb in VO languages, they also follow the auxiliary in the resulting Aux–V construction; the mirror-image pattern holds for OV languages (see also **Lehmann1986**: 12–13). If this line of reasoning extends to most other word-order pairs, there is no need to motivate the synchronic correlations in functional-adaptive terms, e.g. by saying that the correlations arise *in order to* facilitate efficient sentence processing.

In the domain of morphology, **Garrett1990** argued that patterns in case marking, specifically of differential ergative marking, are exhaustively explained by the properties of the source of the ergative marker: When ergative case arises from the reanalysis of instrumental case, the original characteristics of the latter, such as a restriction to inanimate referents, are directly bequeathed to the former. The result is a pattern in which animate A-arguments are left unmarked, but since this is a direct "persistence effect" (**Hopper1991**) of the history of the ergative marker, there is again no need for an additional functional-adaptive explanation in terms of other principles, such as a drive for economical coding patterns. Rather than being result-oriented, then, this way of explaining universals can be characterized as **source-oriented**.

Such source-oriented explanations thus move away from attractor states of grammatical organization and often emphasize the importance of "attractor trajectories" instead (**BybeeBeckner2015**: 185): In some domains of grammar, the patterns of reanalysis and ensuing grammaticalization are so strikingly similar across the world's languages that it is not surprising that they yield similar outcomes, such as strong correlations between V–O & Aux–V or V–O & P–NP ordering. In other cases, it is argued that many individual, and partly very different, diachronies are capable of producing a uniform result, but without any consistent functional force driving these trajectories. **Cristofaro2017**, for instance, claims that this is the case for plural markers: An initial system without number marking can develop an overt plural morpheme from many different sources – usually by contextual reanalysis – and thus ultimately come to contrast a zero singular with an overt plural, but these developments are neither triggered nor further orchestrated by a need for economical coding: They do not happen to keep the (generally more frequent) singular unmarked and the (generally less frequent)

plural overtly signalled.

In other words, whether the individual diachronic trajectories are highly similar or rather diverse, the premise of the source-oriented approach is that they can scale up to produce a predominant structural pattern in synchronic samples. Hence they obviate the need for highly general functional principles tying these patterns together.

While the source-oriented approach was still a more marginal position in previous volumes on explaining language universals (e.g. **Hawkins1988a**; **Good2008**), it has gained considerable ground over the last decade, notably in a series of articles by Cristofaro (e.g. **Cristofaro2012**; 2014; 2017) but also in other publications (e.g. **Creissels2008**; **GildeaZúñiga2016**). Moreover, while the basic thrust of the two explanatory approaches is straightforward, clarification is needed on a number of – equally fundamental – details. After all, both approaches are functionalist in nature, as they rely on domain-general mechanisms (**Bybee2010**) to explain the emergence of language structure and linguistic universals; and in both approaches, these mechanisms constrain how languages "evolve into the variation states to which implicational and distributional universals refer" (**Hawkins1988b**). But as **Plank2007** notes, "what is supposed to be the essence and force of diachronic constraints would merit livelier discussion." It is the goal of the present book to offer precisely a discussion of this kind.

The volume begins with a programmatic paper by **Martin Haspelmath** on what it means to explain a universal in diachronic terms. He aims to clarify how diachrony is involved in result-oriented and source-oriented accounts, respectively, and thus lays out a general conceptual framework for the explanation of universals. At the same time, Haspelmath opens the floor for debating the strengths and weaknesses of the two explanatory accounts at issue here. His own position is that, in many cases, current source-oriented explanations are ill-equipped to truly explain the phenomena they intend to account for, and hence cannot replace result-oriented motivations. Haspelmath's arguments for this position, as well as his terminological proposals, provide a frame of reference to which all other contributions respond in one way or another.

The lead article is followed by two endorsements of source-oriented explanations, articulated by **Sonia Cristofaro** and **Jeremy Collins**, respectively. They both describe the approach in widely accessible terms, allowing also readers outside of linguistic typology to appreciate the general argument as well as the specific examples discussed. The phenomena themselves involve domains that are particularly well-known for being explained in functional-adaptive terms, namely differential argument marking, number marking and word-order corre-

lations, and these are all argued to be best captured by persistence effects from their respective diachronic origins.

We then proceed to papers that allow for progressively more room for functional-adaptive motivations and, importantly, for methodological discussions on how to obtain evidence for such pressures. Accordingly, all of these papers adduce novel empirical data and discuss them in light of the present debate.

Matthew Dryer's paper is an immediate follow-up on Collins' discussion of word-order correlations. On the one hand, Dryer argues that the various correlates of adposition–noun ordering (e.g. OV and NP–P, and Gen–N and NP–P) are, indeed, best accounted for in source-oriented terms. In particular, only this approach proves capable of explaining the occurrence (and the individual semantic types) of both prepositions and postpositions in SVO languages. On the other hand, however, Dryer contends that there are some significant correlations for which a source-based account either fails to offer an explanation or else makes the opposite prediction of the patterns we find synchronically. Dryer concludes, therefore, that neither a purely source-based nor a purely result-based explanation is sufficient to deal with word-order correlations.

In a similar fashion as Dryer's paper, **Holger Diessel**'s article demonstrates that different aspects of the same grammatical domain – in this case adverbial clause combinations – are amenable to different types of explanation. Diessel focuses specifically on the structure and development of preposed adverbial clauses and argues that some of their typological characteristics, notably the properties of their subordinating morphemes, receive a satisfactory explanation in terms of the respective source construction(s), thereby supplanting earlier processing-based explanations. On the other hand, he proposes that the position of adverbial constructions (in general) is clearly subject to a number of functional-adaptive pressures, and that these may already have affected the diachronic sources from which the current preposed adverbial clauses have grammaticalized.

Karsten Schmidtke-Bode offers a review of Hawkins' (2004, 2014) research programme of "processing typology", examining the plausibility of Hawkins' functional-adaptive ideas in diachronic perspective. On a theoretical level, it is argued that a predilection for efficient information processing is operative mostly at the diffusion stage of language change, regardless of the source from which the respective constructions originate. On a methodological level, the paper proposes that the cross-linguistic predictions of Hawkins' programme can be tested more rigorously than hitherto by combining static and dynamic statistical models of large typological data sets; this is demonstrated in a case study on the distribution of article morphemes in VO- and OV-languages, respectively.

An important methodological point is also made by **Ilja A. Seržant**, who claims that certain functional-adaptive pressures may not actually surface in standard typological analysis because they are weak forces, clearly at work but also easily overridden by other, language-specific factors. Because of their weak nature, they may not be directly visible any-more in a synchronic type, but they can be detected in qualitative data from transition phases. Based on diachronic data from Russian, Seržant shows how the development of differential object marking was crucially influenced by considerations of ambiguity avoidance (and hence a classic functional-adaptive motivation), over and above the constraints inherited from the source construction. In the absence of such longitudinal data, transition phases can be identified on the basis of syn-chronic variability, and Seržant shows that a wide variety of languages currently exhibit variation in differential object marking that mirrors the diachronic findings from Russian, and that is not predictable from the source meaning of the marker in question.

