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The noncausal/causal alternation and the limits of ambitransitivity in a sample of sub-Saharan languages

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Abstract

The first part of the present article concentrates on noncausal/causal pairs whose noncausal member is a monovalent verb referring to a process typically undergone by concrete inanimate entities. The cross-linguistic variation in the coding of such pairs is analyzed in a convenience sample of 30 sub-Saharan languages from various genetic units. 10 of the 30 languages show an extremely high degree of preference for the ambitransitivity strategy in the coding of this particular type of noncausal/causal pairs, whereas none of them shows such a high degree of preference for any of the other possible strategies. The second part of the article concentrates on the 10 languages of the sample making a systematic use of the ambitransitivity strategy for the type of noncausal/causal pairs investigated in the first part of the article. It analyzes the extension of the ambitransitivity strategy to the coding of other semantic types of noncausal/causal pairs and to the coding of the psych alternation. In the questionnaire used to test the extension of the ambitransitivity strategy, a sizeable proportion of ambitransitive pairs is found in only three languages. In the others, the lack of any systematicity is the situation that predominates for the semantic types of noncausal/causal pairs other than that investigated in the first part of the article and for pairs of psych verbs.

Keywords

ambitransitivity, causativization, decausativization, noncausal/causal alternation, psych alternation, valency orientation

Résumé

La première partie de cet article examine spécifiquement les couples noncausal/causal dont le membre noncausal est un verbe monovalent dénotant un processus typiquement subi par des entités concrètes inanimées. La variation translinguistique dans le codage de tels couples est analysée dans un échantillon de 30 langues sub-sahariennes appartenant à diverses unités génétiques. 10 des 30 langues présentent un degré extrême de préférence pour la stratégie de l'ambitransitivité dans le codage de ce type particulier de couples noncausal/causal, alors qu'aucune ne présente un tel degré de préférence pour l'une des autres stratégies possibles. La seconde partie de l'article se concentre sur les 10 langues de l'échantillon qui font un usage systématique de la stratégie de l'ambitransitivité pour le type de couples noncausal/causal examiné dans la première partie de l'article, avec comme objectif d'analyser l'extension de la stratégie de l'ambitransitivité au codage d'autres types sémantiques de couples noncausal/causal, ainsi qu'au codage de couples de verbes psychologiques. Dans le questionnaire utilisé pour tester l'extension de la stratégie de l'ambitransitivité, seules trois langues présentent une proportion importante de couples ambitransitifs. Dans les autres, l'absence de toute systématicité est

la situation qui prédomine pour les types de couples noncausal/causal autres que ceux examinés dans la première partie de l'article, ainsi que pour les couples de verbes psychologiques.

MOTS CLÉS

alternance causal/noncausal, alternance psychologique, ambitransitivité, causativisation, décausativisation, orientation de valence

1. INTRODUCTION

In this article, in conformity with the terminology defined in the introduction to this special issue, the labels "noncausal" and "causal" refer to purely semantic notions, as opposed to "causative" (which implies derivation from noncausal to causal) and "decausative" (or "anticausative", which implies derivation from causal to noncausal). "Noncausal" and "causal" are relative notions: a verb (or predicate) is not noncausal or causal in the absolute but only in relation to another verb with which it forms a noncausal/causal pair (Haspelmath 2016). For example, *show* is causal in relation to *see* but noncausal in relation to *make show*.

Five types of strategies may be involved in the coding of noncausal/causal pairs of verb meanings:[1]

- **ambitransitivity** strategy: in an ambitransitive pair, there is no formal difference between the noncausal verb and its causal counterpart;
- **decausativization** strategy: in a decausative pair, the noncausal verb can be analyzed as formally more complex than its causal counterpart;
- **causativization** strategy: in a causative pair, the causal verb can be analyzed as formally more complex than its noncausal counterpart;
- **equipollence** strategy: the two members of an equipollent pair are formally related, but none of the two can be characterized as morphologically more complex than the other; this definition embraces several subtypes that Nichols *et al.* (2004) designate as **double derivation**, **conjugation class change**, **auxiliary change** and **ablaut**;
- **suppletion** strategy: in a suppletive pair, the formal difference between the noncausal verb and its causal counterpart cannot be analyzed as a particular instance of some more or less regular pattern.

Decausativization and causativization share a morphological orientation of the relationship between the two members of the pair and, consequently, can be grouped together as **directed** strategies, contrasting with the other three strategies, which can be characterized as **undirected**.

Some comments are in order here about the equipollence strategy, since the distinction between ambitransitivity and equipollence may be problematic. The point is that not all the changes affecting inflection or auxiliaries that may be observed between the two members of a noncausal/causal pair are worth being considered as instances of the equipollence strategy. When they constitute lexical properties of verbs, the analysis of such changes as involved in the coding of the noncausal/causal alternation is uncontroversial. By contrast, in languages in which verbs do not inflect in the same way, or select distinct auxiliaries, in transitive and intransitive clauses, a change in inflection or auxiliaries automatically triggered by the intransitive or transitive nature of the clause constitutes a mere instance of transitivity marking, which by itself is compatible with the analysis of noncausal/causal pairs as ambitransitive pairs, if no other formal distinction can be observed between the clauses projected by the two members of the pair. Among the languages quoted in this article, this observation applies to Basque (where, whenever an auxiliary is required, it is automatically 'be' in intransitive clauses and 'have' in transitive clauses) and to three Mande languages: Mandinka, Bambara and Soninke (where the paradigm of TAM markers is not exactly the same in transitive and intransitive clauses).

Still concerning the equipollence strategy, it is reasonable to think that, in general, taking into account the distinction between the different subtypes identified by Nichols *et al.* (2004) would give a finer-grained and richer understanding of the strategies involved in the noncausal/causal alternation.

1. The order in which the strategies are listed is in principle arbitrary. The one selected throughout this article reflects their relative prominence in the languages of the sample.

However, there is no reason to think that this could have an impact on the question of the extension of the ambitransitivity strategy, which constitutes the main focus of this article, and this is the reason why I will not pursue that in this article.

Concerning now the distinction between equipollence and suppletion, I adopt a relatively broad view of the notion of suppletion, according to which pairs showing partial formal resemblance, but for which no regularity can be found in the formal relationship between the two members of the pair, are classified as suppletive rather than equipollent. This applies, for example, to Soninke *kàrá*/*kàrí* 'die, go out/kill, put out (fire)', analyzed as a suppletive pair because the verbal lexicon of Soninke includes no other pair of semantically related verbs showing the same formal difference.

In the remainder of this article, the first three letters of each of the labels put forward above will be used as an abbreviation for the five strategies that may be involved in the coding of the noncausal/causal alternation: AMB for ambitransitivity, DEC for decausativization, CAU for causativization, EQU for equipollence and SUP for suppletion. As illustrated in (1), for some noncausal/causal pairs of verb meanings at least, the five possible strategies are attested cross-linguistically, which raises the question of possible regularities in the choice of particular strategies by individual languages.

(1) 'go out/put out (fire)' in five sub-Saharan languages

a.	Minyanka (Gur)	*fúkú*/*fúkú*	AMB
b.	Jóola Fóoñi (Atlantic)	*fok-o*/*fok*	DEC
c.	Afar (Cushitic)	*bade*/*bad-ise*	CAU
d.	Lingala (Benue-Congo, Bantu)	*kozim-an-a*/*kozim-is-a*	EQU
e.	Koroboro Senni (Songhay)	*buu*/*wii*	SUP

The regularities in the choice of particular strategies by individual languages and in the preference of individual noncausal/causal pairs of verb meanings for the causativization or decausativization strategy have already been discussed in very general terms by Haspelmath (1993), Nichols *et al.* (2004) and Haspelmath (2016). One of the hypotheses suggested by the data they analyze is that, in a given language, different semantic types of noncausal/causal pairs do not necessarily show the same possibilities or preferences.

This question is addressed here on the basis of a convenience sample of 30 sub-Saharan languages from various genetic units, focusing on the use of the ambitransitivity strategy. Given the importance of the ambitransitivity strategy in many languages from sub-Saharan Africa, such a sample is well suited for discussing the extension of this particular strategy beyond the semantic type of noncausal/causal pairs for which it is particularly common.

The first part of this article (Sections 2 to 5) deals specifically with pairs whose noncausal member is a monovalent verb referring to a process (not a state) typically undergone by concrete inanimate entities and easily conceived as occurring without the involvement of a clearly identified external instigator. This choice is motivated by the fact that, cross-linguistically, in comparison with other semantic types of noncausal/causal pairs, this type seems to show the following two particularities: on the one hand, a relatively high proportion of pairs whose members are either morphologically related or identical and, on the other hand, a particularly important cross-linguistic variation between the possible strategies (cf. in particular Haspelmath 2016).

