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Direct/inverse systems^{*}

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1 Introduction

1 The term ‘inverse’ has been used in the typological literature to designate a considerable variety of
2 phenomena, which have been analyzed in several distinct frameworks. Direct-inverse systems are
3 attested in a number of endangered languages spoken in the Americas (Algonquian, Mapudungun,
4 Sahaptian etc) and the Himalayas (Sino-Tibetan).

5 The aim of this article is to provide an overview of direct/inverse systems in a perspective as free
6 as possible from framework-specific assumptions, using the most recent data and adopting both a
7 typological and a historical perspective. It is divided into four sections.

8 First, we propose a definition of the canonical direct/inverse system, and introduce the concepts
9 of *proximate/obviative* and *referential hierarchies*.

10 Second, we present examples of attested direct/inverse systems in the world’s languages by sub-
11 dividing them into two main categories: near-canonical and highly non-canonical, and additionally
12 discussing systems with hierarchical agreement but without direction (direct/inverse) marking.

13 Third, we evaluate to what extent direct/inverse systems are correlated with other typological
14 features.

15 Fourth, we apply a panchronic perspective on direct/inverse systems, studying their attested
16 origin and their evolution, and how the diachronic pathways can help understand the present data.

17 2 Basic definition

18 Before defining the canonical direct/inverse system, we need to introduce some of the terminology
19 used by typologists to describe systems which index two arguments.¹ It is customary to represent
20 these systems using semantic maps in tabular format as in Table 1, where rows indicate agent and
21 columns patient. The different transitive configurations are symbolically represented by using an
22 arrow, with the agent on its left and the patient on its right, both abbreviated as 1, 2, 3 for first,

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¹Indexation systems involving three arguments exist, but are rarer and will not be considered in this section.

23 second and third person respectively. The first and second persons are called SPEECH ACT PARTICI-
 24 PANTS (SAP). In the case of third person arguments 3 indicates *proximate* and 3' *obviative* referents
 25 (2.2). In intransitive forms, by contrast, the abbreviation refers to the sole argument of the verb.
 26 They are systematically included for reference.

27 The cells corresponding to the 1→1 and 2→2 configurations are semantically reflexive and are
 28 thus filled in grey, since in most languages they tend to be expressed by an intransitive construction².
 29 The 3→3 cell, on the other hand, is not since the corresponding configuration is not necessarily
 30 reflexive.

Table 1: The three domains of the transitive paradigm

	1	2	3
1	1→1	1→2	1→3
2	2→1	2→2	2→3
3	3→1	3→2	3→3
INTR	1	2	3

31 This table does not represent number, clusivity and obviation, but more complex paradigms
 32 including these features will be studied below.

33 As will become clear in the course of this article, it is convenient to separate the transitive
 34 paradigm into three DOMAINS (Zúñiga 2006, 47-54), represented in Table 1 by different colours.
 35 First, the LOCAL domain (in blue) comprises the forms 1→2 and 2→1, where both arguments are
 36 SAPs. Second, the NON-LOCAL domain (in red) refers to the cases where both arguments are third
 37 person. Third, the MIXED domain (in green) includes all the forms with a SAP argument and a
 38 third person (1→3, 2→3, 3→1, 3→2).

39 2.1 The canonical direct/inverse system

40 Given the diversity of direct/inverse systems in the world's languages, canonical typology (Corbett,
 41 2007) seems to be a useful tool for accurately describing them by accounting for their deviation from
 42 the canon. The canonical direct/inverse system could then be defined as a type of transitive person
 43 marking system presenting three essential characteristics.

44 First, in such a system all person-number markers are neutral with regard to syntactic roles (S,
 45 A and O).³

46 Second, the ambiguity which this entails (especially in mixed scenarios) is resolved by way of
 47 obligatory (and mutually exclusive) markers, called *direct* (in the case of 1→2, SAP→3, 3→3') and
 48 *inverse* (in the case of 2→1, 3→SAP and 3'→3), respectively. These markers do not appear on
 49 intransitive verbs. This property is generally described in terms of *referential hierarchies* (see section
 50 2.3).

²The same applies, in languages with clusivity (a distinction between first person inclusive vs exclusive) to the combination of first inclusive and second person.

³See Haspelmath (2011) for a discussion of the terms S (only argument of an intransitive verb), A (more agent-like argument of a transitive verb) and O (more patient-like argument of a transitive verb). In terms of Bickel et al. (in press, 9)'s approach, all persons *trigger agreement* in all three syntactic roles.

51 Third, inverse verb forms unlike verb forms in a passive construction, do not undergo valency
 52 changes (the verb does not become intransitive when an inverse marker is added), and the arguments
 53 keep the same syntactic properties (such as case marking and pivot accessibility) as in the direct
 54 construction.

55 Table 2 illustrates the canonical system, for which we have taken $1 > 2 > 3 > 3'$ as the canonical
 56 person hierarchy. We can observe the perfectly symmetrical distribution of direct and inverse forms,
 57 along an axis running from the upper left side to the bottom right side of the table. Direct forms
 58 appear in orange and inverse ones in green.

Table 2: The canonical direct/inverse system

	1	2	3	3'
1		1→2	1→3	
2	2→1		2→3	
3	3→1	3→2		3→3'
3'			3'→3	
INTR	1	2	3	

59 No language exactly attests the pattern in Table 2, although Rgyalrong languages (Sino-Tibetan,
 60 Sichuan, China) are among the closest to it.⁴

61 The status of the local and non-local domains varies considerably across languages, but in most
 62 languages with near-canonical systems inverse and/or direct markers can also be found in these
 63 domains.

64 In the local domain, all possibilities but one appear to be attested: $2 \rightarrow 1$ receives the inverse
 65 marker (as in Situ Rgyalrong), both $2 \rightarrow 1$ and $1 \rightarrow 2$ receive the inverse marker (as in Mapudungun,
 66 a language isolate of Chile), or else $1 \rightarrow 2$ and $2 \rightarrow 1$ are expressed by special forms unrelated to either
 67 the direct or the inverse ones (as in Algonquian). Another possibility is that the use of direct/inverse
 68 markers in the local domain can depend on the particular person-number combination involved (as
 69 in Kiranti languages). The one possibility not attested to the best of our knowledge is one where
 70 $1 \rightarrow 2$ would receive inverse marking whereas $2 \rightarrow 1$ would be marked as direct.

