The Development of Dative Agreement in Berber

Lameen Souag

THE DEVELOPMENT OF DATIVE AGREEMENT IN BERBER: BEYOND NOMINAL HIERARCHIES[1]

By Lameen Souag

Centre Nationale de la Recherche Scientifique

ABSTRACT

Diachronically, agreement commonly emerges from clitic doubling, which in turn derives from topic shift constructions (Givón 1976) – a grammaticalisation pathway termed the Agreement Cycle. For accusatives, at the intermediate stages of this development, doubling constitutes a form of Differential Object Marking, and passes towards agreement as the conditions for its use are relaxed to cover larger sections of the Definiteness and Animacy Scales. Berber, a subfamily of Afroasiatic spoken in North Africa, shows widespread dative doubling with substantial variation across languages in the conditioning factors, which in one case has developed into inflectional dative agreement. Examination of a corpus covering eighteen Berber varieties suggests that low Definiteness/Animacy datives are less likely to be doubled. However, since most datives are both definite and animate, these factors account for very little of the observed variation. Much more can be accounted for by an unexpected factor: the choice of verb. "Say" consistently shows much higher frequencies of doubling, usually nearly 100%. This observation can be explained on the hypothesis that doubling derives from afterthoughts, not from topic dislocation.

1. INTRODUCTION

The best-known diachronic pathway for the emergence of agreement was outlined by Givón (1976), although it has a much longer history. In this account, agreement comes about through the reanalysis of dislocated topics as arguments within the clause to which they were originally anaphorically linked (in his terms, the de-marking of topic shift constructions.) In intermediate stages of this development, the originally anaphoric marker co-occurs with an NP argument under certain conditions depending on the nature of that argument, like -*as* '(to) it' with *(w)mušš* 'cat' in the following Ait Seghrouchen Berber example:

(1) wši-x   aysum i   wmušš
     give.PFV-1SG   *meat to*   *cat*
     'I gave meat to the/a cat.'   (Guerssel 1995:115)

(2) wši-x=as   aysum i   wmušš
     give.PFV-1SG=3SG.DAT   *meat to*   *cat*
     'I gave meat to the/*a cat.'   (Guerssel 1995:115)

Viewed from the perspective of argument properties, this phenomenon is a form of Differential Subject / Object / Recipient Marking (Bossong 1991; Aissen 2003; Morimoto 2002; Haspelmath 2007). Viewed from the perspective of the distribution of pronominals, this phenomenon is commonly termed Clitic Doubling (Jaeggli 1982; Kallulli & Tasmowski 2008). Research under

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both rubrics converges on definiteness/specificity (Bossong's 'reference') and animacy ('inherence') as relevant factors; all languages seem to reserve doubling for the high end of the Definiteness and/or Animacy Scales, although different languages place the cut-off point in different places. The Person Scale (non-3rd > 3rd) is also relevant, but will not be discussed here, since in languages allowing doubling – including all Berber varieties – non-3rd person arguments are usually expressed by the clitic alone, the free pronoun being added only for emphasis.

Dative doubling – that is, doubling of recipients and arguments patterning with them but not with themes – is widely attested; while it has attracted less attention than accusative doubling, it is discussed in a number of papers exploring the syntax of clitic doubling, notably in Romance, Balkan, and Semitic languages (Jaeggli 1982; Kallulli & Tasmowski 2008; Aoun 1993). It is clear from this work that the conditions on dative doubling frequently differ from those for accusative doubling in the same language. However, its use as a form of Differential Recipient Marking has not been systematically explored. From a syntactic perspective, the apparent absence of such constraints on it in Romance languages (contrasting sharply with accusatives; cf. Sportiche 1996) has attracted more attention than the few reported cases of differential recipient marking through doubling, to the point that efforts have been made to explain this absence as a necessary consequence of general principles of syntax rather than as a language-specific fact (Jaeggli 1982; Dobrovie-Sorin 1990). From a diachronic perspective, dative doubling has typically been lumped together with accusative doubling if treated at all; for example, van Gelderen (2011) simply treats dative doubling as an early stage of the Object Cycle, without discussing the possibility of differential dative marking as part of a separate cycle. From a typological perspective, the many examples of differential recipient marking listed by Haspelmath (2007) or Kittilä (2011) do not include any cases distinguished by doubling.

A few cases of differential recipient marking through doubling have been reported for individual languages. Notably, Lopašov (1978), as cited in Kalluli and Tasmowski (2008), reports that, whereas clitic doubling applies in Macedonian and Albanian to all datives, it applies in Romanian only to preverbal datives and postverbal non-specific datives introduced by *pe*. Two mutually identical cases in north-central Moroccan Berber have also been reported more recently (see 2.1.) While these data points are useful, much more data would be required even to test the claim that dative agreement develops in accordance with Givón's pathway, let alone to get an impression of the specificities of this process. Looking at Berber as a whole rather than at a single Berber language makes both of these possible.