Section 2 presents the questionnaire I used to evaluate the cross-linguistic variation in the formal relationships between noncausal verbs meeting the semantic characterization formulated above and their causal counterparts (Questionnaire A). Section 3 describes the language sample. Section 4 compares the coding of the noncausal/causal pairs from Questionnaire A across the languages of the sample. Section 5 discusses the prevailing tendencies in the coding of individual noncausal/causal pairs.

The analysis carried out in Sections 4 and 5 shows that the language sample includes a high proportion of languages (10 out of 30) in which the verb pairs that constitute Questionnaire A show an extreme degree of preference for the ambitransitivity strategy but no language showing a very high

degree of preference for either the causativization or decausativization strategy. Consequently, this sample does not provide a convenient basis to discuss the extension of the causativization or decausativization strategy to other semantic types of noncausal/causal pairs but can be used to discuss the following question: in the languages that strongly prefer the ambitransitivity strategy for the semantic type of noncausal/causal pairs investigated in the first part of the article, to what extent is it possible to predict the extension of this strategy to other semantic types of noncausal/causal pairs or to the psych alternation (a type of valency alternation often treated as a mere subtype of the noncausal/causal alternation)?

In the second part of the article (Section 6), I use a second questionnaire (Questionnaire B) to evaluate the tendencies in the coding of semantic types of noncausal/causal pairs other than that investigated in the first part of the article and in the coding of pairs of psych verbs. The data collected on the basis of Questionnaire B shows that the strong preference for the ambitransitivity strategy observed in some languages with the noncausal/causal pairs that constitute Questionnaire A does not necessarily extend to other semantic types of noncausal/causal pairs or to the psych alternation (Section 6).

Section 7 summarizes the conclusions.

2. QUESTIONNAIRE A

As explained in the introduction, among the possible semantic types of noncausal/causal pairs, the first part of the present article deals specifically with pairs whose noncausal member is a monovalent verb referring to a process (not a state) typically undergone by concrete inanimate entities and easily conceived as occurring without the involvement of a clearly identified external instigator meeting the definition of a prototypical agent. Taking into account this delimitation, the wordlists already used for similar studies (Haspelmath 1993; Nichols *et al.* 2004), and my own experience of working on sub-Saharan languages and of consulting dictionaries of sub-Saharan languages, I selected the 13 pairs of verb meanings listed in (2). In order to facilitate comparison with other studies of valency orientation, I decided to restrict the questionnaire to noncausal/causal pairs that also feature, or at least have a near equivalent, in the questionnaire used by Haspelmath (1993: 97), which served as a basis for many subsequent studies.

(2) Questionnaire A
1. break (intr./tr.)
2. burn (intr./tr.)
3. close (intr./tr.)
4. dry (intr./tr.)
5. go out/put out (fire)
6. increase (intr./tr.) — cf. Haspelmath ‘develop’
7. melt (intr./tr.)
8. move (intr./tr.) without changing place (rock, shake, ...) — cf. Haspelmath ‘rock’
9. open (intr./tr.)
10. split (intr./tr.)
11. spoil (intr./tr.) — cf. Haspelmath ‘destroy’
12. spread (intr./tr.)
13. turn upside down (intr./tr.) — cf. Haspelmath ‘turn’

As illustrated in (3),[2] the relevance of this questionnaire for a cross-linguistic investigation of noncausal/causal pairs follows from the fact that, in some languages, the noncausal/causal pairs that

2. The Basque data in (3) has been compiled from dictionaries and checked with native speakers. The Akhvakh data is from my own fieldwork. For Romanian, the data provided by Haspelmath (1993) has been checked and completed with the help of native speakers.

constitute it show an exclusive (or almost exclusive) preference for one of the possible strategies, for example ambitransitivity in Basque (unclassified, eus), with 13 ambitransitive pairs out of 13, decausativization in Romanian (Romance, rum), with 12 decausative pairs out of 13,[3] and causativization in Akhvakh (Nakh-Daghestanian, akv), with 11 causative pairs out of 13.[4]

(3) The 13 noncausal/causal pairs of Questionnaire A in Basque, Romanian and Akhvakh

(3a) Basque

1.	break (intr./tr.)	*puskatu*/*puskatu*	AMB
2.	burn (intr./tr.)	*erre*/*erre*	AMB
3.	close (intr./tr.)	*itxi*/*itxi*	AMB
4.	dry (intr./tr.)	*lehortu*/*lehortu*	AMB
5.	go out/put out (fire)	*itzali*/*itzali*	AMB
6.	increase (intr./tr.)	*handitu*/*handitu*	AMB
7.	melt (intr./tr.)	*urtu*/*urtu*	AMB
8.	move (intr./tr.)	*mugitu*/*mugitu*	AMB
9.	open (intr./tr.)	*ireki*/*ireki*	AMB
10.	split (intr./tr.)	*pitzatu*/*pitzatu*	AMB
11.	spoil (intr./tr.)	*kaltetu*/*kaltetu*	AMB
12.	spread (intr./tr.)	*hedatu*/*hedatu*	AMB
13.	turn upside down (intr./tr.)	*irauli*/*irauli*	AMB

(3b) Romanian

1.	break (intr./tr.)	*se rupe*/*rupe*	DEC
2.	burn (intr./tr.)	*arde*/*arde*	AMB
3.	close (intr./tr.)	*se închide*/*închide*	DEC
4.	dry (intr./tr.)	*se usca*/*usca*	DEC
5.	go out/put out (fire)	*se stinge*/*stinge*	DEC
6.	increase (intr./tr.)	*se dezvolta*/*dezvolta*	DEC
7.	melt (intr./tr.)	*se topi*/*topi*	DEC
8.	move (intr./tr.)	*se legăna*/*legăna*	DEC
9.	open (intr./tr.)	*se deschide*/*deschide*	DEC
10.	split (intr./tr.)	*se crăpa*/*crăpa*	DEC
11.	spoil (intr./tr.)	*se strica*/*strica*	DEC
12.	spread (intr./tr.)	*se răspîndi*/*răspîndi*	DEC
13.	turn upside down (intr./tr.)	*se învîrti*/*învîrti*	DEC

3. In Romanian, decausativization is marked by combining the verb with the clitic *se*, historically the reflex of the Indo-European reflexive pronoun.
4. The Akhvakh verbs quoted here are causativized by means of a suffix whose underlying form is *-aj*.

(3c) Akhvakh

1.	break (intr./tr.)	*biq'-/biq'-aj-*	CAU
2.	burn (intr./tr.)	*č'aj-/č'aj-aj-*	CAU
3.	close (intr./tr.)	*ec'-/ec'-*	AMB
4.	dry (intr./tr.)	*buqː'-/buqː'-aj-*	CAU
5.	go out/put out (fire)	*bisː-/bisː-aj-*	CAU
6.	increase (intr./tr.)	*ĩk'ał-/ĩk'ar-aj-*	CAU
7.	melt (intr./tr.)	*miħ-/miħ-aj-*	CAU
8.	move (intr./tr.)	*kokor-/kokor-aj-*	CAU
9.	open (intr./tr.)	*aχ-/aχ-*	AMB
10.	split (intr./tr.)	*qːar-/qːar-aj-*	CAU
11.	spoil (intr./tr.)	*baχː-/baχː-aj-*	CAU
12.	spread (intr./tr.)	*bač-/bač-aj-*	CAU
13.	turn upside down (intr./tr.)	*sːor-/sːor-aj-*	CAU

3. THE LANGUAGE SAMPLE

The language sample includes 30 languages belonging to 15 distinct genetic units (either independent language families or subfamilies of one of the three phyla variously recognized by specialists of the historical study of sub-Saharan languages — Afroasiatic, Nilo-Saharan and Niger-Congo).[5]

(4) The language sample and the sources

Genetic Unit	Glossonym (ISO 639-3 code)	Source
Atlantic	Balant Ganja (bjt)	own data
	Adamawa Fula (fub)	Noye (1990), Henry Tourneux (p.c.), Jean-Pierre Boutché (p.c.)
	Jóola Fóoñi (dyo)	own data
	Seereer (srr)	Crétois (1972-1977)
	Wolof (wol)	Diouf (2003)
Benue-Congo	Emai (ema)	Schaefer & Egbokhare (2007)
	Herero (her)	Yoneda (2014a)
	Lingala (lin)	Ngalasso-Mwatha (2013)
	Swahili (swa)	Yoneda (2014b)
	Tswana (tsn)	own data
Central Sudanic	Sar (mwm)	Palayer (1992)
Chadic	Hausa (hau)	Caron & Amfani (1997), Newman (2000), Newman (2007)
Cushitic	Afar (aar)	Parker & Hayward (1985)
	Sidaama (sid)	Kawachi (2014a)
Dogon	Jamsay (djm)	Heath (n.d.), Jeffrey Heath (p.c.)