Susanne Maria Michaelis adds another source of data to the debate at hand. She argues that creole languages provide a unique window onto the relationship between synchronic grammatical patterns and their diachronic trajectories, as the latter are often relatively recent and also accelerated when compared to normal rates of grammatical change. The developments are, consequently, more directly accessible and less opaque than in many other cases. By inspecting creole data on possessive forms in attributive and referential function (e.g. *your* versus *yours*), Michaelis finds evidence for the development of the same kinds of coding asymmetries that this domain offers in non-contact languages around the world. She proposes that the data are indicative of result-oriented forces that drive diverse diachronic pathways towards the same synchronic outcome. This stance contrasts most explicitly with Cristofaro's, who interprets such situations in exactly the opposite way (i.e. as providing evidence *against* a unifying functional explanation).

Natalia Levshina, finally, adopts an entirely different methodological approach to illuminate the present discussion: In her paper, she showcases the paradigm of artificial language learning, which can be employed to inspect whether users of such newly acquired languages develop performance biases that are in keeping with hypothesized functional principles, such as an increasingly efficient distribution of morphological marking. Her case study clearly demonstrates such biases and discusses where they may ultimately come from, i.e. how they fit into the new conceptual framework of constraints offered by Haspelmath's position paper.

The volume is rounded off by a brief **epilogue** in which **Karsten Schmidtke-**

Bode and **Eitan Grossman** summarize and further contextualize the arguments put forward by the contributors.

Overall, the purpose of the present book is to provide a state-of-the-art overview of the general tension between source- and result-oriented explanations in linguistic typology, and specifically of the kinds of arguments and data sources that are (or can be) brought to bear on the issue. It should be made clear from the outset that the two types of explanation are framed as antagonistic here even though in most cases, an element of both will be needed in order to fully account for a given grammatical domain. As we emphasize in the epilogue, the diachronic source of a grammatical construction certainly constrains its further development, but the major issue at stake here is the extent to which result-oriented, functional-adaptive motivations enter these developments as well. By the end of the day, universals of language structure will thus differ in the *degree* to which they are shaped by such adaptive pressures.

Acknowledgements

Chapter 1

Weak universal forces

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Standard typological methods are designed to test hypotheses on strong universals that broadly override all other competing universal and language-specific forces. In this paper I argue that there are also weak universal forces. Weak universal forces systematically operate in the course of development but then interact with, or are even subsequently overridden by, other processes such as analogical extension, persistence effects from the source function, etc. This, in turn, means that there can be statistically significant evidence for violations at the synchronic level and, accordingly, only a weak positive statistical signal. But crucially, the absence of statistical prima-facie evidence for such forces does not amount to evidence for their absence. The assumption that there are also weak universal forces that affect language evolution goes in line with the view that human cognition in general and language acquisition in particular are constrained by probabilistic biases of different range, including weak ones (cf. **ThompsonEtAl2016**). By way of example, the present paper claims that the discriminatory function of case in differential object marking (DOM) systems is a weak universal: It keeps appearing in historically, synchronically and typologically very divergent constellations but is often overridden by other processes in further developments and is, therefore, not significant at the synchronic level in a large sample.

1 Introduction

In this paper, I adopt a dynamic approach to universals (**Greenberg1978**) and, accordingly, the following definition of a universal:

(1) A dynamic definition of universals
     principled preferences that affect how languages change over time
     (**Bickel2011**).

I conceive of these preferences as statistical tendencies (cf. **Bickel2011**) rather than "inviolable constraints" on language in **Kiparsky2008**. This definition singles out those universals that are not predetermined by the historical origin of the structures in question, thus resembling Haspelmath's "functional-adaptive constraints" on language (**Haspelmath2018** [this volume]). Universal forces of this kind produce structures that occur with "overwhelmingly greater than chance frequency" or "well more than chance frequency" (**Greenberg1963**: 45, 47, *passim*), and they thus allow for exceptions. The number of such exceptions, in turn, is indicative of the *strength* of a universal force.

Strong universal forces reveal themselves as universal on both of the methodological approaches used in typology: on the *static* and on the *dynamic* approach (see **Greenberg1969** for these notions). The former crucially relies on the relative frequency in the synchronic distribution across languages, while the latter is based on the relative frequency of the relevant changes across languages from a proto-stage (STAGE 0) into the synchronic stage (STAGE 1).[1] A typical characteristic of strong universals is that the dynamic and the static evidence for these universals converge. For example, the force that ALL LANGUAGES MUST HAVE VOWELS (**Comrie1989**) finds solid evidence for universality on the static approach, in the sense that one would hardly find a spoken language violating this universal, i.e. a language without any vowels. The dynamic approach will equally show that, despite various language-specific processes such as vowel reduction strategies and even vowel loss, these never succeed to such an extent as to yield a language without any vowel, because no other universal or language-specific force may override this universal force in any type of language change.

Another strong universal – albeit somewhat weaker than the former – concerns inflection: IF THERE IS ANY INFLECTION IN NOUNS, THERE IS ALSO SOME INFLECTION IN PRONOUNS (**Moravcsik1993**; **PlankEtAl2002ff.**). A still weaker universal – a number of exceptions can be found in the literature (cf. **Handschuh2014**) – concerns case marking: IN A LANGUAGE WITH CASE, THE ZERO-MARKED CASE TENDS TO BE THE ONE THAT MARKS THE SUBJECT OF INTRANSITIVE VERBS (**Greenberg1963**).

Thus, there is gradience in the strengths of universals and, accordingly, in the number of exceptions found at STAGE 1 with each universal. By entertaining the idea of gradience a bit further, one may also think of a force that systematically operates in the development of a particular category across languages, i.e. in the transition between STAGE 0 and STAGE 1, and is, therefore, a universal according

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[1]Note that the static approach, too, assumes that the synchronic distributions are the result of diachronic changes that have led to them (cf. **Haspelmath2018** [this volume]). It is, therefore, only methodologically but not ideologically synchronic.

to the definition in (1) above. However, this universal is not strong enough to override competing internal and/or universal forces to remain visible at STAGE 1. A universal of this kind is referred to as *weak universal force*:

(2) Definition of a weak universal force
     A weak universal is a force that systematically exercises an impact in the historical development from STAGE 0 into STAGE 1 in a particular (grammatical) domain; this impact is found across geographic areas and genealogical affiliations in the diachrony with significant frequency, but may be marginal and heavily restricted or not be visible at all in the synchronic layer (STAGE 1).

The synchronic effects of a weak universal force often reside in marginal sub-domains or are overridden altogether by some other, stronger processes (cf. **Bickel2014**: 117). This, in turn, means that there will be a significant number of violations and only a weak positive statistical signal (if at all). As a result, the standard methodologies that rely on the relative frequency in the *prima-facie* data will provide disproof of universality.