2. CLITIC DOUBLING IN BERBER

Berber is a language family native to northern Africa, spread from the Atlantic to the oases of western Egypt and from the Mediterranean to the northern Sahel. It belongs to the Afroasiatic family, along with Semitic, Egyptian, Chadic, and Cushitic. The diversification of Berber began at least two to three millennia ago; the earliest split was between Western Berber (mainly Zenaga, spoken in Mauritania) and the rest, followed by the split of Tuareg (Tamahaq, Tamajeq, Tamasheq) and a few small Libyan varieties (Ghadames, Awjila) – cf. Kossmann (1999:31–33), Blažek (2010). Within the remaining Northern Berber varieties, the most prominent differences are between southern Morocco (Atlas Berber – Tashelhiyt, Tamazight), the central Maghreb and northern Sahara (Zenati Berber: Tarifit, Taznatit, Tumzabt, Ouargli, Chaoui, and at a further remove Zuwara, Sokna, El-Fogaha, Siwi), and Kabyle (northern Algeria.) Initially, most Berber varieties must have been contiguous. However, the expansion of Arabic over the past millennium has left Berber with an archipelago-like distribution as a large set of enclaves most of which are surrounded by Arabic. The paucity of communication between different enclaves has further encouraged syntactic variation (see Figure 1).
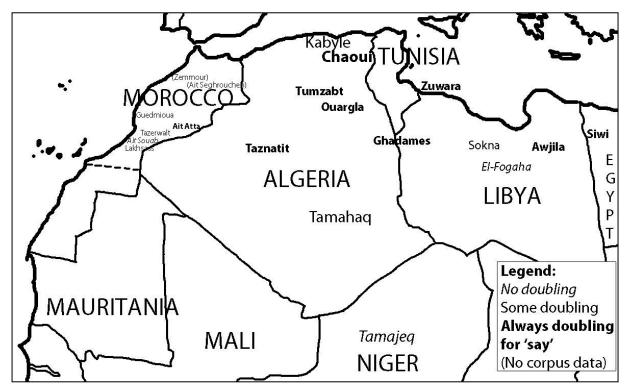
Figure 1. Berber languages mentioned in the text

2.1. Previous literature

Across Berber, clitic doubling is commonly reported for datives (usually not for accusatives; see section 3 for the detailed definition of 'dative'.) The earliest description of this phenomenon of which I am aware is by Hanoteau (1858:57), who noted that in Kabyle 'Le pronom personnel à la forme affixe s'emploie quelquefois d'une manière explétive devant le nom auquel il se rapporte, quand celui-ci est au génitif ou au datif.' ('The personal pronoun in affixal form is used sometimes in an expletive manner before the noun to which it is linked, when the latter is in the genitive or dative.') Subsequent Berber grammars often tersely reported the phenomenon, but efforts to understand its syntactic distribution began only in the post-colonial era. Penchoen (1973:66–68), describing Chaoui, noted that doubling of non-pronominals, which is limited to datives, patterns differently from free pronoun doubling, which is possible for all arguments. In his grammar of Ait Seghrouchen Berber, Bentolila (1981:265) disclaims any intention of dealing with the problem, but notes that in some contexts dative doubling is obligatory, and that it can permit the disambiguation of argument roles. Chaker (1983:289–290), discussing Kabyle, makes the important observation that dative doubling ('Expansion Indirecte') is syntactically distinct from right dislocation ('Expansion Référentielle'), even when the latter applies to a dative argument: doubled arguments use the preposition *i* and show no pause, dislocated arguments show no preposition and can be separated by a pause.

More recently, theoretical questions within the generative tradition have finally provoked a few attempts to pin down the function of this construction. Guerssel (1995:115), reports that, as noted for certain Romance languages, clitic doubling in Ait Seghrouchen Tamazight forces a definite reading, and is impossible with extraction constructions such as relatives and WH-questions. Ouali (2011:130) confirms that, in Zemmour Tamazight, doubled nominals are interpreted as specific/definite, and that doubling is possible for indirect objects irrespective of animacy or humanness, but is not possible for direct objects (Ouali 2011:138). Ouali further confirms that Chaker's criteria distinguishing doubling from right dislocation also apply in Zemmour. Neither author gives examples that would clarify how specific indefinite indirect objects are treated, and neither explains why some definite indirect objects are doubled while others are not.

In short, despite over a century of descriptions and despite the pervasive presence of dative doubling across Berber, incomplete descriptions of the factors motivating "optional" dative doubling have been published for only one region, the Middle Atlas of Morocco.

2.2. From clitic doubling to agreement: Case studies

Throughout Berber, the dative pronominal marker series is distinct from the accusative one, most clearly in the 3rd person but often in other persons as well. Contrast, for example, 3SgDat =*as* with 3MSgAcc =*t*, 3FSgAcc =*tət*; reflexes of these are attested in every Berber language, always with the dative forms distinct from the accusative ones.

In most Berber varieties, these markers are analysed as clitics (Ouhalla 2005), since they can attach to different hosts – variously verbs, complementisers, negators, TAM markers, and others – depending on context, while retaining the same form. (In relative clauses without a complementiser, the markers may follow the antecedent directly; such cases are variously analysed as attachment to the antecedent or to a null complementiser.) Thus, for instance, in Tashelhiyt (transcription and glosses are harmonised):

(3)   nni-x=ak
        say.PFV-1SG=2SG.DAT
        'I told you...'   (Dell & Elmedlaoui 1989:184)
vs.
(4)   ikru   s=ak   nni-x
        kid   COMP=2SG.DAT   say.PFV-1SG
        'the kid who I told you...'   (Dell & Elmedlaoui 1989:184)

As noted, we have very little information on the contexts for doubling in most varieties, but for the Ait Seghrouchen dialect of north-central Morocco, examples 1 and 2 above illustrate the role of definiteness and the optionality of doubling.

Not all languages fit this picture, however. Let us examine the situation in Siwi, the easternmost Berber language, spoken by about 15,000 people in the oasis of Siwa in western Egypt. The principal sources for its morphology and syntax are Laoust (1931), Vycichl (2005), and Souag (2010). All Siwi data in this paper derives from the author's fieldwork.