5. A fourth phylum (Khoisan) was proposed by Joseph Greenberg, but most specialists agree now that the evidence of a genetic relationship between the languages and language families grouped into the Khoisan phylum by Joseph Greenberg is not sufficient to accept this hypothesis. As regards the Nilo-Saharan and Niger-Congo phyla, many specialists consider that convincing evidence of genetic relationships exists only for a subset of the language families grouped by Joseph Greenberg into each of these two phyla and consequently propose a narrower delimitation — cf. Dimmendaal (2011: 307-332).

Eastern Sudanic	Kupsabiny (kpz)	Kawachi (2014b)
Gur	Minyanka (myk)	Sékou Coulibaly (p.c.)
Kwa	Baule (bci)	Tymian *et al.* (2003), Jérémie Kouadio (p.c.)
	Fon (fon)	Segurola & Rassinoux (2000)
Mande	Bambara (bam)	Bailleul (2007), Dumestre (2011), Valentin Vydrin (p.c.)
	Kakabe (kke)	Alexandra Vydrina (2017)
	Mandinka (mnk)	own data
	Mano (mev)	Maria Khachaturyan (p.c.)
	Soninke (snk)	own data
Saharan	Kanuri (kau)	Cyffer & Hutchison (1990)
Sandawe	Sandawe (sad)	Ehret & Ehret (2012)
Semitic	Amharic (amh)	Wakasa (2014)
Songhay	Humburi Senni (hmb)	Heath (2015)
	Koroboro Senni (ses)	Prost (1956), Heath (1998)
Ubangian	Gbaya (gya)	Roulon-Doko (2008), Paulette Roulon-Doko (p.c.)

This is a convenience sample. In addition to the sub-Saharan data already published in the World Atlas of Transitivity Pairs (Herero, Swahili, Sidaama, Kupsabiny, Amharic),[6] my own data on Balant Ganja, Jóola Fóoñi, Tswana, Mandinka and Soninke, and data provided by experts of other languages, I consulted all the dictionaries of African languages to which I had relatively easy access, and the languages in the sample are simply those for which the following two conditions were met: (a) I was able to fill Questionnaire A without any gaps, and (b) in the case of languages with more or less complex morphophonological processes, I had the morphological information necessary to characterize the pairs as belonging to one of the five basic types without the risk of errors.

In addition to the 30 languages of the sample, I will occasionally mention the following languages, for which the data I have been able to gather is sufficient to give an idea of their preferences in the coding of the verb pairs that constitute Questionnaire A, despite some gaps:

- Adamawa: Pere (pfe), Samba Leko (ndi)
- Benue-Congo: Degema (deg), Ibibio (ibb), Yoruba (yor)
- Kru: Bete (btg), Dida (dic)
- Kwa: Ikposo (kpo)
- Mande: Bobo (bwq), Bozo (boz), Bisa (bib), Dan (dnj), Soso (sus)
- Ubangian: Sango (sag)

4. The cross-linguistic variation in the coding of the 13 noncausal/causal pairs of Questionnaire A

4.1 Introductory remarks

The coding of the 13 noncausal/causal pairs of Questionnaire A in the 30 languages of the sample is summarized in Appendix 2. Within the limits of the sample, the average value for each of the five possible types of strategies (i.e. the sum of the values for each of the languages divided by 30) is as indicated in (5).

6. Not all the sub-Saharan data provided by the World Atlas of Transitivity Pairs has been included in the sample. Data whose analysis I considered doubtful has not been included. In all cases, I have reevaluated the analysis, and the discussion of the languages in question in the present article refers to my own evaluation (see Appendix 1).

(5) Average values for each of the five possible types of strategies

ambitransitivity	5.1 out of 13
decausativization	3.2 out of 13
causativization	2.6 out of 13
equipollence	1.5 out of 13
suppletion	0.5 out of 13

The suppletion strategy is found in a sizeable proportion of the languages of the sample for just one pair: *go out*/*put out (fire)* (9 languages out of 30). The average value for the suppletion strategy is particularly low, and none of the languages in the sample has more than 3 suppletive pairs. Consequently, the suppletion strategy will not be considered in the characterization of the individual languages in terms of relative prominence of particular strategies. Within the limits of the sample, I consider each of the other four strategies as relatively prominent in a given language if its value in the language in question exceeds the average value by more than one third, which gives the following thresholds:[7]

– 7 for the ambitransitivity strategy,
– 5 for the decausativization strategy,
– 4 for the causativization strategy,
– 3 for the equipollence strategy.

4.2 The relative prominence of the four main strategies in the languages of the sample

Most of the languages of the sample can be viewed as having one (and only one) relatively prominent strategy for the coding of the semantic type of noncausal/causal pairs represented in Questionnaire A. In some others, two strategies show a relative prominence. In yet others, none of the strategies exceeds its average value significantly. This third group consists of the following four languages: Wolof (Atlantic), Soninke (Mande), Koroboro Senni (Songhay) and Humburi Senni (Songhay).

4.2.1 Languages with one relatively prominent strategy

10 languages belonging to 7 of the 15 genetic units represented in the sample show a relative prominence of **ambitransitivity** only: Emai (Benue-Congo), Sar (Central Sudanic), Jamsay (Dogon), Minyanka (Gur), Baule (Kwa), Fon (Kwa), Bambara (Mande), Kakabe (Mande), Mano (Mande) and Gbaya (Ubangian). It is remarkable that all of them have a very high proportion of ambitransitive pairs, of the same range as that found, for example, in English (between 10 and 12 out of 13).

7 languages belonging to 5 of the 15 genetic units represented in the sample show a relative prominence of **decausativization** only: Jóola Fóoñi (Atlantic), Seereer (Atlantic), Lingala (Benue-Congo), Tswana (Benue-Congo), Sidaama (Cushitic), Kupsabiny (Eastern Sudanic) and Kanuri (Saharan). The number of decausative pairs is particularly high in Kupsabiny: 10 out of the 13 pairs of Questionnaire A, i.e. exactly the same number as in Russian. Other languages with a marked prominence of the decausativization strategy include Jóola Fóoñi (8 decausative pairs), Seereer (9 decausative pairs) and Kanuri (8 decausative pairs). This is all the more remarkable because it has been repeatedly stated in the literature on the noncausal/causal alternation (cf. among others Haspelmath 1993: 102; Nichols *et al.* 2004: 182) that a strong preference for decausativization is extremely rare (or even inexistent) outside of Europe.

The sample includes just one language characterized by the relative prominence of **causativization** only: Swahili (Benue-Congo). Note that, even in Swahili, the number of causative pairs in Questionnaire A is not very high: 7 out of 13, to be compared with the 8.5 causative pairs found in

7. I am conscious of the arbitrariness of considering a strategy as prominent in a given language if its value exceeds the average value by more than one third rather than any other percentage, but the data would be difficult to analyze consistently without first taking such a decision. In any case, a different decision on this point would have no significant impact on the discussion of possible regularities in Section 4.3.

Mongolian (Haspelmath 1993: 117-118) or the 11 causatives pairs found in Akhvakh (see Section 2) on the basis of the same questionnaire.

The sample also includes five languages with a proportion of causative pairs of the same range as that found in Swahili (between 5 and 7) but in which another strategy can also be viewed as relatively prominent: Amharic (Semitic), Sandawe (unclassified), Mandinka (Mande), Herero (Benue-Congo) and Afar (Cushitic).

Two languages show a relative prominence of the **equipollence** strategy only: Adamawa Fula (Atlantic) and Hausa (Chadic). Unsurprisingly, a salient characteristic shared by Fula and Hausa is the existence of a system of conjugation classes (or inflectional voices). Hausa has several verb classes (traditionally called "grades") that differ primarily in the forms that verbs take depending on their objects or lack of objects.[8] Fula has three verb classes (traditionally called "voices") that differ in the forms of the TAM and polarity markers. In both cases, conjugation class change is a common way of coding the noncausal/causal alternation.[9] A system of conjugation classes (or inflectional voices) is also found in Balant Ganja (Atlantic), but in Balant Ganja, the change in conjugation class observed in the coding of the noncausal/causal pairs is often the mere consequence of the addition of a decausativization marker selecting a particular voice, and the pairs in question are consequently best viewed as decausative pairs.