To give an example, **Hammarström2015** argues on the basis of 5,230 languages that there is a universal trend for SVO word order across languages (cf. Gell-MannRuhlen2011; **MauritsGriffiths2014**), henceforth, the SVO UNIVERSAL. Having said this, he claims that "the universal is not the only, nor the most important factor" constraining the synchronic distribution; the most important factor responsible for the current distribution is the order of the immediate ancestor, i.e. inheritance. The following figures illustrate this point: SOV is much more widespread than SVO across language families, with 65.1% SOV vs. 16.2% SVO,[2] but a change from SOV to SVO and from VSO to SVO is significantly more probable than the respective reverse changes (**Croft2003**: 234; **MauritsGriffiths2014**). **Hammarström2015** shows that the pressure to retain the inherited word order accounts for 78% of the sample, while the universal SVO accounts for only 14% of the static evidence. The SVO UNIVERSAL is thus a weak universal in the sense that it cannot so easily force a language to change into SVO against the pressure of inheritance.

In what follows, I argue that the *discriminatory function* of flagging is a weak universal despite apparent counterevidence. I illustrate this with qualitative data

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[2]SOV (43.3%) is attested only slightly more frequently than SVO (40.2%) if the genealogical bias is not controlled for (cf. **Dryer2013**). This effect is just due to a few large families with SVO (**Hammarström2015**).

and arguments about how different motivations may lead to a result that is easily misinterpreted if taken at face value. In order to do so, I first introduce the *(global) discriminatory function* and the related phenomenon of *local disambiguation* (§??). §?? exemplifies various differential object marking (DOM) systems and how the discriminatory function interacts with other, stronger forces in each of them. Finally, §?? provides a discussion of the phenomenon of weak universals and conclusions.

2   The (global) discriminatory function

Since a transitive clause has two arguments (A and P), it must be ensured that the hearer will be able to discern which of the arguments should be interpreted as A and P, respectively. Moreover, other potential misinterpretations, such as one NP modifying the other NP – if both are adjacent to each other – or both NPs being coordinated (without a conjunction), should be excluded. There are many ways in which the discriminatory function may be implemented in a particular language or even in a particular sentence, with flagging being one of them:

(3)   Definition of the global discriminatory function of P flagging (economy subsumed)
      In a transitive clause, the A and the P argument must be sufficiently disambiguated, e.g. by word order, agreement, voice, world knowledge, and it is only if they are not that there is dedicated P flagging.

A number of researchers have argued that there is only little or no evidence for (A or P) flagging systems being driven by the discriminatory function as defined in (3) cross-linguistically (*inter alia*, **Aissen2003**; **Malchukov2008**; various papers in de Hoop & de **Swart2008**). Levshina (in prep.) shows on the basis of the large-scale AUTOTYP database that there is no statistically significant effect of the discriminatory function observable for flagging because there are only very few languages in which flagging is primarily driven by the discriminatory function. Sometimes even in these languages, the discriminatory function does not serve the purpose of discrimination between A and P alone: a function inherited from the source construction and often some ongoing conventionalization of the most frequent discrimination patterns override the discriminatory function to various extents.

Having said this, it has been repeatedly suggested that flagging might also serve the discriminatory function, especially if A and P have similarly ranked input (cf., *inter alia*, **Comrie1978**, 1989; **Dixon1994**; **Silverstein1976**; **Kibrik1997**).

Bossong1985 even assumed that the emergence of DOM is primarily due to the discriminatory function. In the following section, I follow this line of thinking and provide qualitative evidence for the claim that the discriminatory function does operate across genealogically and areally diverse DOM systems and is therefore a universal according the definition given in (1). However, it is not a typical universal in that its impact is mostly weakened by other competing processes to which it is subordinate, the effect being that there is only marginal evidence for it at the synchronic STAGE 1.

3 Evidence from DOM systems

Consider the DOM system of the rural variety of Donno Sɔ, as described in **Culy1995**. The DOM suffix *-ñ* marks human and often animal-denoting pronouns and nouns if the latter are definite:

(4) Donno Sɔ (Dogon: Mali; **Culy1995**: 48)
    Anta-ñ   ibɛra   yaw   aa   bem.
    Anta-DOM market.LOC yesterday see.PTCP AUX.1SG
    'I saw Anta at the market yesterday.'

(5) Donno Sɔ (Dogon: Mali; **Culy1995**: 48)
    Jalɔmbe   izɔmbe-ñ   keraa   biyaa.
    donkey.DEF.PL dog.DEF.PL-DOM bite.PTCP AUX.3PL
    'The donkeys bit the dogs.'

In contrast, neither indefinite animates nor inanimate definites are marked. We observe that at least two referential scales are simultaneously operating here:[3]

(6) Animacy scale
    human > animate > inanimate

(7) Definiteness scale
    definite > specific > indefinite

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[3]In this paper I do not make any assumptions about the nature of referential scale effects: whether they stem from generalizing the most frequent patterns conditioned by the discriminatory function (cf. **Aissen2003**) or from the source (i.e. from topics, cf. **DalrympleNikolaeva2011**), or are language-specific (**BickelEtAl2015**), or whether they represent an independent phenomenon *sui generis*, is irrelevant here.

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Superficially, the discriminatory function does not seem to apply in this language since scale effects from (6) and (7) predominate: all animate and definite NPs are marked regardless of whether they really need to be globally disambiguated or not. However, the animate indefinite NPs that are not (yet) affected by the scale effects do show the operation of the discriminatory function. With these NP types, the DOM marker may be employed to discriminate between A and P in a particular utterance (cf. the Disambiguation Principle in **Culy1995**: 52). For example, when both the object and the subject NP are indefinite and animate and there are no other clues how to discriminate between A and P, the DOM marker may be employed "against" the force of marking definite animates only:

(8)   Donno Sɔ (Dogon: Mali; **Culy1995**: 53)
      Wɛzɛwɛzɛginɛ yaana   po-ñ   don   wo mɔ ni tɛmbɛ.
      crazy.person   woman large-DOM place 3SG PS at found
      'A crazy person found a large woman at his/her place.'

In this example, both indefinite NPs 'a crazy person' and 'a large woman' may potentially be interpreted as A (**Culy1995**). Therefore, the DOM marker -*ñ* is used here to unequivocally mark the syntactic role of 'a large woman'. The discriminatory function is the weakest among other forces here (**Culy1995**) because it applies in a way exceptionally by constraining only one slot on the referential scales in (6) and (7): the indefinite animate P. In accordance with **Culy1995**, one can thus posit the following forces and their relative weight (from the strongest to the weakest):

(9)   The relative weight of the main forces on DOM in Donno Sɔ (and
      Malayalam, see below)
      animacy scale + definiteness scale > discriminatory function

Another important observation can be made here. Notice that the slot on the referential scales in (6) and (7) that is open for the application of the discriminatory function is immediately next to the slots that require rigid marking. I interpret this in the following way. In their historical developments, many DOM systems extend the DOM markers gradually from left to right on referential scales such as (6) and (7) (cf. **DalrympleNikolaeva2011**). For example, many languages start with a DOM system that applies only to animate nouns but then gradually extend the DOM marker onto inanimate nouns as well. Note that very often the difference in meanings between the two neighbouring slots on a referential scale is quite substantial and is certainly not graspable in terms of semantic extension.