In Siwi, dative doubling is acceptable for finite verbs even at the lowest ends of both the Animacy and Definiteness Scales, the least likely contexts cross-linguistically to trigger agreement (Siewierska 2004:149):

(5)   i-təlq-as   i   alqos   g   támaṛt
        3MSG-release-3SG.DAT   to   bicycle   in   earth.
        'He let the bicycle fall onto the ground.'

(6)   la   taš-as   əssərr   i   ħədd
        not   give.IPFV-3SG.DAT secret   to   anyone
        'Don't give a secret to anyone.'

(7)   lá   y-tərraf-as   i   šra
        not   3MSG-fear.IPFV-3SG.DAT   to   anything
        'He fears nothing.'

Note that the datives in 6) and 7) are non-topical, non-specific indefinites, making it difficult to explain the doubling as anaphoric agreement.

Dative doubling is equally acceptable for question words and focus, indicating that Siwi doubling has been extended to grammatical agreement, since anaphoric agreement refers back to a topic, and the focus of a sentence is not its topic, whereas grammatical agreement refers to the controller argument irrespective of information structure (Bresnan & Mchombo 1987):

(8) i   bə́ttin   y-uš-as   əlwərd?
     to   who   3MSG-give-3SG.DAT flower
     'To whom did he give a flower?'

(9) i   bə́tta   ttə́rraf-ṭ-as?
     to   what   fear.IPFV-2SG-3SG.DAT
     'What are you afraid of?'

(10) wók   lá   y-tərraf-as   ɣér   i   sád
     this   not   3MSG-fear.IPFV-3SG.DAT except to   stick
     'This man fears only the stick.'

(11) mmí-ɣ-as   í   ħməd   wáɣ   tibəṭwén, áčči   i   ʕámṛ
     say-1SG-3SG.DAT   to   Ahmad   buy   eggs,   NEG.COP   to   Amr
     'I told **Ahmad** to buy eggs, not Amr.'

The few syntactic contexts where doubling is still impossible for finite verbs are attested almost exclusively in elicited data: notably the Person-Case Constraint (Bonet 1994), which rules out the combination of unaccented dative pronouns with non-3rd person accusatives, and – in accordance with Kayne's Generalisation (Jaeggli 1982:20) – double object constructions (which Siwi allows, but rarely uses).

(12) yə-ddə́zz-ek   i   niš
     3MSG-send-2SG.ACC   to   me
     'He sent you to me.'

(13) ssəħfáṭ-ax   təṛwáwen   əlqúr'an
     CAUS.memorise.IPFV-1SG   children   Qur'an
     'I was teaching children the Qur'an.'

Dative doubling in Siwi is thus grammatical (as well as anaphoric) agreement by Bresnan and Mchombo's criteria, and occurs in a wide range of contexts where definite pronouns would be unacceptable. It fits well with Corbett's (2006) criteria for canonical agreement, but remains non-canonical in one important respect: despite its spread, it is still not obligatory in all contexts, even taking into account the syntactic factors mentioned. Speakers reject non-doubling in some contexts:

(14) ṭṭə́wwəl-ṭ-*(as)   i   amdárrəs
     take_long_time-2SG-(3SG.DAT)   to   teacher*
     'You kept the teacher waiting.'

(15) lá   y-təlq-*(as)   i   šra   g   fus   ə́nnəs
     not   3MSG-release-(3SG.DAT)   to   anything   in   hand   his*
     'He doesn't let go of anything in his hand.'

but optionally accept and even produce it in others, under conditions that require further investigation:

(16) kə́tr-ax / ktə́r-ɣ-as   əllmánət   i   ámṃa
     bring-1SG / bring-1SG-3SG.DAT   trust   to   brother
     'I brought the trust to my brother.'

(17) lə́ʕləf   ʕəšš-ə́x-t   i   ləbháyəm
     fodder feed-1SG-3MSG.ACC   to   cattle
     'The fodder, I fed it to the cattle.'

Morphologically, based on Zwicky and Pullum's (1983) influential criteria for distinguishing clitics from affixes, Siwi's reflexes of the Berber dative clitic pronouns can no longer be termed clitics. Unlike their counterparts elsewhere in Berber, their position is fixed, always immediately postverbal: thus, like affixes, they exhibit a high degree of selection with respect to their hosts (Zwicky and Pullum's criterion A), are affected by any syntactic "rules" affecting the verbs to which they are attached (criterion E), and cannot follow clitics (criterion F). (On the basis of their fixed position alone, Ouali (2011:127) says of both accusative and dative pronominal markers that 'these clitics behave like affixes in Siwi'.) This selectivity is also illustrated by their inability to follow verbal nouns/infinitives, even when the latter govern datives:

(18) xṣ-íx   tiší(*-as)   ləktáb dawók i   lámin
      want-1SG   *to.give(*-3SG.DAT)*   *book* *that* *to*   *Lameen*
      'I wanted to give that book to Lameen.'

Unlike their accusative counterparts, they affect the form of subject inflection, creating morphophonological idiosyncrasies characteristic of affixed words rather than of clitic groups (Zwicky and Pullum's criterion C): the imperative plural *-wət* suppletively becomes *-m-* before a dative suffix, and 1Sg *-ax* similarly if less suppletively becomes *-ɣ-/-ʕ-*. (A few other Berber varieties show subject inflection allomorphy, but usually limited to irregular voicing alternations.) Even more strikingly, their presence (again unlike that of their accusative counterparts) systematically affects stem choice for irregular verbs (criterion C again): contrast *y-us-ən-d* 'they came'[2] with *y-usəd-n-as* 'they came to him'; *us-ix* 'I came' with *usəd-ɣ-as* 'I came to him'; *y-əmməl* 'he said' with *y-əmm-as* 'he said to him'; *i-ṛaħ* 'he went' with *yə-ħħ-as* 'he went to him'... The latter fact is of particular weight in establishing its non-clitic status: in the words of Spencer (2006:116), 'Where a putative affix triggers idiosyncratic allomorphy on its host, it would be a perverse abuse of terminology to call it a clitic.'