Among the languages that I did not include in the sample because of some gaps in the data, the predominance of the equipollence strategy is nevertheless obvious in Pere (Adamawa). However, the equipollent pairs of Pere do not involve conjugation class change but tone ablaut, as, for example, *nál* 'melt (intr.)'/*nàl* 'melt (tr.) (Kastenholz 2014).

4.2.2 Languages with two relatively prominent strategies

Within the limits of Questionnaire A, Mandinka (Mande) has a relatively high proportion of both ambitransitive and causative pairs.

Amharic (Semitic) and Sandawe (unclassified) have a relatively high proportion of both decausative and causative pairs (and consequently very few undirected pairs, or none at all).Balant Ganja (Atlantic) shows a relative prominence of both decausativization and equipollence.

Herero (Benue-Congo) and Afar (Cushitic) show a relative prominence of both causativization and equipollence.

None of the languages of the sample shows a relative prominence of both ambitransitivity and equipollence, in line with one of the correlations observed by Nichols *et al.* (2004: 165) in their worldwide sample.

4.3 Some regularities in the coding of the 13 noncausal/causal pairs of Questionnaire A in the languages of the sample

4.3.1 The ambitransitivity strategy in the languages of the sample

As mentioned above, 10 out of the 30 sample languages have a very high proportion of ambitransitive pairs in Questionnaire A, and the predominance of ambitransitivity is also obvious for several languages that I did not include in the sample because of some gaps in the data: Samba Leko (Adamawa), Yoruba (Benue-Congo), Ikposo (Kwa), Bisa (Mande), Dan (Mande) and Sango (Ubangian).

In this respect, the sample of 30 sub-Saharan languages analyzed here sharply contrasts with the sample of 21 mainly Eurasian languages analyzed by Haspelmath (1993), among which English is the only language with such a high proportion of ambitransitive pairs.

8. The reference grammars of Hausa consider some "grades" as basic and others as derived, but this distinction is based on semantic rather than formal considerations. As a rule, as discussed among others by Newman (2000), verb stems found in "derived" grades show a relatively constant element of meaning associated with the grade form which is absent in the "basic" grades.

9. Note, however, that the vehicular/urban variety of Adamawa Fula tends to lose the middle voice and replaces it by the active voice, which results in a reduction of the proportion of equipollent pairs and an increase in the proportion of ambitransitive pairs (Henry Tourneux p.c.; Jean-Pierre Boutché p.c.).

However, the sample also includes 9 languages with no ambitransitive pairs at all within the limits of Questionnaire A: Jóola Fóoñi (Atlantic), Lingala (Benue-Congo), Swahili (Benue-Congo), Afar (Cushitic), Sidaama (Cushitic), Kupsabiny (Eastern Sudanic), Kanuri (Saharan), Sandawe (unclassified) and Amharic (Semitic).

4.3.2 The decausativization strategy in the languages of the sample

As mentioned above, at least for the semantic type of noncausal/causal pairs represented in Questionnaire A, some of the languages in the sample show a strong preference for decausativization. Among the languages for which I have partial data, the preference for decausativization is also obvious in Ibibio (Benue-Congo).

However, none of the languages in the sample shows a preference for decausativization comparable to that found in extremely decausativizing languages such as Romanian (3), and languages with no decausative pair at all within the limits of Questionnaire A are very common too (13 out of 30), which sharply contrasts with the scarcity of such languages in the language sample analyzed by Haspelmath (1993), heavily oriented towards Eurasian languages.

Consistent with Nichols *et al.*'s (2004: 166-167) observation that decausativization is favored by high morphological complexity, all the languages in the sample that have a relatively high proportion of decausative pairs are morphologically complex, whereas most of the languages that have a very low proportion of decausative pairs or no decausative pair at all within the limits of Questionnaire A are morphologically simple. Interestingly, the three languages in the sample that combine high morphological complexity and strong dispreference for decausativization (Fula, Herero and Hausa) also share a relatively high proportion of equipollent pairs.

Finally, within the limits of the sample, the total lack of decausative pairs is particularly common among the languages showing a marked preference for ambitransitivity, which is consistent with the fact that, contrary to decausativization, ambitransitivity is favored by morphological simplicity.

4.3.3 The causativization strategy in the languages of the sample

As mentioned above, none of the languages in the sample shows a proportion of causative pairs in Questionnaire A comparable to that found in an extremely causativizing language such as Akhvakh (Nakh-Daghestanian) (3). The languages for which I have partial data confirm this observation. In some of them, for example Dida (Kru) and Bete (Kru), the prominence of the causativization strategy is obvious, but in all cases, the available data excludes the possibility of an extremely high proportion of causative pairs.

Interestingly, the total lack of causative pairs within the limits of Questionnaire A can be found even in languages that have an otherwise relatively productive mechanism of morphological causativization. Bambara is a case in point. This means that, in the languages in question, causative derivation may be productive with other semantic types of noncausal/causal pairs but not with the type represented in Questionnaire A.

According to Nichols *et al.* (2004: 172), causativization prominence for inanimate noncausal/causal pairs is found mainly in languages that do not have "passive or other A-removing or A-demoting processes". This generalization is clearly contradicted by the languages of the sample analyzed here. Among the languages of the sample that have a relatively high proportion of causative pairs, Mandinka has fully productive transitive-passive ambitransitivity,[10] and the other five (Herero, Swahili, Afar, Sandawe and Amharic) all have productive morphological mechanisms of passive and/or decausative derivation.

10. By fully productive transitive-passive ambitransitivity, I mean the possibility for any transitive verb to be also used in a zero-coded passive construction, as, for example, in Mandinka, *tábì* 'prepare (food)' in *Fàatú mâŋ kínòo tábì* 'Fatou did not prepare the meal'/*Kínòo mâŋ tábì* 'The meal was not prepared'.

4.3.4 Valency orientation and alignment

Nichols *et al.* (2004: 168-169) observe that, in their worldwide sample, ergative alignment is found in 6 out of the 9 languages they analyze as having high numbers of undirected inanimate verb pairs. On this basis, they put forward the following generalization: "The directed types significantly disfavor ergativity while undirected ones significantly favor it".

None of the languages included in my sample of sub-Saharan languages shows ergative alignment, whereas in 12 out of 30, the proportion of undirected pairs exceeds 2/3. However, this cannot be viewed as contradicting Nichols *et al.*'s generalization about valency orientation and alignment, since they do not claim that undirected strategies are significantly disfavored in non-ergative languages.

4.3.5 Genetic relationships and the variation in the coding of noncausal/causal pairs

Three language families are represented in the sample by more than 2 members: Atlantic (5), Benue-Congo (5) and Mande (5).

4.3.5.1 The Benue-Congo family

Four out of the five Benue-Congo languages included in the sample (Herero, Lingala, Swahili and Tswana) belong to the Bantu group, a low-level genetic subgroup within the Benue-Congo family. Consequently, it is not surprising that, apart from the scarcity of decausative pairs in Herero, these four languages do not differ much in the coding of the noncausal/causal pairs included in Questionnaire A (with a high proportion of both causative and decausative pairs and very few undirected pairs),[11] whereas Emai, which belongs to another branch of Benue-Congo, shows a very different profile. Among the non-Bantu Benue-Congo languages for which I have partial data, the data is sufficient to characterize Yoruba as a language with a strong prevalence of ambitransitivity (like Emai), Degema as a language with a moderate prevalence of causativization and Ibibio as a language with a strong prevalence of decausativization. More research would need to be done before putting forward generalizations about valency orientation in Benue-Congo.

4.3.5.2 The Mande family

The five Mande languages included in the sample seem to be representative of the diversity across Mande languages. One of them (Soninke) has no particularly prominent strategy, another (Mandinka) shows approximately equal prominence of causativization and ambitransitivity, whereas the other three (Bambara, Kakabe and Mano) show a very strong prevalence of ambitransitivity. This last configuration seems to be particularly widespread among Mande languages. Among the Mande languages for which I have been able to find between 10 and 12 of the noncausal/causal pairs that constitute Questionnaire A, Bisa and Dan show a strong prevalence of ambitransitivity, whereas Soso seems to have a configuration similar to that of Mandinka, and Bozo and Bobo seem to have a configuration similar to that of Soninke.

4.3.5.3 The Atlantic family

The sample includes an Atlantic language with no particularly prominent strategy within the limits of Questionnaire A (Wolof), two languages with a marked prevalence of decausativization (Jóola Fóoñi and Seereer), a language with a marked prevalence of equipollence and no decausative pair at all (Fula) and a language with a relative prominence of both decausativization and equipollence (Balant Ganja). Balant Ganja is also the only Atlantic language in the sample in which the number of causative pairs departs from the average significantly, with just one causative pair in Questionnaire A.