For example, the expansion of the DOM marker *-rā(y)* from mostly animates in Middle Persian (**Key2008**: 244; cf. also **Paul2008**: 152–153) to the inclusion of inanimates in Modern Persian is not semantically straightforward, since the two are rather antonymic in meaning. I suggest that it is precisely the discriminatory function that is responsible for the expansion of the DOM marker into the next slot on the scale because the discriminatory function is not dependent on the lexical meaning of the noun in the same way as, for example, the animacy scale. The discriminatory function then applies to the next slot until that slot also becomes conventionalized, and so on.

A constellation very similar to Donno Sɔ is found in Malayalam (Dravidian). The Accusative marker *-(y)e* is regularly used with animate specific object referents but is normally ungrammatical with inanimate referents:

(10) Malayalam (Dravidian: India; **AsherKumari1997**: 204)

Tiiyyə   kuʈil   naʃippacu.
fire.NOM hut.NOM destroy.PST

'Fire destroyed the hut.'

However, in one special case, it may be used on inanimate referents as well, i.e. precisely when there is no other way to (globally) discriminate P from A (**AsherKumari1997**: 204, cf. **Stiebels2002**: 16; Subbārāo 2012: 174–176):

(11) Malayalam (Dravidian: India; **AsherKumari1997**: 204)

a.   Kappal   tiramaalakaḷ-e bheediccu.
ship.NOM wave.PL-ACC(=DOM) split.PST

'The ship broke through the waves.'

(12) b.   Tiramaalakaḷ   kappal-ine bheediccu.
wave.PL ship-ACC(=DOM) split.PST

'The ship broke through the waves.'

As in Donno Sɔ above, the discriminatory function becomes visible only in those slots on the referential scales that are not (yet) affected by the scale effects. While in Donno Sɔ the indefinite animate slot became available for the discriminatory function, it is the inanimate slot (both definite and indefinite) in Malayalam. The relative weight of the discriminatory function of the DOM marker in Malayalam is lower than the effect of the referential scales, cf. (9) again.

Crucially, if one were to superficially evaluate whether or not the discriminatory function operates in Donno Sɔ or Malayalam, one would have to conclude

that it does not, because of the rigid marking of animates (definite animates in Donno Sɔ) and the rigid zero with inanimates. Thus, from the perspective of the discriminatory function, utterances like (4) redundantly mark their objects; conversely, examples such as (10) are economical but equally violate the discriminatory function since same-rank A and P are not disambiguated. I summarize:

(13) The relative weight of the main forces in DOM in Donno Sɔ and Malayalam
      animacy scale + definiteness scale > economy > discriminatory function

Catalan is another example of this pattern. Here, the DOM marker *a* is obligatory only for strong (non-clitic) personal, relative and reciprocal pronouns in the non-colloquial register (cf. Escandell-**Vidal2009**). Thus, the DOM marker of Catalan is primarily conditioned by the parts-of-speech scale: Pronouns are marked while other NPs are unmarked:

(14) Parts-of-speech scale
      (independent) pronouns > nouns

However, the DOM marker may exceptionally appear also with definite animate NPs in the contexts of subject–object ambiguity (**WheelerEtAl1999**: 243):

(15) Catalan (Romance: Spain; **WheelerEtAl1999**: 243)
      T'estima   com a   la   seva   mare.
      2SG.OBJ=love.PRS.3SG like DOM DEF.F 3SG.F.POSS mother
      'She loves you like (she loves) her mother.'

Again, the discriminatory function is subordinate to the parts-of-speech scale (13). It may only exceptionally violate the cut-off point between pronouns and nouns on this scale that is otherwise rigid in this language. Additionally, the animacy scale (6) and definiteness scale (7) apply in that they determine the NP type for which the discriminatory function may operate: the discriminatory function can only operate on definite animates but not on inanimates or indefinites in this language. I summarize:

(16) The relative weight of the main forces in DOM in Catalan
      parts-of-speech scale > animacy + definiteness scale > discriminatory function

The situation in Spanish is somewhat different but largely analogical. Animate and specific NPs must be marked while inanimate and/or non-specific NPs must

remain unmarked. However, the DOM marker *a* is obligatory in certain contexts of disambiguation, even with inanimate NPs:

(17)   Spanish (Romance: Spain; von **HeusingerKaiser2007**: 89)

En esta receta, la   leche puede sustituir **a**=l   huevo.
in   DEM recipe DEM milk   can   replace   DOM=DET egg

'In this recipe egg can replace the milk.'

We observe the same constellation here: the discriminatory function is subordinate to the effects of referential scales.

Another example is the DOM marker *-ăn* in Hup (Nadahup). It is obligatory with definite animates (including pronouns) as well as with the plural collective marker =*d'əh* (**Epps2008**: 170–177). At the same time, the DOM marker *-ăn* may be used with indefinite animates to discriminate the P argument from A (**Epps2009**). Consider the following example, in which the A argument is left out because it is non-referential:

(18)   Hup (Nadahup: Brazil/Columbia; **Epps2009**: 95)

Húp-ăn   tə´w-ə´y, húp-ăn   dóh-óy.
person-DOM scold-DYN person-DOM curse-DYN

'(Some people) scold people, cast curses on people.'

The P argument is not referential either, let alone definite. Since it is indefinite, it should not be marked. However, in order to discriminate the P argument from a possible misinterpretation as A, the object marker is used here (**Epps2009**). Again, the discriminatory function is weak because it is subordinate to the referential-scale effects which primarily determine the slots in which the discriminatory function may apply (e.g. on inanimates or indefinites or non-referential NPs, etc.). The relative weight of these is the same as in Catalan in (15) above.

The subordinate discriminatory function is found in other Nahadup languages as well. For example, the object marker *-ĩːyʔ* in Dăw accompanies topical objects but it may also be used for the discriminatory function (**MartinsMartins1999**: 263–264).

Similarly, the Papuan language Awtuw obligatorily marks all pronominal and proper-name direct objects regardless of whether there is a need for discrimination or not:

(19) Awtuw (Sepik: Papua New Guinea; **Feldman1986**: 109)

*Wan rey   du-k-puy-ey.

1SG   3M.SG FA-IPFV-hit-IPFV

[Intended meanings] 'I'm hitting him.' / 'He's hitting me.'

In addition, overt definiteness – marked either by a demonstrative or a possessor NP – has the tendency to attract object marking regardless of the context (**Feldman1986**: 109–110). By contrast, the marking of common nouns is optional. In case of ambiguity it becomes obligatory, or else the NPs will be interpreted as conjoined (**Feldman1986**):

(20) Awtuw (Sepik: Papua New Guinea; **Feldman1986**: 109)

  a. Piyren-re yaw di-k-æl-iy.

   dog-DOM pig FA-IPFV-bite-IPFV

   'The pig is biting the dog.'