71 In the non-local domain, some languages with a direct/inverse system present a further contrast
 72 between *proximate* and *obviative* referents (see 2.2 for more details). In such cases, the inverse marker
 73 appears in the $3' \rightarrow 3$ and the direct marker in the $3 \rightarrow 3'$ configuration and the same direction markers
 74 are shared between the mixed and non-local domains.

75 2.2 Proximate / obviative

76 Algonquian languages have grammaticalized a distinction between two types of third person refer-
 77 ents. These are generally designated as *proximate* (3) and *obviative* (3'). This distinction is re-
 78 dundantly marked on both nouns and all verb forms, including transitive and intransitive ones (see
 79 3.1.2). In addition, the proximate / obviative status of the arguments determines the presence of
 80 direct or inverse marking on transitive verbs: in non-local scenarios, when the A is proximate and

⁴Direct/inverse systems are often illustrated with data from Algonquian languages, but they generally lack di-
 rect/inverse marking in the local domain, and are thus farther removed from the canon than Rgyalrong languages.

81 the O is obviative, the direct form is used, whereas in the case when the A is obviative and the O
 82 is proximate, the inverse form is required. In example 1, the verb is in the direct form, as the A
 83 is proximate and hence unmarked while the O is obviative (marked with the *-a* suffix), whereas in
 84 example 2, the converse is true.

85 (1) *mihcet nipah-êw mistanask mostosw-a*
 many kill-3→3' badger buffalo-OBV
 86 'Badger (3) has killed many buffalo (3).'

87 (2) *sêkih-ik nâpêw atimw-a*
 scare-INV man dog-OBV
 88 The dog scares the man. (Wolfart, 1973, 25)

89 In the mixed domain, the proximate / obviative status of the third person referent is also indi-
 90 cated on the verb (see Table 4).

91 No language outside of Algonquian displays a system in which the proximate / obviative dis-
 92 tinction is marked on nouns, on intransitive verbs and in the mixed domain. Yet, for the purpose of
 93 typological comparison, we find it legitimate to use the terms 'proximate' and 'obviative' to describe
 94 systems which distinguish two third person referents in the non-local domain only by means of
 95 direct / inverse marking on the verb form.

96 Indeed, in most languages with direct/inverse systems, unlike Algonquian, the presence of direct
 97 or inverse markers on the verb is the only clue to the proximate or obviative status of a particular
 98 argument in non-local scenarios. In example 3 from Japhug Rgyalrong for instance, the absence of
 99 inverse marker on the verb indicates a direct form, which implies that the A (the maid) is proximate
 100 while the O (the rooster) is obviative. Inverse marking here would indicate the opposite scenario (A
 101 obviative and O proximate) without changing the syntactic roles.

102 (3) *ɛʃoʋ nuu ku kumpyaphu nuu pɣ-sat*
 servant TOP ERG rooster TOP EVD-kill
 103 'The maid killed the Rooster.' (Japhug, Aesop adaptation "The old woman and the maid")

104 As is the case in Japhug, in languages with direct-inverse contrast in the non-local domain, the
 105 choice of proximate or obviative status for a particular referent (and thus the use of an inverse or a
 106 direct form) is guided by both semantics (relative animacy of the agent and patient) and pragmatics
 107 (the relative topicality or saliency of the two referents).

108 2.3 Referential hierarchies

109 Some authors have proposed to apply the (pre-existing) concept of *referential hierarchies* in order to
 110 provide a unified account of the use of direct/inverse markers in all three domains, including the
 111 question of how the proximate or obviative status of the referents is determined.

112 Since DeLancey (1981a, 644), direct/inverse systems are often described in terms of the *Empathy*
 113 *Hierarchy* presented in (4):⁵

⁵For an overview of referential or *prominence* hierarchies, see Lockwood and Macauley (2012). These hierarchies,

114 (4) SAP > third person pronoun > human > animate > natural forces > inanimate

115 The distribution of direct and inverse markers can then be captured by the following rule:

116 (5) If the patient is higher on the hierarchy than the agent, the verb receives inverse marking;
117 conversely, if the agent is higher on the hierarchy than the patient (or if both are equal),
118 the verb receives direct marking.

119 In DeLancey's view, the Empathy Hierarchy in (4) is motivated by several factors.

120 First, the ranking SAP → 3 is due to an 'inherent natural attention flow', whereby discourse
121 participants (first or second person) are the 'natural starting point' of most utterances. Second, the
122 ranking within the third persons is explained by the concept of *empathy*, hence the name of the
123 proposed hierarchy: 'speakers, being animate and humans, are more likely to empathize with (i.e.
124 take the viewpoint of) human beings than animals, and of animals than inanimates.

125 The hierarchy in (4) is a general model which has to be adapted to each language to correctly
126 predict the attested forms, and some variation can be observed even between closely related lan-
127 guages.

128 A detailed investigation of hierarchies in direct/inverse systems is beyond the scope of this paper
129 (see Zúñiga 2006 for more detail). Overall, the two rankings SAP > 3 and animate > inanimate
130 appear to be relatively robust, and can even be considered definitional of direct/inverse systems
131 within a theoretical framework using referential hierarchies.⁶

132 Additionally, direct/inverse systems are considered by some authors as a special case of *hierarchi-*
133 *cal alignment* (Nichols 1992), a type distinct from accusative, ergative, active or tripartite alignment.
134 Following Siewierska (1998, 10), hierarchical alignment can be defined as an alignment type where
135 "the treatment of the A and O is dependent on their relative ranking on the referential and/or
136 ontological hierarchies".

137 3 Attested systems

138 This section will present three types of hierarchical systems: near-canonical direct/inverse sys-
139 tems, highly non-canonical direct/inverse systems and hierarchical systems without direction (di-
140 rect/inverse) markers.