11. For a finer-grained analysis of the relationship between causativization and the other strategies in Bantu, readers are referred to Dom *et al.* (this issue), Laine *et al.* (this issue) and Yoneda (this issue).

4.3.5.4 Genetic proximity, contact and the coding of noncausal/causal pairs

The question briefly commented on in this section is specifically addressed by Allassonnière-Tang *et al.* (this issue) for the Atlantic, Mande and Mel families.

It is clear that the language sample on which the present article is based is not sufficient for an in-depth investigation of the possible relationships between the typology of the coding of noncausal/causal pairs in sub-Saharan languages, their genetic affiliation and their contact history. Unsurprisingly, closely related languages (such as Lingala and Tswana, Humburi Senni and Koroboro Senni, or Bambara and Kakabe) often show similar configurations. However, the sample also includes two cases of very closely related languages with significantly different configurations, which suggests that, in the history of languages, contrary to what has been repeatedly stated in the literature on valency orientation, the coding of noncausal/causal pairs may be subject to relatively abrupt changes, whatever the possible reasons for such changes.

The first such case is that of Fula and Seereer, which constitute a subgroup within the Atlantic family. Within the limits of Questionnaire A, Fula and Seereer have an approximately equal number of causative pairs, but Seereer shows a strong prevalence of the decausativization strategy and has no equipollent pair at all, whereas Fula shows a strong prevalence of the equipollence strategy and has no decausative pair at all. This contrast is quite obviously related to the fact that Fula morphosyntax combines valency-changing derivations with a system of conjugation classes semantically similar to that of Ancient Greek, whereas Seereer has a rich and productive system of valency-changing derivations but no system of conjugation classes. Unfortunately, I am not aware of any evidence that could help to reconstruct the historical scenario responsible for this contrast.

The second case is that of Bambara and Mandinka, two Mande languages whose genetic closeness is so obvious that they are often presented as two dialects of the same macro-language. Within the limits of Questionnaire A, Bambara has 12 ambitransitive pairs and no causative pair, whereas Mandinka has 7.5 ambitransitive pairs and 5.5 causative pairs. Moreover, the relatively high number of causative pairs found in Mandinka, unusual for a Mande language, has no obvious explanation in terms of language contact, in spite of the fact that Mandinka differs from the other Mande languages by the importance of its contacts with Atlantic languages. The point is that all the Atlantic languages in the sample show a proportion of causative pairs in Questionnaire A lower than that found in Mandinka; in fact, contact with Atlantic languages should rather have favored the emergence of decausative pairs, which are not attested at all in Mandinka.

An even sharper contrast can be found between Emai and Degema, which both belong to the Edoid group within the Benue-Congo family. Degema is not included in the sample because of some gaps in the data, but the partial data I have for this language includes 4.5 decausative pairs, 5.5 causative pairs and no undirected pair, whereas Emai (included in the sample) has 12 ambitransitive pairs and 1 suppletive pair.

5. Prevailing tendencies in the coding of individual noncausal/causal pairs

For each of the pairs of verb meanings included in Questionnaire A, the number of languages of the sample selecting each of the five possible strategies is given in (6).

(6) Distribution of the five possible strategies by verb pairs

	AMB	DEC	CAU	EQU	SUP	Total undirected	Total directed
break	14	13.5	0	2.5	0	16.5	13.5
burn	11	3	9	4	3	18	12
close	14	13	1	2	0	16	14
dry	7	1	21.5	0.5	0	7.5	22.5
go out/put out	13	3	4	1	9	23	7

(6) Distribution of the five possible strategies by verb pairs (cont.)

	AMB	DEC	CAU	EQU	SUP	Total undirected	Total directed
increase	7.5	6.5	9.5	4	2.5	14	16
melt	11	1.5	13.5	3	1	15	15
move	11	9	4	5	1	17	13
open	14	12.5	0	3.5	0	17.5	12.5
split	14	11.5	2	2.5	0	16.5	13.5
spoil	13	8.5	5	3.5	0	16.5	13.5
spread	13	6.5	6.5	4	0	17	13
turn upside down	11	8	5	5	1	17	13

(7) summarizes the ratio of undirected to directed and decausative to causative for each of the pairs of verb meanings included in Questionnaire A. Boldface signals ratios that depart from the average ratio significantly.

(7) Ratio of undirected to directed and decausative to causative by verb pairs

	Undirected/directed	Decausative/causative
break	16.5/13.5 (1.2)	**13.5/0**
burn	18/12 (1.5)	3/9 (0.33)
close	16/14 (1.1)	**13/1 (13)**
dry	**7.5/22.5 (0.3)**	**1/21.5 (0.05)**
go out/put out	**23/7 (3.2)**	3/4 (0.75)
increase	14/16 (0.8)	6.5/9.5 (0.68)
melt	15/15 (1)	**1.5/13.5 (0.11)**
move	17/13 (1.3)	9/4 (2.2)
open	17.5/12.5 (1.4)	**12.5/0**
split	16.5/13.5 (1.2)	**11.5/2 (5.7)**
spoil	16.5/13.5 (1.2)	8.5/5 (1.7)
spread	17/13 (1.3)	6.5/6.5 (1)
turn upside down	17/13 (1.3)	8/5 (1.6)

5.1 Variation in the ratio of undirected to directed pairs

For the vast majority of the pairs included in Questionnaire A, the ratio of undirected to directed pairs within the limits of the sample is comprised between 14/16 and 18/12, with an average value of approximately 16/14. Only two pairs show a ratio significantly different from the average: 'dry (intr./tr.)' and 'go out/put out (fire)'. They are examined in Sections 5.1.1 and 5.1.2, before examining the ratio of decausative to causative pairs in the eleven pairs showing an average ratio of undirected to directed pairs (Section 5.2).

5.1.1 The case of 'dry (intr./tr.)'

The ratio of undirected to directed pairs is much lower for 'dry (intr./tr.)' than for any of the other pairs included in Questionnaire A: 7.5/22.5. Another striking characteristic of 'dry (intr./tr.)' is an extremely low ratio of decausative to causative pairs (1/21.5). Interestingly, in the sample of 21 mainly Eurasian languages analyzed by Haspelmath (1993), 'dry (intr./tr.)' also shows a particularly low ratio

of decausative to causative pairs (3/10), but its ratio of undirected to directed pairs (7/13) has nothing exceptional in comparison with that found for other pairs; cf. for example 5.5/15.5 for 'melt (intr./tr.)'. I have no explanation or hypothesis for this observation.

5.1.2 The case of 'go out/put out (fire)'

The ratio of undirected to directed pairs is much higher for 'go out/put out (fire)' than for any of the other pairs included in Questionnaire A: 23/7. This particularity of 'go out/put out (fire)' is not found in the sample analyzed by Haspelmath (1993) , in which the ratio of undirected to directed pairs for 'go out/put out (fire)' is 10.5/10.5, not very different from that of, for example, 'burn (intr./tr.)' (9/12).

The very high proportion of undirected pairs for 'go out/put out (fire)' in the sub-Saharan sample is due to an unusually high number of languages that have a suppletive pair for 'go out/put out (fire)'. This is at least partly due to the fact that the colexification of 'go out/put out (fire)' with 'die/kill' is a common pattern among the languages of sub-Saharan Africa. The point is that the coding of 'die/kill' by means of suppletive pairs is also particularly common in sub-Saharan languages, as in the languages spoken in other parts of the world, cf. for example the Koroboro Senni pair *buu*/*wii* 'die/kill' and 'go out/put out (fire)' quoted in (1) or the Soninke pair *kàrá*/*kàrí* 'die/kill' and 'go out/put out (fire)'. Consequently, 'go out/put out (fire)' pairs that are originally a metaphorical extension of 'die/kill' may have maintained the suppletive coding of the noncausal/causal alternation typically found for 'die/kill' pairs.

5.2 Variation in the ratio of decausative to causative pairs

The 11 pairs that show an average ratio of undirected to directed pairs can be ranked as shown in (8) according to the ratio of decausative to causative pairs.[12] (9) gives the corresponding data for the Haspelmath sample.

(8) The ranking of the 11 verb meanings showing an average ratio of undirected to directed pairs according to the ratio of decausative to causative pairs

	DEC/CAU	Ratio
melt	1.5/13.5	0.11
burn	3/9	0.33
increase	6.5/9.5	0.68
spread	6.5/6.5	1
turn	8/5	1.6
spoil	8.5/5	1.7
move	9/4	2.2
split	11.5/2	5.7
close	13/1	13
open	12.5/0	—
break	13.5/0	—

12. Given the low proportion of directed pairs for 'go out/put out (fire)', it would not make much sense to compare its ratio of decausative to causative pairs (3/4) to that of the other pairs included in the questionnaire.