Siwi has therefore developed inflectional dative agreement – a phenomenon otherwise unreported not just within Berber, but also within cross-linguistic overviews such as Corbett (2006).

3. TEXTUAL FREQUENCY OF DATIVE DOUBLING IN NARRATIVES

While presence/absence of dative doubling can readily be ascertained from a few example sentences, it constitutes a very crude metric for the phenomenon. A much more informative metric can be obtained by examining the frequency of doubling in comparable texts. To do so, I counted the number of cases of doubling and the total number of cases in which a dative prepositional phrase constituting an argument of a verb is found within published narratives (folk tales, in all but a few indicated cases) for a number of Berber varieties. The definitions used require further discussion.

The dative is, prototypically, the recipient or addressee in a ditransitive predicate (eg 'give', 'send', 'show', 'say') where the theme patterns with the patient of monotransitive predicates (eg 'hit', 'kill'). In Berber, as seen above, the recipient is indicated by the preposition *i* and/or the dative bound pronominal series, whereas the theme of a ditransitive and the patient of a monotransitive are unmarked. For present purposes, I define the dative as any non-locative argument patterning morphologically and syntactically with recipients but not with themes – ie, any non-locative argument marked with *i* or indicated by dative bound pronominals. The exclusion of locatives is motivated by the fact that only a few Berber varieties use *i* to mark destinations, while most use other prepositions; since locatives are never unambiguously doubled in the corpus, this would make the frequency of doubling in those languages appear misleadingly lower compared to their relatives. The requirement that the dative must be an argument excludes usages of *i* to mark

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2   The suffix *-d* here derives from a pan-Berber directional marker 'hither'. However, in Siwi it is no longer productive; the only verb to have preserved a reflex of it outside the imperative is 'come', and there its occurrence is obligatorily determined by the person and number of the verb, not by the direction of motion. See Souag (2010).

distributives, as well as lexicalised adjunct phrases – in particular Tashelhiyt *i ṛbbi* 'please', Kabyle *i wakkən* 'in order to', and Zuwara *i-matta*, Siwi *i-tta* 'why?'. Apart from the cases mentioned above, dative arguments in Berber typically include the benefactive/malefactive in forms like 'make (for)', 'steal (from)'; the addressee or recipient in monotransitive verbs such as 'speak', 'call', 'hear', 'listen'; along with a few more idiosyncratic cases, such as the object of *ɣrs* 'slaughter' in Tashelhiyt.

I define dative doubling, for Berber, as the phenomenon of a dative bound pronominal (clitic or affix) and a co-referential nominal marked by the dative preposition *i* co-occurring within the same predicate and filling the same argument. This definition excludes dislocated topics both on syntactic grounds (they are not in argument position, and may be separated by a pause) and on morphological grounds (they do not feature the preposition *i*).

The frequency of dative doubling is measured against the total number of dative prepositional phrases constituting an argument of a verb. Note that this total excludes bound pronominals, even where they constitute the sole indicator of the argument, since they are not prepositional phrases; this is motivated by the fact that free pronominals are automatically emphatic, whereas other nominals need not be. All ethical datives within the corpus are bound pronominals, and hence absent from a count of dative prepositional phrases. Dative prepositional phrases not constituting an argument of a predicate are also excluded from the total count; since nouns cannot host dative bound pronominals, dative doubling is impossible in those environments.

For El-Fogaha, Sokna, and Awjila, the corpora used are the only published materials in the languages; they have been included, despite their small size, to increase geographical coverage. To avoid falling foul of geographical and diachronic variation, I have opted not to merge texts in the same language coming from different sources. The results are given in Table 1.

Table 1. Overall doubling rates.

Language / variety	Number of doubled datives (D)	Total number of PP datives (Total)	Percentage of PP datives doubled (D/Total)	Text
El-Fogaha	0	13	0%	(Paradisi 1963:93–98)
Tamajeq (Aïr)	0	25	0%	(Casajus 1985:17–109)
Tashelhiyt (Aït Souab)	0	40	0%	(Podeur 1995:118–148)
Tashelhiyt (Lakhsas)	3	78	4%	(Podeur 1995:30–66)
Tamahaq (Ahaggar)	3	58	5%	(Foucauld & A. de Calassanti-Motylinski 1984:235–297)
Tashelhiyt (Guedmioua)	14	193	7%	(Stroomer 2003:68–170)
Tashelhiyt (Tazerwalt)	9	100	9%	(Stroomer 2002:28–98)
Kabyle-1	13	50	26%	(Zellal 1964:7–101)
Kabyle-2	10	25	40%	(Reesink 1973:4–43)
Sokna	7	16	44%	(Sarnelli 1924:31–36)
Taznatit	24	54	44%	(Bellil 2006:152–188)
Ghadames	33	57	58%	(Lanfry 1968:1–46)
Awjila	12	19	63%	(Paradisi 1961:79–91)
Chaoui	46	63	73%	(Lafkioui & Merolla 2002:46–144)
Tumzabt	43	58	74%	(Delheure 1986:265–286)
Zuwara (biography, not folk tale)	104	132	79%	(Mitchell 2009:198–322)
Tamazight (Aït Atta)	43	50	86%	(Amaniss 1980:723–734)
Ouargla	213	244	87%	(Delheure 1989:12–36)
Siwi (mostly tales)	37	42	88%	Author's field data

The wide differences between these percentages strongly suggests that differential dative marking through doubling in Berber involves more than just a binary parameter. However, the data does display a striking gap: only one case examined displays a relative frequency of clitic doubling between 10% and 40% (as we shall see later, this case is largely the result of two features anomalous for this corpus – a very high frequency of inanimate datives, and a very low frequency of 'say') whereas the rest of the frequency range is well-covered.