141 3.1 Near-canonical direct/inverse systems

142 3.1.1 Rgyalrong languages

143 The direct/inverse systems of Rgyalrong languages have been described in several studies (DeLancey
144 1981b on Situ, Sun and Shidanluo 2002 on Tshobdun, Jacques 2010 on Japhug and ? on Zbu).

initially proposed in order to account for particular splits in case patterns (see Silverstein 1976), have also been used to explain a variety of other phenomena, including the distribution of direct and inverse markers and slot accessibility. However, it is not always possible to account for all phenomena within a given language by positing a single hierarchy, as Zúñiga 2006 has shown. In Cree for instance, no less than four distinct hierarchies are needed to explain direct/inverse marking and the allocation of person markers to the correct slot.

⁶Hierarchies involving 3 > SAP may govern slot accessibility, as in the case of slots 5-7 in Cree which follow the hierarchy 1PL > 1INCL/2PL > 3 animate > SAP.SG > 3 inanimate, Zúñiga 2006, 86. This type of hierarchy has however never been described for direct/inverse morphemes.

145 These languages index not only the person but also the number of the two arguments in the verbal
 146 morphology, and the resulting paradigm is more complex than the pattern shown in Table 2.

147 In 6, the verb has a direct form, and the inverse is blocked, as the A is SAP while the O is third
 148 person. On the other hand, 7 illustrates the compulsory use of the inverse marker when the agent
 149 is third person and the patient SAP.

150 (6) *ŋó? kə akú? tə-xśâŋ*
 I ERG that AOR-hit:1SG

151 I hit him/her.

152 (7) *rəçór vəjé? kə-lə nəjé? tə-tə-wə-xśâv*
 yesterday 3SG one-time you AOR-2-INV-hit

153 (S)he hit you once yesterday.

154 The presence or absence of the inverse prefix in 3→3 forms (in other words, the 3'→3 vs 3→3'
 155 contrast) can be predicted by the following rules (Sun and Shidanluo 2002, Jacques 2010):

- 156 1. When the agent is animate and the patient inanimate, the inverse is blocked.
- 157 2. When the agent is inanimate and the patient animate, the inverse is required.

158 There is a strong, though not absolute, tendency for the inverse to appear when the agent
 159 is non-human animate and the patient human. When both arguments are human, there is no
 160 absolute constraint blocking or requiring the use of the inverse. 3'→3 forms with inverse marking
 161 are relatively rare in comparison with direct 3→3' ones, and are used when the patient is markedly
 162 more topical than the agent.

163 Table 3 presents the non-past paradigm of a dialect of Zbu Rgyalrong. The symbols Σ_1 and Σ_3
 164 represent different stem forms (stem 1 and stem 3, respectively). Stem 3 only occurs in a subset of
 165 direct forms, i. e. those where the patient is third person and the agent is singular ([123]SG→3('))
 166 and could thus be considered as a non-canonical direct marker.

Table 3: Zbu Rgyalrong transitive paradigm (data adapted from ?)

	1SG	1DU	1PL	2SG	2DU	2PL	3SG	3DU	3PL	3'
1SG				$tə\text{-}\Sigma_1$	$tə\text{-}\Sigma_1\text{-}ndzə$	$tə\text{-}\Sigma_1\text{-}nə$	$\Sigma_3\text{-}\eta$	$\Sigma_3\text{-}\eta\text{-}ndzə$	$\Sigma_3\text{-}\eta\text{-}nə$	
1DU							$\Sigma_1\text{-}tçə$			
1PL							$\Sigma_1\text{-}jə$			
2SG	$tə\text{-}wə\text{-}\Sigma_1\text{-}\eta$						$tə\text{-}\Sigma_3$			
2DU	$tə\text{-}wə\text{-}\Sigma_1\text{-}\eta\text{-}ndzə$	$tə\text{-}wə\text{-}\Sigma_1\text{-}tçə$	$tə\text{-}wə\text{-}\Sigma_1\text{-}jə$				$tə\text{-}\Sigma_1\text{-}ndzə$			
2PL	$tə\text{-}wə\text{-}\Sigma_1\text{-}\eta\text{-}nə$						$tə\text{-}\Sigma_1\text{-}nə$			
3SG	$wə\text{-}\Sigma_1\text{-}\eta$									Σ_3
3DU	$wə\text{-}\Sigma_1\text{-}\eta\text{-}ndzə$	$wə\text{-}\Sigma_1\text{-}tçə$	$wə\text{-}\Sigma_1\text{-}jə$	$tə\text{-}wə\text{-}\Sigma_1$	$tə\text{-}wə\text{-}\Sigma_1\text{-}ndzə$	$tə\text{-}wə\text{-}\Sigma_1\text{-}nə$				$\Sigma_1\text{-}ndzə$
3PL	$wə\text{-}\Sigma_1\text{-}\eta\text{-}nə$									$\Sigma_1\text{-}nə$
3'							$wə\text{-}\Sigma_1$	$wə\text{-}\Sigma_1\text{-}ndzə$	$wə\text{-}\Sigma_1\text{-}nə$	
INTR	$\Sigma_1\text{-}\eta$	$\Sigma_1\text{-}tçə$	$\Sigma_1\text{-}jə$	$tə\text{-}\Sigma_1$	$tə\text{-}\Sigma_1\text{-}ndzə$	$tə\text{-}\Sigma_1\text{-}nə$	Σ_1	$\Sigma_1\text{-}ndzə$	$\Sigma_1\text{-}nə$	

167 In this paradigm, considering only the mixed and non-local forms and leaving aside stem al-
 168 ternations (Σ_1 vs Σ_3), there is perfect symmetry between direct and inverse forms, which are dis-
 169 tinguished only by the presence or absence of the inverse prefix $wə\text{-}$. Mixed and non-local direct
 170 forms are identical to the corresponding intransitive forms except for the stem alternations. Only

171 1→2 forms are distinct from all the rest, with a synchronically opaque portmanteau *tə-* 1→2 prefix
172 (if the system was perfectly symmetrical, 1→2 forms such as **tə-Σ₁-ŋ* would be expected).

173 To account for the Zbu Rgyalrong data presented above, the following hierarchy has to be
174 posited:

175 (8) 1 > 2 > 3 animate proximate > 3 animate obviative > 3 inanimate

176 Applying rule 5 to the hierarchy in (8) predicts the occurrence of the inverse in 2→1, 3→SAP and
177 3'→3 forms, and its absence in 1→2, SAP→3 and 3→3'. Here proximate/obviative (or topical/non-
178 topical) is more relevant than human/non-human as listed in the original formulation of the hier-
179 archy in (4).