(21) Piyren yaw di-k-æl-iy.

   dog   pig FA-IPFV-bite-IPFV

   'The dog and the pig bite.' / *'The pig is biting the dog.' / *'The dog is biting the pig.'

The situation in Awtuw is slightly different from the one found in the languages above: the slot affected by the discriminatory function (common nouns) already allows for the overt marking; the discriminatory function turns the marking in a particular utterance from optional into obligatory for this particular interpretation.

The prepositional DOM marker *bǎ* of Chinese primarily occurs before animate, definite or, rarely, indefinite specific preverbal object NPs while postverbal objects are never marked with it (**LiThompson1981**; **Bisang1992**: 158–159; Yang & van **Bergen2007**):

(22) Chinese (Sinitic: China; **LiThompson1981**: 464)

   Tā bǎ   fàntīng   shōushi gānjing le.

   3SG DOM dining.room tidy.up   clean   PFV

   'S/He tidied up the dining room.'

The discriminatory function as defined in (3) above is not relevant in (20). In addition to the general SVO and S *bǎ* OV word orders, Chinese also allows for OSV with topical objects and prominent subjects, cf. (21):

(23) Chinese (Sinitic: China; **Bisang1992**: 158)

Chinese

    a. Láng Mary chī-le.
       wolf Mary eat-PFV

       'Mary ate the wolf.'

    b. Láng bǎ Mary chī-le.
       wolf DOM Mary eat-PFV

       'The wolf ate Mary.'

To force the interpretation of (21) with SOV, the *bǎ* marker has to be used in order to disambiguate the referentially more prominent NP (*Mary*) as P (cf. **Bisang1992**: 158). Again as in the examples above, the DOM system of Chinese is primarily driven by the cut-off points on referential scales (definiteness, animacy) and some other strong rules pertaining to affectedness, aspectuality and the "disposability" of the object referent (cf. **LiThompson1981**). Some of these functions are most probably inherited from the source, such as the requirement on disposability or the preverbal position, which may be explained as the retention of the properties of the source construction.[4] The discriminatory function is thus again limited to a particular constellation of (21) in which the source function, referential scale effects and other forces allow it to operate.

The discriminatory function in Mam (Mayan) is carried out by the obligatory cross-referencing of both A and P on the verb; no flagging is involved. By contrast, the Antipassive form of the verb does not allow for cross-referencing the P argument, which is regularly marked by the preposition / relational noun *-iʔj* 'about' or *-ee* (dative, beneficiary) (**England1983**):

(24) Mam (Mayan: Guatemala; **England1983**: 213)
    ma ø-tzyuu-n Cheep *(t-iʔj) xiinaq
    REC 3A-grab-ANTIP Jose *(3SG-RN) man

Mam

    'Jose grabbed the man.'

However, "if there is no confusion as to which noun phrase is the agent and which is the patient" the relational noun may be omitted in order to code the meaning of an unintentional act (**England1983**):

(25) Mam (Mayan: Guatemala; **England1983**: 212—213)

Mam

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[4]The *bǎ* marker stems from the lexical verb 'to hold' in a serial verb construction (**Sun1996**: 61–62).

a. Ma ø-tzyuu-n   Cheep t-iʔj   ch'it.

   REC 3A-grab-ANTIP Jose   3SG-RN bird

   'Jose grabbed the bird.'

b. Ma ø-tzyuu-n   Cheep ch'it.

   REC 3A-grab-ANTIP Jose   bird

   'Jose unintentionally grabbed the bird.'

The discriminatory function thus delimits the range of the input with which unintentional acts can be expressed (in the Antipassive). In other words, the discriminatory function of flagging is found in a very small subdomain of the language, i.e. in the unintentional use of the Antipassive.

A somewhat different constellation is found in Tamasheq (Berber). The marker *na* (*ná, nà* depending on the dialect and tone sandhi) occurs only in SOV word order – never in SVO or VSO – and only if there is no verb inflection (Perfective Indicative), i.e. when no disambiguation via indexing is possible (**Heath2007**: 92, 94).[5] Moreover, both arguments must be expressed overtly. For example, the marker cannot be used in the imperative with the subject dropped (**Heath2007**: 92–93). These requirements suggest that the marker is conditioned by the discriminatory function:

(26)   Tamasheq (Afro-Asiatic, Berber: North Africa; **Heath2007**: 91; glosses

`Tamasheq`   adapted)

     Hàr-òó   nà   háns-òò   kárú.

     man-DET.SG DOM dog-DET.SG hit

     'The man hit the dog.'

Without *nà*, both NPs may be misinterpreted as either a compound or as a possessor phrase 'the man's dog' (**Heath2007**).

Moreover, some Mande languages such as Soninke, Bambara, Wan or Songhay languages of the area also have similar markers that primarily fulfil the discriminatory function of unambiguous identification of the subject and the object in a clause (**Heath2007**; **CreisselsDiagne2013**; **Nikitina2018**). While Tamasheq, similarly to many Central Mande languages, has generalized the marker, extending it onto all SOV utterances, Wan (South-eastern Mande) employs the marker

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[5]It is referred to as a "bidirectional case marker" in **Heath2007** as well as in the descriptions of some Mande languages, cf. **Diagana1995**, **Nikitina2018**. Bidirectional case markers cannot be straightforwardly related to either A or P marking since they occur only when both are present and do not show any phonetic or syntactic fusion effects. Note that bidirectional case markers are treated under the heading of differential argument marking, cf. **Nikitina2018**.

laa predominantly only in those input configurations which are in need of disambiguation given SOV: The marker is used with nominal A and pronominal P (62%) but not with pronominal A and nominal P (0%) (**Nikitina2018**). In contrast to the languages discussed above, in these languages the discriminatory function is somewhat stronger, as it applies across the board under SOV. Analogically, the DOM marker is optional in the most frequent SOV word order in Korean but becomes almost obligatorily when the object is preposed (OSV) (**AhnCho2007**).

At least two Loloish languages (Tibeto-Burman) also attest a strong discriminatory function that is not subordinate to some other force. The direct-object markers *tʰaʔ* in Lahu and *tʰie* in Lolo are only used if the context does not help to discriminate between A and P. That is, these markers code direct objects only where the inherent semantics of the participants (such as animacy) and the semantics of the event fail to do so:

(27) Yongren Lolo (Tibeto-Burman, Loloish: China; adapted from **Gerner2008**: 299)[6]

ŋo ɕɛmo tʰie ʈʂɔ   ʑi.
1SG snake DOM follow go

'I will follow the snake'

(28) Yongren Lolo (Tibeto-Burman, Loloish: China; adapted from **Gerner2008**: 300)

Sɨka tʰie χekʰɯ ti   na.
tree DOM house smash broken

'The house smashed the tree.'