This variation in outcomes, however, naturally raises the question: how do the conditioning factors for dative doubling differ across Berber? The obvious candidates to examine are those predicted by Givón's account. Varieties with 0% observed doubling will be excluded from the tables to come.

4. SCALES COMMONLY RELEVANT IN DIFFERENTIAL OBJECT MARKING

4.1. Animacy Scale

The Animacy Scale ranks as follows: human > animate > inanimate (Silverstein 1976). Locations, which are in a sense even less animate than inanimate objects, have been excluded from this survey by the definition chosen, and almost never show doubling in the corpus examined; a rare exception (likely a typographical error, as noted by one reviewer) is Ouargla *a s-ga i təxbušt* 'I put it in the pot' (Delheure 1989:72).

The human vs. animate distinction cannot easily be investigated with this corpus, since it consists in large part of fairy tales involving personified animals. The human/animate vs. inanimate distinction – given in Table 2 – causes much less difficulty, although a few problem cases may be noted: 3 of the 6 cases of inanimate doubling in Ouargla counted below involve a personified palm tree which responds to commands, and the Tazerwalt Tashelhiyt corpus includes a couple of household tools and stones which respond to commands but are not attested with doubling.

Table 2. Doubling rates for animates vs. inanimates.

	Animates			Inanimates		
	D	Total	%	D	Total	%
Tashelhiyt (Lakhsas)	3	64	5%	0	14	0%
Tamahaq (Ahaggar)	3	44	7%	0	14	0%
Tashelhiyt (Guedmioua)	14	158	9%	0	35	0%
Tashelhiyt (Tazerwalt)	9	86	10%	0	14	0%
Kabyle-1	13	31	42%	0	19	0%
Kabyle-2	10	21	48%	0	4	0%
Sokna	7	14	50%	0	2	0%
Taznatit	24	50	48%	0	4	0%
Ghadames	33	46	72%	4	11	36%
Awjila	12	19	63%	0	0	-
Chaoui	46	63	73%	0	0	-
Tumzabt	43	58	74%	0	1	0%
Zuwara	104	130	83%	0	2	0%
Tamazight (Aït Atta)	42	45	93%	1	5	20%
Ouargla	207	228	90%	6	16	38%
Siwi	33	38	87%	4	4	100%

As Table 2 illustrates, several varieties – minimally, Ghadames, Ait Atta, Ouargla, and Siwi, as well as Zemmour (see 2.1) – allow doubling for inanimates as well as animates, eg Ouargla:

(19) xuya-tkum   y-uš-as   ḍar   i   lbudun
      brother-2MPL.POSS 3MSG-give-3SG.DAT foot to   pail
      notre ami d'un coup de pied renverse le seau
      'Your friend hit the pail with his foot.' (Delheure 1989:94)

(20) yǝ-ssǝrsa-yas   i   gušguš-ǝs,   yǝ-mmut.
      3MSG-put-3SG.DAT to   backside-3SG.POSS, 3MSG-die.
      il se les applique sur la derrière, si bien qu'il en meurt ainsi.
      'He put them on his (own) backside, and died.' (Delheure 1989:117)

Except in Siwi, however, inanimate datives, if present at all, consistently show a far lower rate of doubling – in all but four cases, in fact, this rate is 0%. In Kabyle(1), Ghadames, Zuwara, Ait Atta, and Ouargla, the difference is individually significant at the 5% level based on Fisher's exact test (2-tail); in the other languages, the frequency of inanimate datives, of doubling overall, or of both is too low to allow firm conclusions.

The particular problem is that inanimate datives are textually rare throughout, accounting for no more than about 10% of dative prepositional phrases overall. Even in the exceptional case of Kabyle-1, they account for barely more than a third of datives; elsewhere, they account for no more than (in Tashelhiyt, Ghadames, and Tamahaq) about 20%, and often for much less (6% in Ouargla and less than 2% in Zuwara, for example.) While animacy seems to affect the frequency of doubling in at least some languages, the animacy scale thus leaves most of the observed cross-linguistic variation in doubling frequency unexplained.

4.2. Definiteness Scale

Table 3. Doubling rates for definites vs. indefinites.

	Definite			Indefinite / partitive		
	D	Total	%	D	Total	%
Tashelhiyt (Lakhsas)	3	72	4%	0	6	0%
Tamahaq (Ahaggar)	3	46	7%	0	12	0%
Tashelhiyt (Guedmioua)	13	162	8%	0	28	0%
Tashelhiyt (Tazerwalt)	9	96	9%	0	4	0%
Kabyle-1	11	44	25%	2	3	66%
Kabyle-2	10	22	45%	0	2	0%
Sokna	7	15	47%	0	1	0%
Taznatit	24	53	45%	0	1	0%
Ghadames	33	52	63%	1	3	33%
Awjila	10	17	59%	0	0	-
Chaoui	46	63	73%	0	0	-
Tumzabt	40	53	75%	0	1	0%
Zuwara	103	126	82%	0	3	0%
Tamazight (Aït Atta)	55	66	83%	1	3	33%
Ouargla	202	227	89%	10	13	77%
Siwi	35	40	88%	2	2	100%

While there is some variation in treatments of the Definiteness Scale, a rough consensus version is as follows: Personal pronoun > Proper Name > Definite > Partitive / Specific Indefinite > Non-Specific Indefinite. The observations of Guerssel (1995) and Ouali (2011), discussed above, suggest that this is a relevant dimension for doubling in Berber.