180 Describing Japhug Rgyalrong data in this framework would require a different hierarchy (Jacques
181 2012b):

182 (9) SAP > 3 animate proximate > 3 animate obviative > 3 inanimate > generic human

183 In Japhug, there is no inverse in 2→1 forms, while it appears with a generic human agent
184 (disregarding the animacy of the patient).

185 Zbu Rgyalrong also allows us to illustrate the ways in which inverse marking can be shown to
186 differ from passive marking. Indeed, the Zbu prefix *wə-* cannot be analyzed as a passive marker for
187 several reasons.

188 First, it is obvious that the verb still remains transitive even in inverse forms, since especially in
189 2/3 →1SG the number markers *-ndzə* (dual) or *-jə* (plural) are suffixed to the first person *-ŋ* and
190 since in all 2→1 forms both the second person *tə-* prefix and the first person *-ŋ*, *-tə* or *-jə* suffixes
191 are present. Given the fact that both the agent and the patient are indexed, one can deduce that the
192 inverse *wə-* has no intransitivizing effect.

193 Second, the addition of the inverse prefix has no effect on case marking: third person agents
194 still receive ergative case, as illustrated by example (10) from ?.

195 (10) *tʂɛɕi skutsɛʔ kə tə-wə-xʂəv ki*
Bkrashis stone ERG AOR-INV-hit NON.VISUAL

196 'A stone hit bKrashis.' (The stone falls from the mountain, for example)

197 Third, the inverse prefix *wə-* is not a derivation contrary to the passive construction in this
198 language: the semantics of inverse forms are always predictable from that of the base forms, un-
199 like derivation prefixes in Rgyalrong languages (including passive, anticausative, antipassive etc, see
200 Jacques 2012b) which present many irregularities.

201 Few direct/inverse systems are as symmetrical as the one attested in Zbu Rgyalrong, and in fact
202 these systems present tremendous diversity across languages. Partially opaque inverse systems will
203 be studied in more detail in 3.2.

204 3.1.2 Algonquian languages

205 Algonquian languages differ from Rgyalrong and all other languages with direct/inverse (apart from
206 Kutenai) in that the proximate/obviative distinction is largely independent of direction marking on
207 the verb.

208 In Algonquian languages, all animate nouns are marked for proximate and obviative and all
 209 animate third person referents have a clear status as proximate or obviative in a given sentence. No
 210 such distinction is found in the case of SAP (SAPs are never obviative) nor in the case of inanimate
 211 nouns in most of these languages. Furthermore, the singular/plural distinction is neutralized in
 212 obviative forms (except in some Central Algonquian languages such as Fox and Miami-Illinois) or
 213 else there is no contrast between proximate and obviative in the plural (as in Blackfoot). In a single
 214 sentence, at most one argument can be proximate, but it is also possible to find sentences with only
 215 obviative arguments.

216 Table 4 (adapted from Wolfart, 1973) illustrates an example of a transitive animate paradigm
 217 (the verb *wâpam*– “see”) and an intransitive animate one with *pimipahtâ*– “run”. The direct markers
 218 are *-â-* or *-ê-* and the inverse marker is *-ik(o)*. Please note that the proximate/obviative distinction
 219 is also marked on intransitive verbs.

Table 4: Plains Cree present paradigms. TA *wâpam*– “see” and IA *pimipahtâ*– “run” (Wolfart, 1973)

		P							
A		1SG	1PI	1PE	2SG	2PL	3SG	3PL	3'
1SG					<i>kiwâpamitin</i>	<i>kiwâpamitinâwâw</i>	<i>niwâpamâw</i>	<i>niwâpamâwak</i>	<i>niwâpamimâwa</i>
1PI							<i>kiwâpamânaw</i>	<i>kiwâpamânawak</i>	<i>kiwâpamimânawa</i>
1PE					<i>kiwâpamitinân</i>		<i>niwâpamânân</i>	<i>niwâpamânânak</i>	<i>niwâpamimânâna</i>
2SG	<i>kiwâpamin</i>						<i>kiwâpamâw</i>	<i>kiwâpamâwak</i>	<i>kiwâpamimâwa</i>
2PL	<i>kiwâpaminâwâw</i>		<i>kiwâpaminân</i>				<i>kiwâpamâwâw</i>	<i>kiwâpamâwâwak</i>	<i>kiwâpamimâwâwa</i>
3SG	<i>niwâpamik</i>	<i>kiwâpamikonaw</i>	<i>niwâpamikonân</i>	<i>kiwâpamik</i>	<i>kiwâpamikowâw</i>				<i>wâpam(im)êw</i>
3PL	<i>niwâpamikwak</i>	<i>kiwâpamikonawak</i>	<i>niwâpamikonânak</i>	<i>kiwâpamikwak</i>	<i>kiwâpamikowâwak</i>				<i>wâpam(im)êwak</i>
3'	<i>niwâpamikoyiwa</i>	<i>kiwâpamikonawa</i>	<i>niwâpamikonâna</i>	<i>kiwâpamikoyiwa</i>	<i>kiwâpamikowâwa</i>	<i>wâpamik</i>	<i>wâpamikwak</i>		<i>wâpamêyiwa</i>
INTR	<i>nipimipahtân</i>	<i>kipimipahtâ(nâ)naw</i>	<i>nipimipahtânân</i>	<i>kipimipahtân</i>	<i>kipimipahtânâwâw</i>	<i>pimipahtâw</i>	<i>pimipahtâwak</i>		<i>pimipahtâyîwa</i>

220 On transitive verbs, the proximate/obviative appears in the mixed domain: there are different
 221 forms for SAP ↔ 3 PROX and SAP ↔ 3 OBV. In the non-local domain, three configurations with
 222 direct and inverse marking are observed: 3 → 3', 3' → 3 and 3' → 3'. While the first two are attested in
 223 other languages with direct/inverse systems, the third one is only found in Algonquian. Here, 3' → 3'
 224 (as in the form *wâpam-êyiwa* ‘he_{obv} sees him_{obv}’) is the so-called *further obviative* form, which is
 225 often abbreviated as 3' → 3". Example 11 illustrates this form with the verb *nipah*– ‘to kill’.