The absence of the Accusative marker would not be ungrammatical but would create ambiguity as to who is following whom in (25) or what is smashing what in (26) (**Matisoff1973**: 156; **Gerner2008**). However, along with the synchronically primary function of discriminating P from A (and also R from A), this marker also has the diachronically primary function of coding contrastive focus (**Gerner2008**: 298–289). For example, (27a) cannot be used with the DOM marker *tʰie* because of the lack of a focal contrast. By contrast, (27b) is acceptable with it if the numeral is interpreted as bearing contrastive focus (**Gerner2008**):

(29) Yongren Lolo (Tibeto-Burman, Loloish: China; adapted from **Gerner2008**: 299)

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[6]I simplified the transliteration and slightly adjusted the glossing of all examples from **Gerner2008**.

a. Bɔlu mɔlu   tsɨ   ɔ.
   Bolu trousers wash PRF
   'Bolu washed trousers.'

b. Bɔlu mɔlu   sɔ   khə tʰie tsɨ   ɔ.
   Bolu trousers NUM.3 CLF DOM wash PRF
   'Bolu washed THREE pairs of trousers [not just TWO].'

Importantly, (27b) may at first glance be interpreted as counterevidence to the discriminatory function because A and P are sufficiently disambiguated by the lexical meanings anyway. Hence, the marking is not due to the discriminatory function. I claim that this is not a piece of counterevidence for the hypothesis of a weak discriminatory function. It may only count as counterevidence for the strong hypothesis of the discriminatory function being the only force constraining DOM (which is counter-intuitive anyway). The source function of marking contrastive focus overrides the discriminatory function here. A situation where various new and inherited functions cluster on one marker is typical of many grammatical categories (cf. **Hopper1991**: 22). For example, if an indefinite article does not mark plural indefinite NPs but only singular ones, this cannot be taken as counterevidence for its being an indefinite article. A more plausible account is that the restriction to the singular is just the impact of the source meaning.

Another similar DOM system is the one of Khwe. In this language, proper names must obligatorily be marked with *à/-à*; additionally, this marker encodes contrast and/or focus on the NP (Kilian-**Hatz2006**: 82–83). At the same time, the marker may also be used in contexts in which the distinction between subject and object would have been impeded, for example, when both arguments are animate and topical (Kilian-**Hatz2006**: 82–83):

(30)   Khwe (Khoe: Southern Africa; adapted from Kilian-**Hatz2006**: 83)

a. Tcá   tí   à   kxʼóã́.
   2SG.M 1SG DOM wait
   'You have to wait for me!'

b. Yàá! Cáò   à   tí   kyá-rá-hã̄!
   yes   2DU.F DOM 1SG love-ACT-PST
   'That's it! I love you two (women)!'

Further examples may be added. For example, the DOM marker *-m* in Imonda (Papuan) is used obligatorily with some verbs such as *eg* 'to follow' or *hetha*

'to hit' as well as with others to denote something like resultativity ("directionality") of the action (**Seiler1985**). However, in addition to that, the marker may also serve to disambiguate Ps from As when both have similar-rank input (**Seiler1985**). Furthermore, DOM in Guaraní is primarily conditioned by animacy, definiteness and topicality but it may also marginally fulfil the discriminatory function (**Shain2009**: 89–92). In Telkepe (Semitic, Aramaic), the new object marker *ta* may be employed in those situations where agreement alone does not provide for disambiguation while it is otherwise heavily constrained by its meaning of marking topics (**Coghill2014**). Finally, **KurumadaJaeger2015** show for Japanese that, in addition to animacy, disambiguation also triggers the DOM marker *-o* (see also **FedzechkinaEtAl2012**).

The discriminatory function may help to explain the world-wide distribution of DOM, namely, why there are more animacy-driven DOM systems than those driven by definiteness and/or specificity across languages. Thus, in a large-scale typological study by **Sinnemäki2014**, roughly 39% of DOM systems are conditioned by animacy, while DOM systems conditioned by definiteness/specificity are areally biased towards the Old World and occur less frequently (34% of his sample). I claim that the reason for this is that animate referents are much more strongly associated with the A role than definite/specific referents. Hence, there is a more urgent need with animate than with definite referents for the discriminatory function to apply. A number of corpus studies from various languages show that only animacy shows reversed association tendencies with A and P such that As tend to be animate while Ps tend to be inanimate; by contrast, both As and Ps – with minor differences – tend to be definite and/or specific (**Dahl2000**; **Hofling2003**; **Everett2009**; **FauconnierVerstraete2014**).

Finally, there is neurolinguistics evidence for the discriminatory function, suggesting that A and P are not treated symmetrically by the processor. Instead, Bornkessel-**SchlesewskySchlesewsky2015** claim that the effects they observe cannot be explained by simply arising from the degree of semantic associations for the A or P role. Rather, both arguments are interpreted relatively to each other (Bornkessel-**SchlesewskySchlesewsky2015**: 336). Analogically, **KurumadaJaeger2015** found in their psycholinguistic study on DOM in Japanese that just the properties of the arguments are insufficient to explain the results of their experiments and that the case-marking is affected by the plausibility of role assignment given both arguments and the verb (2015: 161; cf. also **AhnCho2007**; **FedzechkinaEtAl2012**).

Above I have argued that the global discriminatory function as defined in (3) is found to operate in many diverse languages. Moreover, I have found that it is most frequently the weakest force alongside other forces, such as referential

scale effects (based on animacy, definiteness or parts of speech) or the source meaning (focus, topic, etc.). All these forces constrain the DOM systems at the same time. The weakness of the discriminatory function is not correlated, I claim, with scarce attestation across languages. On the contrary, I suspect that its impact could be found across most of the DOM systems if one took a closer look at the historical developments and if the synchronic descriptions were more detailed.

The context-dependent, global discriminatory function in (3) is relatively costly because it requires whole-utterance planning and online decision making on the part of the speaker. It is costly for the hearer as well since ambiguous NPs (e.g. German *die Frau* 'DET.NOM=ACC woman') – if placed clause-initially – can only be interpreted by the hearer once enough context has been provided, and not incrementally (Bornkessel-**SchlesewskySchlesewsky2014**: 107). It is perhaps for this reason that the global discriminatory function often develops into what may be called a *local discriminatory function* (cf. **Aissen2003**; **ZeevatJäger2002**; **Jäger2004**; **Malchukov2008**: 208, 213). By virtue of the *local discriminatory function*, the NP is disambiguated as A or P immediately and regardless of whether the whole utterance might make disambiguation redundant. The local discriminatory function is more efficient because it allows for more reliable incremental processing of the utterance. The degree of efficiency and processability, in turn, correlates with the strength of a force (**Hawkins2014**: 60, 69). This is why the global discriminatory function (cf. (3)) is a weak force and its effects tend to be generalized over diachronically, for example, by conventionalizing the flagging on those NP types that tend to be disambiguated most frequently or, alternatively, by conventionalizing the marker in those constructions that require disambiguation most frequently (such as SOV in Tamasheq).