Berber has no definite articles. This makes interpreting the definiteness of an argument problematic sometimes. Where the case appears ambiguous, I have opted to follow the interpretation suggested by the translations (into French, English, and Italian) included in these bilingual texts. In this corpus, definites far outnumber all other classes put together. To get cell sample size greater than one or two, it has been necessary to lump the finer distinctions on the scale into a simple binary: definite vs. indefinite. Reflexives are excluded from the table. The results are given in Table 3.

For all but four cases, the rate of doubling is 0% for indefinites. In those cases, however – unlike in the Moroccan varieties investigated by Guerssel (1995) and Ouali (2011) – doubling is unambiguously found with indefinites, eg Ouargla:

(21)   gaʕ   w   az-d-y-uši   i   ħədd
          at.all   *not*   *3SG.DAT-hither-3MSG-give.NEG*   *to*   *anyone*
          il ne fait de faveur à personne
          'He hasn't given to anyone at all.' (Delheure 1989:92)

or Kabyle:

(21)   yə-ɣli-yas   i   walbəʕḍ   iməksawən
          3MSG-fall.PF-3SG.DAT   *to*   *some*   *shepherds*
          (It) was lost by (lit. fell for) a certain shepherd. (Zellal 1964: 37)

The grammaticality contrast between the varieties is strikingly illustrated by comparing the following Ouargli example with Guerssel's example 24d, retranscribed below:

(23)   i   mammu   a   s-t-uši-d   tnast?
          to   *who*   *FOC*   *3SG.DAT-2SG-give-2SG*   *key?*
          à qui as-tu donné la clé?
          'To whom did you give the key?' (Ouargli, Delheure 1989:100)

(23)   *Mumi   as   wši-x   aysum?
          **to.whom*   *3SG.DAT*   *give-1SG*   *meat?*
          'Who did I give meat to?' (Ait Seghrouchen, Guerssel 1999:127)

In every case observed except Kabyle-1 (with only three indefinites) and Siwi (with only two), doubling is less frequent for indefinites than for definites. Indefinites, however, are so infrequent (only about 6% of dative prepositional phrases) that this makes a very poor predictor overall. Only in the case of Zuwara does a Fisher's exact test (2-tail) indicate that definiteness makes a difference significant at the 5% level, and the overall pattern could easily be viewed as mere accidental variation. Only Guedmioua Tashelhiyt and Ouargla have more than a handful of indefinites to begin with, and in neither case is the difference statistically significant. The Ouargla case does not seem to reflect a split lower on the scale either; 3 out of the 4 non-specific indefinites in the Ouargla corpus are doubled. Like the animacy scale, the definiteness scale leaves most of the observed cross-linguistic variation unexplained; and the corpus data hardly even suggests that definiteness is a relevant factor.

4.3. Berber and the Agreement Cycle

The data examined is consistent with the predictions of Givón: in each language, clitic doubling is more frequent at the high ends of the Animacy and Definiteness Scales than at the low ends. However, even taking both factors together cannot help us explain the wide variation between varieties in the frequency of doubling for definite animate datives. In fact, as the following table shows, this variation is nearly as wide as was observed for all dative prepositional phrases put together.

Table 4. Doubling rates for definite animates alone.

	D	Total	%
Tashelhiyt (Lakhsas)	3	60	5%
Tamahaq (Ahaggar)	3	38	8%
Tashelhiyt (Guedmioua)	14	136	10%
Tashelhiyt (Tazerwalt)	9	83	11%
Kabyle-1	11	26	42%
Kabyle-2	10	18	56%
Sokna	7	13	54%
Taznatit	24	49	49%
Ghadames	29	42	69%
Awjila	10	17	59%
Chaoui	46	63	73%
Tumzabt	40	52	77%
Zuwara	103	124	83%
Tamazight (Aït Atta)	54	62	87%
Ouargla	196	199	98%
Siwi	32	37	86%

While doubling is consistently more frequent with definite animate datives than with other datives, at no stage is it obligatory for all definite animates, despite being available for indefinites and inanimates. Yet, as the table illustrates, the frequency of doubling for definite animates still varies from 5% to 98%, with relatively even coverage of the whole span from 40% to 100%, and with a striking discontinuity between 12% and 40%, mirroring the gap seen earlier, that needs explanation.

I take this to indicate that, while Givón's account appears accurate as far as it goes, it does not provide the full story. An examination of the data suggests that a much more important factor not so far taken into account relates to argument structure.

5. BEYOND ANIMACY AND DEFINITENESS

5.1. A verb choice parameter: 'To say' or not 'to say'

The commonest single verb in almost all of these corpora is 'say' (usually *ini*). An examination of the distribution of doubling for this verb alone, as in Table 5, gives a striking impression of discontinuity, contrasting notably with the corresponding figures for all verbs together. This impression is only accentuated by examining some apparent exceptions: Ouargla and Zuwara have only a single instance of 'say' without doubling each, respectively reflexive and reciprocal, while of the two instances of 'say' without doubling in Ghadames, one is reciprocal and the other's dative argument is the recipient of a name rather than being a listener. If we exclude such cases, those three varieties too show a 100% doubling rate for 'say'.

Table 5. Doubling rates for 'say', compared to overall doubling rates.