- 226 (11) *pêyak piko nipah-êyiwa o-mis-a wâposw-a*
 227 one just kill-3' → 3' 3POSS-older_sister-OBV rabbit-OBV
 228 ‘His sister had killed but one rabbit.’ (Wolfart, 1996, p. 401)

228 Such a form illustrates the fact that a given sentence can have any number of obviative arguments.
 229 Thus, a configuration with two obviative arguments does not imply reflexivization.

230 The morphosyntactic marking of the proximate/obviative distinction presents some noteworthy
 231 differences with other languages with direct/inverse such as Rgyalrong.

232 First, in Algonquian, we observe a tripartite distinction between proximate animate, obviative
 233 animate and inanimate referents. Indeed, the empathy hierarchy for Cree would be the following:⁷

- 234 (12) SAP > animate proximate > animate obviative > inanimate

⁷It is generally considered that the second person outranks the first person (2 > 1) in Algonquian languages, but this refers to a distinct hierarchy related to the slot accessibility of person prefixes, not the distribution of direct and inverse forms. Concerning obviative inanimates, see a recent study by Muehlbauer (2012).

235 Second, the proximate/obviative distinction in Rgyalrong is only present in $3 \rightarrow 3'$ and $3' \rightarrow 3$ verb
 236 forms, while in Algonquian it is also redundantly marked on nouns, intransitive verbs and transitive
 237 mixed forms.

238 Third, in Algonquian languages, the possessee of a SAP possessor can be either proximate
 239 or obviative, but the possessee of a third person proximate referent must be obviative. Thus, in
 240 example 13, where the possessee ('John's dog') is the agent and the possessor ('John') is the patient,
 241 the inverse suffix *-ik* is required, since the former ('John's dog') is automatically obviative.

- 242 (13) *Cân o-têm-a kî-mâkwam-ik*
 John 3SG.POSS-dog-OBV PST-bite-INV
 243 John_{prox}'s dog_{obv} bit him_{prox}. (Wolfart 1973, 25)

244 Although a similar constraint has been described in other language families such as Mayan
 245 (see Aissen 1997), no such phenomenon is attested in other languages with direct/inverse in non-
 246 local forms, such as Rgyalrong languages, for instance (see Jacques 2010, 141-2), and is thus not a
 247 universal property of proximate/obviative marking.

248 This comparison of Rgyalrong and Algonquian shows that while the proximate/obviative dis-
 249 tinction may appear to be a subset of the direct/inverse in non-local forms, the two phenomena are
 250 fundamentally different and only intersect in the $3 \rightarrow 3'$ and $3' \rightarrow 3$ configurations. Nearly all lan-
 251 guages whose direct/inverse system includes the non-local domain behave like Rgyalrong languages.
 252 The only exceptions we are aware of are Algonquian and Kutenai, but even the latter has a much
 253 simpler system than Algonquian. This also confirms the fact that the Algonquian direct/inverse
 254 system, while undeniably the first to have been properly described, is by no means representative.

255 3.2 Highly non-canonical direct/inverse systems

256 Highly non-canonical inverse systems comprise two main types: systems with the direct/inverse
 257 contrast present in the local or non-local domains but not in the mixed domain, or systems where
 258 the direct or inverse markers are polyfunctional. For lack of space, we will only illustrate the second
 259 case, using data from Khaling, a Kiranti language of Nepal (Jacques et al. 2012).⁸

260 As can be seen in Table 5, Khaling has a prefix *?i-* which appears in the second person forms of
 261 intransitive verbs as well as in the following transitive configurations: $2 \rightarrow 1$, $3 \rightarrow 1$, $3 \rightarrow 2$ and $2 \rightarrow 3$.
 262 Additionally, it appears in $1DU/PL \rightarrow 2$ forms which are not shown in that table. Khaling has no
 263 contrast between 3 and 3'.

Table 5: Khaling verbal system (singular forms only)

	1	2	3
1		$\Sigma-n\varepsilon$	$\Sigma-u$
2	$?i-\Sigma-\eta\lambda$		$?i-\Sigma-u$
3	$?i-\Sigma-\eta\lambda$	$?i-\Sigma$	$\Sigma-u$
INTR	$\Sigma-\eta\lambda$	$?i-\Sigma$	Σ

⁸The first case is represented by languages with proximate/obviative marking only in the non-local domain (Kutenai, Navajo) and languages with inverse only in local forms such as Nez Percé.

264 The prefix *ʔi-* can be described as appearing in all forms involving the second person (except
 265 1SG→2) and in all inverse forms. It is thus a conflation of a second person marker and an inverse
 266 marker, which has little synchronic functional motivation and cannot be described in terms of a
 267 hierarchy, even though a historical explanation seems possible (see section 5.2). We could gloss the
 268 Khaling prefix as 2/INV, but it would be misleading to refer to it as an inverse marker.

269 Prefixes with a distribution nearly identical to that of Khaling *ʔi-* are found in related languages
 270 such as Dumi, Trung and Rawang (van Driem 1993).

271 3.3 Hierarchical agreement without direction marking

272 Hierarchical systems without direct/inverse marking can be illustrated with data from Icarl Dargwa
 273 (Nakh-Daghestanian, Sumbatova and Mutalov 2003).

274 This language illustrates the fact that the access to inflectional slots may be described in terms
 275 of an indexability hierarchy. There are two clitics (= *di* ‘2s’ and = *da* ‘1, 2p’) which mark person
 276 in several TAM forms, such as the preterite. Second person arguments are always indexed on the
 277 verb irrespective of their grammatical role (S, A, or O). On the other hand, 1st person arguments
 278 are indexed only if there is no 2nd person involved (see 14 vs 15)

279 (14) *du-l u uc-ib=di* *l>2*
 1SG-ERG 2SG(ABS) catch.M.PFV-PRET=2SG

280 I caught you.

281 (15) *du-l Murad uc-ib=da* *l>3*
 1SG-ERG M. catch.M.PFV-PRET=1SG

282 I caught Murad.

283 Finally, when there are no SAP arguments, none of these clitics is used. In other words, person
 284 indexability is only determined by the hierarchy 2 > 1 > 3, not by grammatical roles (see Table 6
 285 with the verb *uc-* “to catch” in the preterit form *-ib*).