A number of languages have undergone this change towards local disambiguation. I illustrate this with the development of DOM in Russian. I base my argumentation on the philologically profound evidence from Krys'ko (1994; 1997).

Old Russian inherited from Proto-Slavic the emergent DOM system that evolved in the following way. The direct object was marked by the Accusative case in affirmative clauses and by the Genitive case in clauses with predicate negation. Already during the Proto-Slavic period, the Genitive started penetrating into affirmative transitive clauses (**Klenin1983**). The reason is that, under predicate negation, the Genitive no longer carried any functional load but became just a purely syntactically conditioned rule.[7] The Genitive was thus just another way of marking direct objects (when the predicate was negated) alongside Accusative.

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[7]Originally it had an emphatic function similarly to double negation in, for example, French, cf. Kuryłowicz (1971).

At the same time, due to the overall loss of all word final consonants, the old Accusative and Nominative markers became phonetically indistinguishable in the singular in most of the Proto-Slavic declensions and, subsequently, turned into zero (Table 1):

Table 1: Phonetically driven conflation of the old Accusative with the old Nominative in most of the declensions (cf. **Arumaa1985**: 130)

	Proto-Slavic Nominative	Proto-Slavic Accusative	Resulting form Accusative = Nominative
u-declension	*-us*	*-um*	> *-u* > -ъ > ø
i-declension	*-is*	*-im*	> *-i* > -ь > ø
o-declension	*-os* > *-us*	*-om* > *-um*	> *-u* > -ъ > ø
jo-declension	*jos* > -jus*	*jom* > -jum*	> *-ju* > *-jъ* > ʲъ > ʲø

The new DOM marker – i.e. the Genitive case – replaced the old (zero) Accusative only on animate nouns and some pronouns. Importantly, only those animate nouns and pronouns were affected which belonged to the declension classes that did not differentiate between the Nominative and the Accusative anymore (cf. Table 1). Thus, the expansion of the new DOM marker (Genitive) was crucially conditioned by the local discriminatory function alongside the animacy scale (Krys'ko 1995).

The evidence for this is abundant: (i) The Genitive did not replace the old Accusative in the *a*-declension because, in this declension, the old Accusative (-ǫ > -u) had not become indistinguishable from the Nominative (-a) due to nasalization of the former. (ii) The first NP types affected were proper names while personal pronouns generally remained unaffected to begin with, which is atypical of DOM systems that tend to expand along the referential scales.[8] The reason for this is that personal pronouns had not undergone the phonetic conflation of the Nominative (cf. *azъ* '1SG.NOM') and the Accusative (cf. *mę* '1SG.ACC') and hence were not in need of disambiguation. (iii) The plural of the *o*-declension – in contrast to the singular – did retain the phonetic distinction between the old

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[8]There are no unambiguous Genitive forms of pronouns in the position of a direct object in Early Slavic (**Meillet1897**: 84, 97; **Vondrák1898**: 327; Krys'ko 1994: 128). Following Meillet, Kuryłowicz (1962: 251) concludes that chronologically, the Accusative-from-Genitive with personal pronouns must be later than with animate masculine nouns.

Accusative (-*y*) and the old Nominative (-*i*) and thus the old Accusative was not replaced by the new DOM marker here. Only later, between the 14th and 16th c., were both the old Accusative plural and the old Nominative plural conflated into -*y*. Precisely from this period onwards, the new DOM marker (Genitive plural) started to be used instead of the Accusative in the plural (Krys'ko 1994: 144). (iv) The third person pronoun *j*- did not have a Nominative form in Early Slavic (various demonstratives were used instead here). Hence, there was no need for disambiguation; Although the form *ji* itself would have been morphologically ambiguous between the Nominative and Accusative, it was reserved for the Accusative only. This pronoun acquired the new DOM marker much later than the relative pronoun *ji-že* (both are etymologically related). Since the relative pronoun *ji-že* did have both the Nominative and the homophonous Accusative forms, it acquired DOM very early. (v) Finally, as Krys'ko (1993) shows, the conflation of the old Nominative with the old Accusative took place much later in the Old Novgorodian dialect, because the latter retained the dedicated Nominative form -*e* in the *o*-declension, as opposed to the old Accusative (-ъ > ø). The erstwhile retention of the dedicated Nominative affix guaranteed the distinction between A and P and hence no DOM was needed until the Nominative affix disappeared in this dialect, too.

In all instances in which either the Accusative or the Nominative was not zero or the Nominative did not exist at all, the new DOM marker was introduced much later or not all. It was precisely the Nominative-Accusative syncretism, i.e. the indistinguishability of A and P, that triggered the introduction of the new DOM marker. This relative chronology of the expansion of the Genitive to different NP types suggests that the discriminatory function was the crucial trigger conditioning it (first in **Dobrovsky1834**: 39; Krys'ko 1994: 156; **Tomson1908**, 1909). Although there is no direct evidence for the global discriminatory function as in (3), the consistent application of local disambiguation in different nominal and pronominal classes might suggest that there was a development from global to local disambiguation by means of conventionalization.

The domain of the discriminatory function was determined by a language-specific phonological process, namely, the loss of word-final consonants: Only those declensions were affected which had undergone the phonetic conflation of the old Nominative and Accusative. I conclude that the following forces were crucial in the development of Russian DOM (alongside some others such as analogical levelling):

(31) The relative weight of the main forces in the development of DOM in Russian

> complete loss of word-final consonants > discriminatory function >
> animacy scale

It is clear that the complete loss of word-final consonants was a stronger force in Proto-Slavic than the discriminatory function because otherwise the latter would have blocked the former. Crucially, the resulting synchronic picture – if looked at superficially – clearly violates the animacy scale and the global discriminatory function as in (3). While some declensions distinguish between animate and inanimate nouns by means of the new DOM marker, other declensions do not have this distinction and mark animate and inanimate Ps indistinguishably.

4 Discussion and conclusions

In this paper I have taken a dynamic perspective on the development of DOM systems. I have provided qualitative evidence from a number of areally and genealogically unrelated languages for the claim that the discriminatory function of case keeps appearing in the diachrony of DOM systems in various subdomains and/or leaves behind traces in the form of local disambiguation. Importantly, the discriminatory function is not dependent on the respective historical source of the DOM marker and its particular developmental path. It is only the range of its application in a particular DOM system that is indeed very much constrained by the source meaning of the marker and/or by scale effects. Even scale effects themselves are sometimes just a strong residual of the source meaning of the DOM marker. For example, DOM markers of many languages (Persian, Romance, Kanuri, etc.) stem from topic markers (cf. **Iemmolo2010**; **DalrympleNikolaeva2011**; see also **Cristofaro2018** [this volume]). In other instances, the scales are epiphenomenal, as they represent conventionalizations of the most frequent patterns originally conditioned by the discriminatory function (e.g. in Russian).