	'say'			overall		
	D	**Total**	**%**	**D**	**Total**	**%**
Tashelhiyt (Lakhsas)	2	36	6%	3	78	4%
Tamahaq (Ahaggar)	3	24	13%	3	58	5%
Tashelhiyt (Guedmioua)	10	77	13%	14	190	7%
Tashelhiyt (Tazerwalt)	7	45	16%	9	100	9%
Kabyle-1	2	4	50%	13	50	26%
Kabyle-2	3	3	100%	10	25	40%
Sokna	6	9	67%	7	16	44%
Taznatit	17	17	100%	24	54	44%
Ghadames	12	14	86%	32	57	56%
Awjila	12	12	100%	12	19	63%
Chaoui	43	43	100%	46	63	73%
Tumzabt	25	25	100%	43	58	74%
Zuwara	50	51	98%	99	121	82%
Tamazight (Aït Atta)	19	19	100%	43	50	86%
Ouargla	131	132	99%	213	244	87%
Siwi	8	8	100%	37	42	88%

Thus all languages examined, except for Sokna (which is based on sparse data) and Kabyle-1 (where 'say' is anomalously low in frequency, and one of the two exceptions is reciprocal), fall into three classes on the basis of P(doubling|say): no doubling with 'say' or any other verb (Tuareg, Aït Souab Tashelhiyt); doubling rare (5%-20%) for 'say' and even rarer for other verbs (other Tashelhiyt); doubling quasi-obligatory for 'say' and possible for other verbs (all others.) In every language where doubling is attested at all (except Kabyle-1), limiting the corpus to cases where the verb is 'say' increases the chances of doubling, often greatly. In four varieties – Guedmioua, Taznatit, Awjila, and Chaoui – the effect is significant at the 5% level based on a Fisher's exact test (2-tail), despite the relatively small size of the corpora examined. This single variable thus gives a much more satisfyingly binary picture, and explains much more of the variation than animacy or definiteness. It also explains the 10%-40% gap observed initially in Table 1, and paralleled in Tables 2-4.

This is unlikely to be a lexically specific characteristic of 'say'. If individual lexical entries could influence the rates of doubling for the arguments independent of wider classes, then we would expect to see similar patterns for other verbs. But if we take the two verbs which are common enough across the corpus to produce useful cross-comparisons – 'give' (reflexes of proto-Berber *βḱ throughout) and 'call' (variously reflexes of proto-Berber *ɣr, Ghadames *ssəlil*, or Arabic loans ʕyyṭ and *nada*) – then we get the much less binary-looking Table 6 (languages yielding less than 5 examples of each of them have been omitted; where a language yields less than 5 examples of only one of them, the percentage is bracketed).

Table 6. Doubling rates for 'give' and 'call'.

	'give'			'call'		
	D	**Total**	**%**	**D**	**Total**	**%**
Tashelhiyt (Lakhsas)	0	3	(0%)	0	7	0%
Tashelhiyt (Guedmioua)	1	7	14%	0	10	0%
Tashelhiyt (Tazerwalt)	0	7	0%	0	12	0%
Taznatit	3	15	20%	0	3	(0%)
Ghadames	1	2	(50%)	4	5	80%
Zuwara	4	5	80%	8	15	53%
Tamazight (Aït Atta)	6	6	100%	1	2	(50%)
Ouargla	8	10	80%	12	13	92%
Siwi	5	6	83%	0	0	-

In addition to ruling out lexeme-specific effects, this table also furnishes evidence against the otherwise plausible hypothesis that the effect depends on the dative argument's theta role. In fact, in three out of the four cases where frequency is high enough to allow comparison (namely Guedmioua, Tazerwalt, Zuwara, Ouargla), doubling is more frequent with 'give' (assigning recipient) than with 'call' (assigning listener, like 'say'), and for neither is it at all comparable with 'say'.

Unlike most other ditransitives, 'say' usually takes a propositional direct object rather than a nominal one. So an obvious alternative hypothesis is that the relevant parameter is whether or not the verb takes a clausal direct complement. The only verb attested in the corpus which takes a clausal direct complement is 'say', except in Tashelhiyt and Siwi, and even there they are rare, as Table 7 shows.

Table 7. Doubling rates for other verbs taking clausal direct complements.

	D	**Total**	**%**	**Verbs taking clausal direct complements**
Tashelhiyt (Lakhsas)	1	1	*100%*	lhu 'shout' (1/1)
Tashelhiyt (Guedmioua)	0	7	**0%**	amṛ 'order' (0/1), ḍalb 'ask' (0/3), dum 'keep doing' (0/1), ggall 'swear' (0/1), xxu 'allow' (0/1)
Tashelhiyt (Tazerwalt)	0	2	*0%*	bṛṛħ 'proclaim' (0/1), skr 'make' (0/1)
Siwi	2	2	*100%*	fəkkəṛ 'remind' (1/1), skən 'show' (1/1, with clause 'that...')

While more examples of non-'say' verbs taking a clausal direct complement would be desirable, this hypothesis appears compatible with the facts, unlike the others examined. In practice, however, other cases are rare enough that we can continue to speak in terms of 'say' alone.

5.2. The emergence of doubling and the special role of 'say'

Givón's account of the rise of object agreement tentatively connects it to the 'afterthought-topic construction' (Givón 1976:154). However, in light of more recent research (see eg Lambrecht 2001, Averintseva-Klisch 2008), this conflates two syntactically distinct notions: right dislocation, and afterthought constructions disambiguating pronouns. Either source would lead us to expect that, in early stages of the grammaticalisation chain, the doubled item would be at the right edge of the clause, rather than being flexibly positioned. This prediction appears compatible with the corpus data for the languages in which doubling is least frequent here: even though dative arguments are commonly followed by material belonging to the same verb phrase within these corpora, Lakhsas, Tamahaq, and Tazerwalt (but not Guedmioua) offer no examples of doubling in which the dative argument is followed by material belonging to the same verb phrase. (Sentential

direct complements are excluded, since they can only appear clause-finally and are presumably themselves extraposed).