(9) The ranking of the same verb meanings (or their near equivalents) according to Haspelmath (1993)

	DEC/CAU	Ratio
melt	5/10.5	0.48
turn	8/7.5	1.07
burn	7/5	1.40
destroy	8.5/5.5	1.55
spread	11/6	1.83
develop	10/5	2
rock	12/4	3
open	13/1.5	8.67
break	12.5/1	12.50
close	15.5/1	15.50
split	11.5/0.5	23

The two rankings do not fully coincide but can nevertheless be viewed as consistent with each other, since in both rankings, 'melt (intr./tr.)' shows a particularly low ratio of decausative to causative pairs, and the following four pairs of verb meanings can be grouped together as showing a particularly high ratio of decausative to causative pairs: 'split (intr./tr.)', 'close (intr./tr.)', 'open (intr./tr.)' and 'break (intr./tr.)'.

5.3 Variation in the preference for the ambitransitivity strategy

The 13 pairs of verb meanings that constitute Questionnaire A can be ranked as shown in (10) according to the number of languages from the sample that select the ambitransitivity strategy for each of them. Two groups of pairs of verb meanings of unequal importance can be distinguished: 11 pairs for which the ambitransitivity strategy is selected by a relatively high number of languages (between 11 and 14, i.e. more than half of the 21 languages in the sample that have at least one ambitransitive pair) and two pairs for which the ambitransitivity strategy is selected by a relatively low number of languages (about one third of the 21 languages in the sample in which the ambitransitivity strategy is attested). However, none of the pairs that constitute the sample shows an extreme degree of preference or dispreference for the ambitransitivity strategy.

(10) The ranking of the thirteen pairs of Questionnaire A according to the number of languages from the sample that code them by means of the ambitransitivity strategy

14 close (intr./tr.), break (intr./tr.), open (intr./tr.), split (intr./tr.)

13 go out/put out (fire), spoil (intr./tr.), spread (intr./tr.)

11 burn (intr./tr.), melt (intr./tr.), move (intr./tr.), turn upside down (intr./tr.)

7.5 increase (intr./tr.)

7 dry (intr./tr.)

6. The limits of ambitransitivity

6.1 Introductory remarks

In this section, I discuss the extension of the ambitransitivity strategy to semantic types of verb pairs other than that investigated in the previous sections. The languages selected for this study are the ten languages of the sample that strongly prefer the ambitransitivity strategy for the semantic type of

noncausal/causal pairs considered in the first part of the article: Emai, Sar, Jamsay, Minyanka, Baule, Fon, Bambara, Kakabe, Mano and Gbaya. The investigation is carried out on the basis of the pairs of verb meanings listed in (11).

(11) Questionnaire B
1. die/kill
2. get tired/tire
3. get sick/make sick
4. heal (intr.)/ heal (tr.), cure
5. wake up (intr.)/wake up (tr.)
6. get up/make get up
7. lie down/make lie down
8. hide (intr./tr.)
9. sit (intr.)/sit (tr.), seat
10. stop (intr./tr.)
11. be afraid/frighten
12. be ashamed/put to shame
13. get angry/make angry
14. get sad/make sad
15. hate/displease
16. like/please
17. rejoice/delight

Three semantic types of pairs of verb meanings are represented in Questionnaire B.

The first type consists of noncausal/causal pairs whose noncausal member is a monovalent verb referring to a process typically involving **non-volitional animate** entities: *die*/*kill*, *get tired*/*tire*, *get sick*/*make sick*, *heal*/*cure* and *wake up* (intr./tr.).

The second type consists of noncausal/causal pairs whose noncausal member is a monovalent verb referring to a process typically involving **volitional animate** entities: *get up*/*make get up*, *lie down*/*make lie down*, *hide* (intr./tr.), *sit down*/*seat* and *stop* (intr./tr.).

The third type consists of pairs of **psych verbs** referring to the same psychological event or state but differing in the perspectivization of the event/state, manifested in the mapping of the semantic roles of experiencer and stimulus onto syntactic roles: *be afraid*/*frighten*, *be ashamed*/*put to shame*, *get angry*/*anger*, *get sad*/*sadden*, *hate*/*displease*, *like*/*please* and *rejoice*/*delight.*

The first two types are not particularly problematic, but the third one calls for a brief comment, since pairs of psych verbs such as *be afraid*/*frighten* are often presented as noncausal/causal pairs in the literature. For example, Nichols *et al.* (2004) included the pairs *fear, be afraid*/*frighten, scare* and *become angry*/*make angry* in their questionnaire.[13] My position on this point is that such pairs of psych verbs are not a subtype of noncausal/causal pairs for the simple reason that, whatever the possible similarities with the syntactic properties of noncausal/causal pairs, the semantic difference between the two members of psych verb pairs cannot be analyzed in terms of absence vs. presence of a participant occupying the initial position in the causality chain but only in terms of change in the perspectivization of the event.

The two members of psych verb pairs encode the same bivalent participant structure <Experiencer, Stimulus>. Moreover, a crucial contrast between psych verbs and the verbs involved in the noncausal/causal alternation is that none of the two participants in a psychological event can be

13. Interestingly, in contrast to the questionnaire used by Nichols *et al.* (2004), the questionnaire of 31 verb pairs used by Haspelmath (1993) for his cross-linguistic investigation of the noncausal/causal alternation includes no pair of psych verbs.

unambiguously characterized as having a particular affinity with one of two essential participants in a typical transitive event: typical agents are animate, like experiencers in psychological events, but as regards the involvement in the causality chain, it is the stimulus that has an affinity with agents in typical transitive events.

It is true that, in some languages, the equivalent of *frighten* derives from *be afraid* via the addition of a causative marker (as in Mandinka *sílà*/*sílá-ndì*). However, two uses of *frighten* should be distinguished. For example, *The man frightened the child with his dog* can be analyzed as the causative counterpart of *The child was afraid of the dog*, since an additional participant fulfilling the role of causer is involved. By contrast, the relationship between *The dog frightened the child* and *The child was afraid of the dog* cannot be analyzed in terms of causation, since *The dog frightened the child* and *The child was afraid of the dog* express two different perspectivizations of the same bivalent participant structure <Experiencer, Stimulus>: 'from Experiencer to Stimulus' in the case of *The child was afraid of the dog* and 'from Stimulus to Experiencer' in the case of *The dog frightened the child*.

In other words, in pairs such as Mandinka *sílà* 'be afraid'/*sílá-ndì* 'frighten', the causative suffix *-ndi* does not necessarily mark a change in participant structure but only in the perspectivization of a bivalent participant structure that remains unchanged.

Interestingly, some languages are sensitive to this distinction. For example, in Basque, *beldurtu* corresponds to both *be afraid* and non-causative *frighten*, whereas the marked causative form *beldurrarazi* is preferred as the equivalent of causative *frighten*.

Before examining the sub-Saharan languages selected for this study, it is worth mentioning that, outside of Africa, the comparison of two languages such as English and Basque shows that the languages showing a very strong preference for ambitransitivity in the coding of noncausal/causal pairs of the semantic type investigated in the first part of this article do not necessarily behave in the same way with respect to the coding of the semantic types of verb pairs considered in this section. Within the limits of Questionnaire A, English and Basque show almost the same proportion of ambitransitive pairs (12 out of 13 for English, 13 out of 13 for Basque). By contrast, as can be seen in (12), Basque also has ambitransitive pairs for all of the pairs of verb meanings that constitute Questionnaire B, whereas within the limits of the same questionnaire, English has ambitransitive pairs for 5 pairs of verb meanings only.

(12) Questionnaire B in English and Basque

English		Basque	
die/kill	SUP	*hil*/*hil*	AMB
get tired/tire	DEC	*nekatu*/*nekatu*	AMB
get sick/make sick	EQU	*gaixotu*/*gaixotu*	AMB
heal (intr.)/heal (tr.), cure	SUP or AMB	*sendatu*/*sendatu*	AMB
wake up (intr.)/wake up (tr.)	EQU or AMB	*esnatu*/*esnatu*	AMB
get up/make get up	CAU	*jaiki*/*jaiki*	AMB
lie down/make lie down	CAU	*etzan*/*etzan*	AMB
hide (intr.)/hide (tr.)	AMB	*ezkutatu*/*ezkutatu*	AMB
sit (intr.)/sit (tr.), seat	SUP or AMB	*eseri*/*eseri*	AMB
stop (intr.)/stop (tr.)	AMB	*gelditu*/*gelditu*	AMB
be afraid/frighten	SUP	*beldurtu*/*beldurtu*	AMB
be ashamed/put to shame	EQU	*lotsatu*/*lotsatu*	AMB
get angry/make angry	EQU	*haserretu*/*haserretu*	AMB
get sad/make sad	EQU	*ilundu*/*ilundu*	AMB
hate/displease	SUP	*higuindu*/*higuindu*	AMB
like/please	SUP	*laketu*/*laketu*	AMB
rejoice/delight	SUP	*poztu*/*poztu*	AMB

6.2 Extension and limits of ambitransitivity in the languages of the sample

In fact, the languages of the sample showing a very strong preference for ambitransitivity within the limits of Questionnaire A are very diverse in the treatment of the semantic types of verb pairs represented in Questionnaire B. The ambitransitive pairs I have found in Questionnaire B are listed in (13).