Table 6: Icarl Dargwa person markers in the preterite

	1	2	3
1		<i>uc-ib=di</i>	<i>uc-ib=da</i>
2	<i>uc-ib=di</i>		<i>uc-ib=di</i>
3	<i>uc-ib=da</i>	<i>uc-ib=di</i>	<i>uc-ib</i>

286 The paradigm in Table 6 is the prime example of a hierarchical system without a direction
 287 marker.

288 However, this simple picture looks different when TAM categories derived from the thematic
 289 stem are taken into account (Sumbatova and Mutalov, 2003, 81-82, 99).

290 The choice of the thematic vowel follows the hierarchy SAP > non-SAP. Thus, *-i-* shows that
 291 the AGENT is higher on the hierarchy than the PATIENT, *-u-* that this is not the case, i.e. *-i-* is used
 292 if the AGENT is SAP and the patient isn’t, and *-u-* in all other cases (including intransitive forms,

293 except with 3 person subjects where *-ar-/-an-* is used instead). Person markers in the thematic TAM
 294 categories cross-reference only SAP: we have *-d* ‘1st person (SG/PL)’ and *-ĭ/-ĭa* ‘2nd person (SG/PL)’,
 295 the 3rd person being unmarked (cf. Table 7).

Table 7: Icari Dargwa Potential Present verb paradigm

A \ P	P	1	2s	2p	3
1			<i>urc-u-ĭ</i>	<i>urc-u-ĭ-a</i>	<i>urc-i-d</i>
2s	<i>urc-u-ĭ</i>				<i>urc-i-ĭ</i>
2p	<i>urc-u-ĭ-a</i>				<i>urc-i-ĭ-a</i>
3	<i>urc-u-d</i>	<i>urc-u-ĭ</i>	<i>urc-u-ĭ-a</i>	<i>urc-u</i>	

296 Although pure hierarchical systems without any direct or inverse marker are well attested,⁹ it
 297 is possible that many languages with hierarchical alignment appearing to lack direction markers
 298 may reveal restricted direct or inverse marking in some areas of their grammar, like Icari Dargwa.
 299 In particular, Tangut (Sino-Tibetan; extinct) is generally presented as having a verbal agreement
 300 system very close to that of Dargi in Table 6 (the only significant difference being that in Tangut in
 301 local forms the verb agrees with the patient, thus 2→1 receives the first person marker instead of
 302 the second person marker as in Dargi, cf Kepping 1981). However, it has more recently been shown
 303 that Tangut consistently distinguishes SAP.SG→3 and 3→SAP.SG by stem alternation in the direct
 304 forms (Jacques 2009).

305 4 Typological perspectives

306 An important question concerning direct/inverse systems is to what extent this typological feature
 307 is correlated with other features. Klaiman (1992, 1991, 165-169) has proposed a correlation with
 308 head-markedness and configurationality, which was indeed observed in most of the languages in
 309 her sample.

310 More than twenty years after Klaiman’s work, it seems unlikely that direct/inverse could be
 311 correlated with any other feature (or set of features) in particular. Table 8 presents data from
 312 Zbu (?), Cree (Wolfart 1973), Sahaptin (Rude 1997, Zúñiga 2006), Navajo (Willie 2000), Dargwa
 313 (Sumbatova and Mutalov 2003), Movima (Haude 2009) and Mapudungun (Zúñiga 2006).

314 This table indicates whether the inverse in these languages appears in the local, non-local or
 315 mixed domains, as well as the presence or absence of other typologically relevant features such
 316 as head-markedness, discontinuous constituents, case marking, polypersonal marking on the verb,
 317 incorporation, and strong noun-verb distinction.

318 These data show that languages with direct/inverse systems, though mainly head-marking and
 319 polysynthetic (i.e. having noun incorporation and polypersonal marking), need not be so. It is
 320 important to note that non-configurationality, if understood as allowing discontinuous constituents,
 321 is likewise rare among such languages.

⁹The Tupi-Guarani family provides many examples of such systems (see for instance Rose 2009).

Table 8: Direct/inverse and other typological features

Family	Language	Head-marking	Discontinuous constituents	Non-local	Mixed	Local	Case	Noun / Verb	Incorporation	Polypersonal marking on the verb
Rgyalrongic (ST)	Zbu	x		x	x	x	ergative	strong	x	x
Algonquian (Algic)	Cree	x	x		x	x	obviative	strong	x	x
Sahaptian	Sahaptin	x	x	x		x	tripartite	strong		
Athabaskan	Navajo	x		x				strong		x
Nakh-Daghestanian	Dargwa			x	x	x	ergative	strong		
Isolate	Movima			x	x	x		omnipredicative	x	
Isolate	Mapudungun	x		x	x	x		strong	x	x

322 Given the limited number of languages with direct/inverse systems, it may prove difficult to
 323 ascertain whether the presence of such a system in a given language could be correlated with the
 324 presence or absence of other features. Indeed, even if we surveyed all such languages, the result-
 325 ing sample would still be too limited to provide any statistically significant results, especially if
 326 all languages of a particular subgroup (Algonquian or Rgyalrong, for instance) are counted as one
 327 token.

328 4.1 Extension of the concept of direct/inverse

329 As defined in section 2 and even taking into account highly non-canonical inverse systems, di-
 330 rect/inverse systems represent a very restricted phenomenon only attested in a minority of languages.
 331 Givón (1994) has proposed to extend this term to a broader set of phenomena.

332 Givón (1994, 9) defines the inverse as a type of de-transitive voice where ‘the patient is more
 333 topical than the agent but the agent retains considerable topicality’, unlike the passive where the
 334 agent is extremely non-topical (demoted or suppressed). He strictly distinguishes between *pragmatic*
 335 inverse (the optional use of the inverse to indicate that the agent is more topical than the patient)
 336 and *semantic* inverse (the obligatory use of the inverse conditioned by the relative ranking of the
 337 agent and patient on a particular referential hierarchy).