However, even within those corpora, the doubled arguments rarely if ever appear to be topical for the clauses to which they are appended. Since right dislocated arguments are normally topical, whereas afterthoughts need not be, this suggests that object doubling here derive mainly from afterthoughts rather than right dislocation; in Greek, some of the earliest attestations resembling object doubling are afterthought constructions (de Boel 2008:100). The functions of afterthoughts correlate well with those proposed for doubling in Brustad's (2000:355) analysis of Syrian Arabic, which argues that it is used for 'recalling or reinvoking a topic into active registry' when it is in principle identifiable but 'has not been active in the conversational registry' or 'the speaker believes the interlocutor has forgotten about it'.

The apparent purpose of afterthoughts is to ensure correct identification of an old argument in contexts where the listener may not be able to do so from the pronoun alone. However, correct identification is not equally important for all elements; the more salient the item in question is going to be in the following discourse, the worse the consequences of identification failure. Thus, afterthoughts should be most strongly motivated for items which are not currently topical but which the speaker plans to reuse in the following clause(s). A correlation between this purpose and doubling is indicated for Romanian by the experimental results of Chiarescu and von Heusinger (2010), which indicate that indefinite arguments doubled with *pe*, compared to non-doubled ones, show higher referential persistence and are more frequently the subjects of following clauses.

This suggests a possible explanation for the special role played by 'say' in the grammaticalisation of dative agreement. When 'say' is used with an indirect object, it refers to a speaker transferring information to a hearer. In accordance with Grice's maxims, this information can normally be assumed to be relevant to the hearer – and, more specifically, to affect how the hearer acts. No such expectation applies in general to the transfer of objects. This would lead us to expect that, in narrative contexts, a 'say'-clause should be more frequently followed by description of actions taken by its dative argument. To phrase this in more easily testable terms, the dative argument of the clause should be the subject of the next one more often when the clause refers to information transfer than in other cases – and hence should be more likely to be doubled by an afterthought.

This prediction is borne out by two data sets examined, counting for each dative argument (pronominal or nominal) whether it is the subject of the following clause at the same level (ie non-quoted for non-quoted, quoted for quoted). In Boukous (1977:198-204), a Moroccan variety (Tashelhiyt), the dative arguments of 26 out of 43 instances of 'say' (60%) are the subjects of the following clause, whereas those of only 6 out of the 30 instances of all verbs other than 'say' (20%) are. Doing the same for Mitchell (2009:200-203), a Libyan variety (Zuwara), yields an even starker difference: 22/31 (71%) for 'say', and only 11/47 (23%) for all other verbs. In both cases, the difference is significant at the 5% level, and indeed the 0.1% level, based on Fisher's exact test (2-tailed).

6. CONCLUSIONS

The synchronic typology observed for Berber datives has an obvious diachronic ordering:

- Stage 1: no doubling
- Stage 2: clitic doubling rare but commoner for 'say'
- Stage 3: clitic doubling quasi-universal for 'say', common for other verbs
- Stage 4: clitic doubling becomes inflectional agreement, and is normal for finite verbs in almost all contexts

A corresponding diachronic cycle, reminiscent of but distinct from Givón's, can be reconstructed on the basis of the observations above:

- Dative clitic doubling is initially a byproduct of afterthought constructions, particularly common with 'say'.
- Its high frequency with 'say' leads it to be interpreted as just an in situ agreement marker there, with fewer or no pragmatic constraints.
- The high frequency of 'say' among verbs taking datives, in turn, makes this new interpretation the model for a reanalysis of clitic doubling as agreement with other verbs, presumably spreading down the definiteness and animacy hierarchy.
- As the dative pronominal markers are increasingly used for agreement, they tend to get more tightly bound to the verb, as expected for grammaticalisation.

The key role played by 'say' in this cycle, for its high frequency as well as its topic-shifting role, suggests a cross-linguistic prediction: that dative agreement should be more likely to develop in languages which, like Berber, mark the recipient of the commonest information-transfer verb as a dative rather than an accusative ('say to X' rather than 'tell X'.)

We have thus identifed three important factors in dative clitic doubling in Berber: nature of the direct complement (approximately, 'to say' or not 'to say'), definiteness, and animacy. Even taking all three into account, however, chance continues to play a role. If we count only definite animate dative arguments of verbs other than 'say' (about 40% of the datives), we still find practically the same amount of variation, as shown in Table 8. Explaining this would be a promising, if challenging, avenue for future research.

Table 8. Doubling rates for definite animate dative arguments other than of 'say'.

Language	D	Total	%
Tashelhiyt (Lakhsas)	1	24	4%
Tamahaq	0	14	0%
Tashelhiyt (Guedmioua)	4	66	6%
Tashelhiyt (Tazerwalt)	2	42	5%
Kabyle-1	9	23	39%
Kabyle-2	7	16	44%
Sokna	1	5	20%
Taznatit	7	32	22%
Ghadames	16	30	53%
Chaoui	3	20	15%
Tumzabt	18	30	60%
Zuwara	48	63	76%
Tamazight (Aït Atta)	26	35	76%
Ouargla	72	86	84%
Siwa	21	23	91%

Laboratoire LACITO (UMR 7107) - CNRS / Paris III / Paris IV
7, rue Guy Môquet (bât. D)
94801 Villejuif
France
Email: lameen@gmail.com

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