(13) Ambitransitive pairs in Questionnaire B in the 10 languages in which ambitransitivity is strongly predominant in Questionnaire A

a. Baule[14]

wake up (intr.)/wake up (tr.)	*tinnge*/*tinnge*
lie down/make lie down	*la*/*la*
hide (intr.)/hide (tr.)	*fia*/*fia*
sit (intr.)/sit (tr.), seat	*tran ase*/*tran ase*
stop (intr.)/stop (tr.)	*jran*/*jran*
be afraid/frighten	*srɛ kun*/*kun srɛ*
be ashamed/put to shame	*nyannzuɛn kun*/*kun nyannzuɛn*
get sad/make sad	*wla bo*/*bo wla*
rejoice/delight	*klun jɔ*/*jɔ klun*

b. Bambara[15]

get tired/tire	*sègɛn*/*(lá)sègɛn*
get sick/make sick	*bàna*/*(lá)bàna*
heal (intr.)/heal (tr.), cure	*kɛ́nɛya*/*kɛnɛya*
wake up (intr.)/wake up (tr.)	*kúnun*/*(lá)kúnun*
get up/make get up	*wúli*/*(lá)wúli*
stop (intr.)/stop (tr.)	*jɔ̀*/*(lá)jɔ̀*
be ashamed/put to shame	*màlo*/*(lá)màlo*

c. Minyanka

heal (intr.)/heal (tr.), cure	*còlòŋ̋*/*còlòŋ̋*
wake up (intr.)/wake up (tr.)	*ɲɛ̃̀*/*ɲɛ̃̀*
hide (intr.)/hide (tr.)	*ŋwɔ̃̀*/*ŋwɔ̃̀*
be afraid/frighten	*fyá*/*fyá*
be ashamed/put to shame	*fìlèkí*/*fìlèkí*
get angry/make angry	*yá*/*yá*

d. Sar

wake up (intr.)/wake up (tr.)	*ndól̄*/*ndól̄*
stop (intr.)/stop (tr.)	*dɨbà*/*dɨbà*

e. Fon

wake up (intr.)/wake up (tr.)	*fɔ́n*/*fɔ́n*
lie down/make lie down	*mlɔ̌ ayǐ*/*mlɔ̌ ayǐ*

14. In Baule, some of the meanings in Questionnaire B are expressed by combinations of a verb and a noun, the noun occupying the subject role in the noncausal use of the expression and the object role in its causal use, hence the variation in word order in the citation form of such expressions.

15. In Bambara, *lá* is a causative suffix, and causative marking is optional for the causal member of some of the pairs that constitute Questionnaire B.

f. Mano

sit (intr.)/sit (tr.), seat	*yà*/*yà*
stop (intr.)/stop (tr.)	*dɔ̄*/*dɔ̄*

g. Gbaya

get up/make get up	*kur*/*kur*
be afraid/frighten	*gbaŋ*/*gbaŋ*

h. Kakabe

die/kill	*fàga*/*fàga*

i. Emai (none)

j. Jamsay (none)

6.2.1 Languages with a strong prevalence of ambitransitivity in Questionnaire A and no ambitransitive pair at all in Questionnaire B

In two of the languages showing a strong prevalence of ambitransitivity in Questionnaire A, I was not able to find a single ambitransitive pair in Questionnaire B: Emai and Jamsay.

The source I used for Emai (Schaefer & Egbokhare 2007) is a very complete dictionary in which the possibility of using verbal lexemes transitively or intransitively is indicated with precision, and with the help of which I had no difficulty finding 12 ambitransitive pairs and 1 suppletive pair corresponding to the pairs of verb meanings that constitute Questionnaire A. By contrast, among the 17 pairs of verb meanings that constitute Questionnaire B, I was able to retrieve 9 pairs only, among which 3 suppletive pairs, 1 decausative pair, 1 equipollent pair and 4 causative pairs, but no ambitransitive pair at all.

In Jamsay, within the limits of Questionnaire B, I was able to retrieve 11 pairs out of 17: 10 causative pairs and 1 suppletive pair, but no ambitransitive pair at all.

6.2.2 Languages with a limited number of ambitransitive pairs in Questionnaire B

For 5 of the languages showing a strong prevalence of ambitransitivity within the limits of Questionnaire A, I was able to find a very limited number of ambitransitive pairs within the limits of Questionnaire B (one or two): Sar, Fon, Kakabe, Mano and Gbaya. In the languages in question, in addition to a limited number of ambitransitive pairs, I have found some suppletive pairs and also a limited number of pairs that can be analyzed as causative or decausative (although they involve periphrasis rather than systematic grammatical devices), but for most pairs, the dictionaries I have consulted (and with the help of which I had no difficulty in filling Questionnaire A) provide an equivalent for one of the members of the pair only.

6.2.3 Languages with a sizeable proportion of ambitransitive pairs in Questionnaire B

Among the languages of the sample showing a strong prevalence of ambitransitivity in Questionnaire A, three also have a sizeable proportion of ambitransitive pairs in Questionnaire B: Baule (10 out of 17), Bambara (7 out of 17) and Minyanka (6 out of 17). However, none of them shows an extension of the ambitransitivity strategy comparable to that observed, for example, in Basque (12).

In Baule, no other strategy emerges from Questionnaire B as relatively prominent, whereas Bambara and Minyanka also have a sizeable proportion of causative pairs (which were completely lacking in Questionnaire A).

Moreover, there is an interesting contrast between the two languages of the sample that show a strong predominance of ambitransitivity in Questionnaire A and a relatively wide use of both ambitransitivity and causativization in Questionnaire B. In Minyanka, ambitransitivity and causativization are not attested for the same pairs of verb meanings. By contrast, in Bambara, as a rule, ambitran-

sitivity and causativization are attested as variants for the same pairs, for example *síran* 'be afraid'/ (*lá-)siran* 'frighten', where *lá-* is the causative prefix. A priori, one might wonder whether there is a semantic distinction between a causative verb such as *lá-siran* and the transitive use of the corresponding ambitransitive verb *síran*, but Dumestre's (2011) Bambara dictionary provides examples for which this is unquestionably a case of free variation, at least in the standard variety of Bambara.[16]

7. CONCLUSION

In the sample of 30 sub-Saharan languages investigated in the first part of this article, the variation in the coding of the noncausal/causal pairs whose noncausal member is a monovalent verb typically selecting an inanimate argument (Questionnaire A) is broadly comparable to that observed for the same pairs (or their near equivalents) in the sample of 21 mainly Eurasian languages analyzed by Haspelmath (1993), with, however, some interesting contrasts. Overall, the ratio of decausative to causative pairs is very similar in the two samples, but the ratio of undirected to directed pairs is much higher in the sub-Saharan sample, within which ambitransitivity ranks first, whereas it ranks fourth in the Haspelmath sample. The sub-Saharan sample includes several languages with an extreme degree of preference for ambitransitivity but no language with an extreme degree of preference for causativization.

As regards the ranking of the pairs of verb meanings included in the questionnaire according to the ratio of decausative to causative pairs, the results are broadly similar to those provided by Haspelmath (1993). By contrast, the very low ratio of undirected to directed pairs for 'dry (intr./tr.)' and the very high ratio of undirected to directed pairs for 'go out/put out (fire)' observed in the sub-Saharan corpus have no equivalent in the Haspelmath sample.

As regards possible typological correlations, the data is consistent with the hypothesis that ambitransitivity and double derivation are incompatible (Nichols *et al.* 2004: 165) and with the hypothesis that high morphological complexity favors decausativization (NIchols *et al.* 2004: 166). By contrast, the data contradicts the hypothesis of a correlation between causativization prominence for inanimate pairs and the lack of A-removing/demoting processes (Nichols *et al.* 2004: 172).