Thus, the discriminatory function is frequently subordinate to other, stronger pressures, foremost the source meaning of the relevant marker. In addition, pressures like paradigmatic levelling (cf. **Jäger2007**: 102) or analogical extension play a role in individual systems. Even those DOM systems which are primarily conditioned by the discriminatory function synchronically (such as the one of Yongren Lolo) never have the discriminatory function as the only constraint. I conclude that – even though recurrent from language to language in the transition – the discriminatory function is not strong enough to resist competition with other forces.

But what conditions the power of the discriminatory function in a particu-

lar DOM system? The degree to which the discriminatory function is found to operate synchronically in a particular DOM system or subsystem sometimes correlates positively with how recent the DOM (sub)system is in the language. Thus, the evidence for the discriminatory function is most clearly found in those DOM (sub)systems that emerged relatively recently. For example, the use of the marker *laa* in Wan (South-eastern Mande) to discriminate between A and P is a very recent phenomenon, while its original function was one of marking the focus and the focused agent in a perfect-passive-like construction (**Nikitina2018**). In Wan, it is the whole system of differential marking that is recent (**Nikitina2018**). In Spanish, only the subsystem of definite inanimate NPs, as in (16), has recently been affected by DOM (inanimates are not affected by DOM in Old Spanish). It is this slot where the discriminatory function is found to operate occasionally. But differential object marking as such is quite an old phenomenon in this language.

By contrast, in older DOM systems, the effects of the discriminatory function tend to conventionalize to replace context-dependent rules that are much costlier in processing. The DOM marker is generalized in those contexts that were most frequently in need of global disambiguation. The generalization may proceed (i) along particular NP types or (ii) along particular constructions / word orders. For example, (i) Catalan generalized the DOM marker with personal pronouns regardless of whether there was a need for disambiguation or not in a particular utterance. By contrast, (ii) many Mande languages, Songhay and Tamasheq (Berber) generalized the marker in the APV (SOV) word order with no auxiliaries intervening between A and P in constructions requiring both overt A and P. These were precisely those contexts in which the distinction between A and P was particularly blurred. By contrast, the imperative does fulfil the discriminatory function, albeit in a different way: The sole NP that is expressed overtly is the P argument, while A is dropped. Hence, there was no need for a distinction between A and P by means of flagging here.

There are other types of bivalent constructions, such as equative constructions or comparative constructions, which are also sometimes constrained by the discriminatory function in order for the hearer to coherently process them. Unfortunately, they have never been considered in the general discussion on the discriminatory function of flagging, probably because the conventionalization processes involved here do not proceed along the same scales as the prototypical transitive constructions. However, this effect is certainly just due to different semantic expectations, e.g., as to the standard of comparison and the comparee in the comparative construction, than in a prototypical transitive construction.

Furthermore, the discriminatory function of flagging is found to apply in ditransitive constructions of some languages in order to distinguish between A and R, which have similar semantic entailments and thus often do not provide for sufficient cues for the correct interpretation themselves.

In more general terms, I have argued for the existence of weak universals – a type of universal force that applies across different languages and language families but which is not strong enough to prevail into the synchronic STAGE 1. I claim that the (global) discriminatory function of flagging is a weak universal. This claim is supported by neurolinguistics and psycholinguistic evidence which suggests that both arguments are interpreted relatively to each other and cannot be reduced to the degree of semantic association of each argument with the role it bears (Bornkessel-**SchlesewskySchlesewsky2015**: 336; **AhnCho2007**; **FedzechkinaEtAl2012**; **KurumadaJaeger2015**).

Its weakness is possibly motivated by a higher processing load (cf. **Hawkins2014**: 60, 69) as compared to local disambiguation: it requires pre-planning of the whole clause by the speaker and hinders incremental processing by the hearer. By contrast, local disambiguation is straightforward and may be processed incrementally without "having to wait" until sufficient context is provided (cf. Bornkessel-**SchlesewskySchlesewsky2014**: 107). This is why patterns produced by the (global) discriminatory function often become conventionalized (cf. **Aissen2003**; **ZeevatJäger2002**; **Jäger2004**; **Malchukov2008**: 208, 213).

The concept of STRENGTH OF UNIVERSALS, in particular, of weak universals, is relatively new to linguistics (though see **Bickel2013** for some discussion). However, it ties in with the insight that human cognition in general and language acquisition in particular are better characterized by probabilistic biases or constraints ranging from weak to strong (cf. **ThompsonEtAl2016**). Moreover, it seems that very strong (absolute) universals have a different motivation than weak universals. The former may indeed reflect some innate properties of human beings, as suggested by nativists (cf. **Chomsky1965**), though not necessarily domain-specific properties. For example, the universal that all languages must have vowels (**Comrie1989**) is a very strong, probably, absolute universal. It seems likely that it is caused by innate properties of the human articulatory (and auditory?) apparatus. By contrast, weak universals are rather motivated by cultural evolution, for example, by the strive towards efficient communication between individuals (**Haspelmath2018** [this volume]).

Weak universals constitute a number of challenges for typological research. While strong universals override all potentially competing pressures and can thus be detected by relatively simple techniques, weak universals enter into com-

petition with both other functional motivations as well as language-specific factors, not least the source meaning of the relevant marker (cf. **Cristofaro2012**, 2017; **Hammarström2015**). The only way of modelling this adequately is a fine-grained competing-motivations account (cf. **Haiman1983**; Du **Bois1985**; **Croft2003**: 59; **Bickel2014**: 115; **Hawkins2014**: 60, 69; *pace* **Cristofaro2018** [this volume]).[9] For the same reason, weak universals also pose a methodological problem for typological testing for universality, even on the dynamic approach that relies on the transition from STAGE 0 into STAGE 1. Dynamic methods based on transitional probabilities do take into account one of the competing motivations, namely, the impact of inheritance (transitional probabilities are measured given the original state, i.e. STATE 0). However, many other factors that may influence the probability of change towards a particular pattern are glossed over on this approach as well. Finally, weak universals raise an important question about the nature of evidence in typology. Traditionally, typologists have been interested in defining what qualifies as positive evidence. Statistically significant signals that are due to the common genealogical or areal relationships of the languages of the sample have been ruled out as not offering positive evidence for universality. Other types of signals that may not count as positive evidence, such as same-source constructions, have also been identified (cf. **Cristofaro2017**; **Collins2018** [this volume]). At the same time, a definition of what really counts as negative evidence, i.e. the proof of absence, is missing. As was argued in this paper, a random distribution in the sample given coarse data mining methods without taking the dynamic and historical evidence into account, might not be sufficient. This is problematic because, intuitively, it seems probable that strong universals are only the tip of the iceberg, not being numerous in number, while many more universals are rather weak universals of the type investigated here.

Acknowledgements

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[9]In contrast to optimality-theoretic approaches that also primarily assume competition among universal constraints (cf. **Aissen2003**), an adequate approach to weak universals has to take language-specific forces into account as well.

Abbreviations

All examples abide by the Leipzig Glossing Rules. Additional abbreviations are:

fa factitive
ps person
dom differential object marker
dyn dynamic
rec recent past
rn relational noun.

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