338 Under this view, inverse constructions are not limited to hierarchical systems, but the concept
 339 can be extended to describe topic fronting, a phenomenon he designates as *word-order* inverse. This
 340 extension of the concept of direct/inverse, while it has some merits in terms of cross-linguistic
 341 comparison, may run into difficulties when analysing the syntax of languages with a near-canonical
 342 direct/inverse system, as those languages also have topic fronting and right extraposition, and topic
 343 fronting of the patient is not always correlated with the use of the inverse.

344 Regardless of terminological preferences, Givonian text counts (in particular of *referential distance*
 345 and *topic persistence*, Givón 1994, 10) have provided an easily reproducible and insightful basis on
 346 which to build a cross-linguistic study of direct/inverse systems. It has been successfully applied to
 347 various languages with direct/inverse, such as Kutenai (Dryer 1994) and Japhug Rgyalrong (Jacques
 348 2010).

349 5 Diachronic perspective

350 Recent work such as Cristofaro (2013) has called into question the functional validity of referential
 351 hierarchies as an explanatory tool to account for the existence of direct/inverse systems. Instead,

352 it suggests that the structure of direct/inverse systems might be better explained by taking into
353 account the diachronic origin of these markers.

354 In this section, we provide a panchronic overview of direct and inverse markers: their origins
355 from and their development into other markers. Still, this type of research is fraught with difficulties
356 for two main reasons. First, most languages with direct/inverse marking (such as Movima, Kutenai,
357 Mapudungun) are isolates and thus cannot be easily studied in a diachronic perspective. Second,
358 since there are no languages with a near-canonical inverse with a written tradition predating the
359 seventeenth century (when Wampanoag was first put to writing by John Eliot), the data presented
360 here are reconstructions obtained by using the comparative method, and may be subject to revision
361 in the future.

362 5.1 Origins of inverse marking

363 The best attested origin of inverse markers is from an earlier cislocative. Two additional sources
364 (an earlier passive or a third person marker) have been identified, but examples are fewer and more
365 difficult to interpret.

366 5.1.1 Cislocative

367 The term ‘cislocative’ is used to refer to markers expressing a motion towards the speaker, both
368 directional (*‘verb hither’*) and associated motion (*‘come to verb’*) ones.¹⁰

369 The inverse marker in Nez Percé (Sahaptian) used in local scenarios with second person acting
370 on first person has grammaticalized from an earlier cislocative marker, reconstructed for Proto-
371 Sahaptian as *-im (Rude, 1997, 122).

372 (16) *héxn-e*
see-PST
373 I saw you.

374 (17) *hexn-ím-e*
see-CIS-PST
375 You saw me.

376 Interestingly, this marker has also grammaticalized into the ergative case suffix which appears
377 on the non-SAP agent in mixed scenarios in cases where one would expect inverse marking on the
378 verb (Rude, 1997, 121-2).

379 (18) *hi-héxn-e* *háama-nm*
3S/A→SAP-see-PST man-ERG
380 The man saw me/you. (NEZ PERCÉ)

381 This grammaticalization path is also attested in Sino-Tibetan. DeLancey (2013, 13-14) reports
382 that in several Kuki-Chin languages a verb meaning ‘to come’ (reconstructed for Proto-Kuki-Chin
383 as *huŋ by VanBik 2009, 191) has grammaticalized to a varying degree in different languages into a

¹⁰On the grammaticalization of associated motion markers from motion verbs, see Jacques (2013).

384 cislocative ‘hither’ prefix on motion verbs. Interestingly, in some Northern and Central languages,
 385 it has developed the additional function of optionally marking some transitive or ditransitive con-
 386 figurations involving a 1st person patient as in Bawm (example 19) or 1st or 2nd person patient, as
 387 in Sizang (example 20).

388 (19) *ka pâ nih hâi hawng ka pêk*
 1SG father ERG cup CIS 1SG give

389 My father gives me the cup. (Reichle 1981, 147-149, cited in DeLancey 2013, 14)

390 (20) *naŋmá: k-oy né: tú: hî:*
 you 1SG-CIS eat will FIN

391 I will eat you. (Stern 1984, 48, cited in DeLancey 2013, 13)

392 Even if we are not dealing with a fully grammaticalized direct/inverse system, the process towards
 393 its shaping is well under way.

394 Similar developments which have not (as yet) reached the same target, are also attested in the
 395 unrelated languages Shasta (Shastan, extinct), the Northern Iroquoian languages Cayuga, Tuscarora
 396 and Mohawk (Mithun, 1996), but also in Modern Japanese (Shibatani, 2003, 2006; Koga and Otori,
 397 2008) and Kabardian (Kumakhov and Vamling, 2006, 68ff). In all of these languages a cislocative
 398 has evolved, or is currently evolving, into a first person patient or a portmanteau 2 → 1 marker.

399 As for the grammaticalization path involved, it need not have been the same in all of the lan-
 400 guages concerned. Based on data from Japanese (Japonic) and Circassian (NW Caucasian) and the
 401 following tentative grammaticalization pathway could be proposed:

402 (21) COME → CISLOCATIVE *associated motion* *directional* → (‘sudden action’)? → INVERSE

403 Indeed, apart from their incipient use as a marker of grammatical relations in mixed scenarios,
 404 cislocative markers in these two languages have independently developed a secondary meaning of
 405 ‘sudden action’, a semantic extension not attested in the other languages of the sample. Therefore,
 406 the pathway proposed in (21) may not be applicable to other languages where the inverse originated
 407 from an earlier cislocative marker and so further research is needed.

408 5.1.2 Passive

409 A second grammaticalization pathway from passive to inverse has been proposed by several authors,
 410 the most prominent of whom is Givón (1994).

411 This pathway could perhaps be attested in the case of Algonquian. At present, there is no
 412 consensus on the origin of the inverse marker (used in the independent order) which has been
 413 reconstructed for Proto-Algonquian as *-ekw (Bloomfield, 1946, 98, Goddard, 1979, 89).

414 Goddard (1974) pointed out a possible Wiyot cognate, but the data is too fragmentary to draw
 415 any firm conclusions. Yurok, the only other relative of Algonquian, has a passive suffix -oy (Robins
 416 1958, 56-8) which presents affinities with inverse marking: it is required in some 3→SAP forms and
 417 blocked in SAP→3. However, this passive suffix is not relatable to Algonquian *-ekw by known
 418 phonetic laws (A. Garrett, p.c.).

419 Still, [McLean \(2001\)](#) has proposed that the Algonquian inverse suffix **-ekw* originated from a
 420 passive marker whose function was similar to the suffix *-oy* in Yurok. There is some evidence for this
 421 in modern languages such as Cree and Ojibwe which still have a passive construction distinct from
 422 the inverse one but sharing with it the **-ekw* element. In Ojibwe ([Valentine 2001](#), 689), for instance,
 423 the passive SAP form is marked by *-igoo*, a compound suffix which could be tentatively analyzed as
 424 resulting from the fusion of the inverse *-igw* with the intransitive animate verb derivational suffix
 425 *-aa*.

426 5.1.3 Third person

427 In still other languages, we observe a formal similarity between some inverse or direct markers and
 428 various types of third person markers including agent, patient or possessive affixes.

429 The clearest case is the inverse prefix found in Sino-Tibetan (Rgyalrongic and Kiranti) lan-
 430 guages. As first noticed by [DeLancey \(1981b\)](#), the Situ Rgyalrong third person possessive prefix
 431 *wə-* is formally identical to the inverse marker. This is also true of other Rgyalrong languages and
 432 of some Kiranti languages that have an inverse marker, such as Bantawa (see [Table 9](#), data from ?
 433 and [Doornenbal 2009](#)).

Table 9: Comparison of inverse and third person prefixes in Rgyalrong and Kiranti

	language	inverse marker	third person possessive
Rgyalrong	Situ	<i>wə-</i>	<i>wə-</i>
	Tshobdun	<i>o-</i>	<i>o-</i>
	Zbu	<i>wə-</i>	<i>wə-</i>
Kiranti	Bantawa	<i>i- < *u-</i>	<i>i- < *u-</i>

434 The similarity between the two sets of prefixes is striking, and suggests a grammaticalization
 435 from a third person marker into an inverse marker. While the exact pathway remains unclear and
 436 thus requires further investigation, it is possible that non-finite verb forms carrying a third person
 437 possessive prefix were reanalyzed as finite ones. In the case of Sino-Tibetan languages, this scenario
 438 probably occurred in the ancestor of both Rgyalrongic and Kiranti languages (see [Jacques 2012a](#) and
 439 [DeLancey 2011](#)).

440 5.2 Stability of direct/inverse systems

441 Direct/inverse marking appears to be quite stable in at least one family: Algonquian. The system
 442 can be reconstructed back to Proto-Algonquian ([Goddard 1979](#), 89) and has been preserved with
 443 little modification in all daughter languages.

444 However, in Sino-Tibetan, the only other large family where direct/inverse systems are attested,
 445 near-canonical direct/inverse systems are only present in the Rgyalrong languages described in sec-
 446 tion 2.1. Other Sino-Tibetan languages show highly non-canonical or even completely opaque
 447 inverse systems (cf. Kiranti languages described in section 3.2).

448 In this connection, Lavrung ([Huang 2007](#), 69-70, [Lai 2013](#)) shows an interesting evolution
 449 which might help us understand how such opaque systems develop. A comparison of the data in

450 Table 10 with the Zbu Rgyalrong paradigm in 3 shows that the ϑ - prefix neatly corresponds to the
 451 inverse $w\vartheta$ - in Zbu and indeed the system we have in Lavrung, though slightly less canonical than
 452 that of Zbu, is still what we would call a near-canonical inverse system.

Table 10: Lavrung verbal paradigm (singular and plural forms)

	1sg	1pl	2sg	2pl	3
1sg			$\Sigma-n$	$\Sigma-j$	$\Sigma-a\eta$
1pl					$\Sigma-j$
2sg	$\vartheta-\Sigma-a\eta$	$\vartheta-\Sigma-j$			$\Sigma-n$
2pl					$\Sigma-j$
3			$\vartheta-\Sigma-n$	$\vartheta-\Sigma-j$	$\vartheta-\Sigma$
INTR	$\Sigma-a\eta$	$\Sigma-j$	$\Sigma-n$	$\Sigma-j$	Σ

453 Lavrung appears to differ from Zbu mainly in having lost direct inverse contrast in non-local
 454 forms ($3 \rightarrow 3'$ and $3' \rightarrow 3$) to the benefit of the inverse form. This evolution appears somewhat
 455 contrary to *a priori* expectation, given that inverse could be construed as being the marked form,
 456 and the direct the unmarked form. Lavrung thus represents a first step in the direction of an
 457 opaque (direct/inverse) system. The prefix ϑ - cannot be analyzed synchronically as a third person
 458 agent marker, since it occurs in $2 \rightarrow 1$ forms, but it is not a canonical inverse marker anymore either,
 459 since it also occurs in all $3 \rightarrow 3$ forms.

460 There is no consensus as to how exactly the opaque systems observed in Kiranti came into exist-
 461 ence, but a possibility is that they originated from a direct/inverse system similar to that observed in
 462 Rgyalrong languages, and then underwent a series of changes which thoroughly reshaped the system
 463 starting with a generalization of the inverse marker in non-local scenarios as in the case of Lavrung.
 464 This in turn increased morphological opacity up to a point where many individual morphemes (like
 465 Khaling *?i-*) ceased to have a synchronically straightforward morphosyntactic function.

466 6 Conclusion

467 Direct/inverse systems in the narrow sense are a rare type of agreement system, observed mainly in
 468 languages of the Americas and the greater Himalayan region. Nevertheless, their theoretical impor-
 469 tance cannot be overestimated. Indeed, they have served as one of the models for the development
 470 of the concept of *referential hierarchies* and the idea of setting *hierarchical alignment* as a category
 471 distinct from accusative, ergative, active or tripartite alignment.

472 Direct/inverse systems are attested in extremely endangered languages, and much work is still
 473 needed for a detailed and meticulous description of such systems. In particular the precise conditions
 474 for the use of direct and inverse forms in the non-local domain is a topic of research which cannot
 475 be based on elicitation, but requires extensive work on authentic oral corpora. A finer-grained
 476 approach to morphosyntactic diversity is necessary, and recent research on Rgyalrongic languages
 477 for instance has revealed subtle but important differences in the use of the inverse across closely
 478 related language varieties.

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