As regards possible relationships between the coding of noncausal/causal pairs, the genetic affiliation of languages and their contact history, the data is not sufficient to draw general conclusions. However, they illustrate the diversity in the coding of inanimate noncausal/causal pairs in two language families (Atlantic and Mande), suggesting the possibility of relatively abrupt changes in the history of languages, since the sample includes two pairs of languages with very different profiles with respect to valency orientation in spite of their relatively close genetic relationship: Seereer/Fula (Atlantic) and Mandinka/Bambara (Mande).

In the second part of the article, I have analyzed the extension of the ambitransitivity strategy to other semantic types of verb pairs in the ten languages of the sample in which ambitransitivity is very strongly prevalent for the noncausal/causal pairs whose noncausal members are monovalent verbs typically selecting inanimate arguments:

- noncausal/causal verb pairs whose noncausal member is a monovalent verb referring to a process typically involving non-volitional animate entities;
- noncausal/causal pairs whose noncausal member is a monovalent verb referring to a process typically involving volitional animate entities;
- pairs of psych verb differing in the perspectivization of the argument-stimulus relationship.

Out of the ten languages that have a very strong prevalence of the ambitransitivity strategy for the semantic type of verb pairs examined in the first part of the article, only three have a sizeable pro-

16. This variation in Standard Bambara can probably be analyzed as reflecting dialectal fluctuations in the use of causative derivation, since according to Gérard Dumestre (p.c.), the use of causative derivation is very limited in some Bambara varieties and more common in some others. The free variation observed in the standard variety is probably at least partly due to the fact that Standard Bambara has undergone a strong influence from the Maninka varieties spoken in western Mali, which are closely related to Bambara but in which causativization is more productive than in most Bambara varieties.

portion of ambitransitive pairs for the three semantic types of verb pairs examined in Section 6. This confirms the conclusion that, as suggested by the comparison between English and Basque, a strong prevalence of the ambitransitivity strategy for noncausal/causal verb pairs whose noncausal member is a monovalent verb referring to a process typically undergone by inanimate entities does not necessarily correlate with a high degree of productivity of the same strategy for other semantic types of verb pairs commonly coded as decausative or causative pairs cross-linguistically.

To conclude, I would like to briefly discuss the question of the relevance of Haspelmath's (2016) spontaneity scale for the explanation of the regularities observed in this article. Since the notion of spontaneity scale has been elaborated to account for the distribution of causativization and decausativization strategies across the verbal lexicon, whereas the focus of the present article is on ambitransitivity, the question that arises is whether the spontaneity scale also provides an explanation for the distribution of the ambitransitivity strategy.

The data analyzed in this article suggests that the ambitransitivity strategy is typically used for the segment of the spontaneity scale designated by Haspelmath as "unaccusative", which includes the semantic type of noncausal/causal pairs analyzed in the first part of this article. However, Haspelmath introduces a further distinction between two subtypes of unacccusatives differing in their preferences for the causativization and decausativization strategies: "automatic unaccusative" and "costly unaccusative". Consequently, the question that arises is whether this distinction would also be relevant for explaining the distribution of ambitransitivity across the lexicon.

In fact, the data analyzed in this article shows no obvious relation between Haspelmath's distinction between "automatic unaccusative" and "costly unaccusative" and the variation in the use of the ambitransitivity strategy by individual pairs of verb meanings as described in Section 5.3. In particular, 'dry', which shows the weakest preference for the ambitransitivity strategy, and 'go out (fire)', which shows a relatively strong preference for ambitransitivity', are equally characterized by Haspelmath as "automatic unaccusative".

All this suggests that ambitransitivity would deserve more attention in the cross-linguistic and typological investigation of valency orientation, which has so far focused on causativization and decausativization. Undoubtedly, the languages of sub-Saharan Africa have an important contribution to make to this question.

Abbreviations

AMB	ambitransitivity
CAU	causativization
DEC	decausativization
EQU	equipollence
intr.	intransitive
SUP	suppletion
tr.	transitive

References

Bailleul, Charles. 2007. *Dictionnaire bambara-français*. 3rd rev. ed. Bamako: Éditions Donniya.

Caron, Bernard & Ahmed H. Amfani. 1997. *Dictionnaire français-haoussa, suivi d'un index haoussa-français*. Paris: Karthala.

Crétois, Léonce. 1972-1977. *Dictionnaire sereer-français*. 6 vols: I (A-C) 1972; II (D-G) 1973; III (H-L) 1974; IV (M-N) 1975; V (N-S) 1976; VI (T-J) 1977. Dakar: CLAD.

Cyffer, Norbert & John P. Hutchison (eds.). 1990. *Dictionary of the Kanuri language*. Dordrecht: Foris.

Dimmendaal, Gerrit J. 2011. *Historical linguistics and the comparative study of African languages*. Amsterdam: John Benjamins.

Diouf, Jean-Léopold. 2003. *Dictionnaire wolof-français et français-wolof*. Paris: Karthala.

Dumestre, Gérard. 2011. *Dictionnaire bambara-français*. Paris: Karthala.

Ehret, Christopher & Patricia Ehret. 2012. *A dictionary of Sandawe*. Cologne: Rüdiger Köppe.

Haspelmath, Martin. 1993. More on the typology of inchoative/causative verb alternations. In Bernard Comrie & Maria Polinsky (eds.), *Causatives and transitivity*, 87-120. Amsterdam: John Benjamins.

Haspelmath, Martin. 2016. Universals of causative and anticausative verb formation and the spontaneity scale. *Lingua Posnaniensis* 58(2). 33-63.

Heath, Jeffrey. 1998. *Dictionnaire songhay-anglais-français: Koroboro senni*. Paris: L'Harmattan.

Heath, Jeffrey. 2015. *Dictionary Humburi Senni (Songhay of Hombori, Mali) - English - French / Dictionnaire Humburi Senni (songhay de Hombori, Mali) - anglais - français*. Language Description Heritage Library. Max Planck Institute for the Science of Human History, ms.

Heath, Jeffrey. n.d. *Jamsay-English-French dictionary*. Unpublished (accessed 17 November 2022).

Kastenholz, Raimund. 2014. Tonal contrast and transitivity in Pere verbs. In Rose-Juliet Anyanwu (ed.), *Transitivity in African languages* (Frankfurter Afrikanistische Blätter 26), 75-88. Cologne: Rüdiger Köppe.

Kawachi, Kazuhiro. 2014a. Transitivity pairs in Sidaama. In *The world atlas of transitivity pairs*. Tokyo: National Institute for Japanese Language and Linguistics (accessed 17 November 2022).

Kawachi, Kazuhiro. 2014b. Transitivity pairs in Kupsapiny. In *The world atlas of transitivity pairs*. Tokyo: National Institute for Japanese Language and Linguistics (accessed 17 November 2022).

Newman, Paul. 2000. *The Hausa language: An encyclopedic reference grammar*. New Haven: Yale University Press.

Newman, Paul. 2007. *A Hausa-English dictionary*. New Haven: Yale University Press.

Ngalasso-Mwatha, Musanji (ed.). 2013. *Dictionnaire français-lingala-sango*. Paris: Organisation internationale de l francophonie.

Nichols, Johanna, David A. Peterson & Jonathan Barnes. 2004. Transitivizing and detransitivizing languages. *Linguistic Typology* 8(2). 149-211.

Noye, Dominique. 1990. *Dictionnaire foulfouldé-français*. Paris: Librairie orientaliste Paul-Geuthner.

Palayer, Pierre. 1992. *Dictionnaire sar-français (Tchad)*. Paris: Librairie orientaliste Paul-Geuthner.

Parker, Enid M. & Richard J. Hayward. 1985. *Afar-English-French dictionary with grammatical notes in English*. London: School of Oriental and African Studies, University of London.

Prost, André. 1956. *La langue soŋey et ses dialectes*. Dakar: IFAN.

Roulon-Doko, Paulette. 2008. *Dictionnaire gbaya-français (République Centrafricaine), suivi d'un dictionnaire des noms propres et d'un index français-gbaya*. Paris: Karthala.

Schaefer, Ronald P. & Francis O. Egbokhare. 2007. *A dictionary of Emai*. Cologne: Rüdiger Köppe.

Segurola, Basilio & Jean Rassinoux. 2000. *Dictionnaire fon-français*. Madrid: Ediciones Selva y Sabana, Sociedad de Misiones Africanas.

Tymian, Judith, Jérémie Kouadio & Jean-Noël Loucou. 2003. *Dictionnaire baoulé-français*. Abidjan: Nouvelles Éditions Africaines.

Vydrina, Alexandra. 2017. *A corpus-based description of Kakabe, a Western Mande language: Prosody in grammar.* Vol. II: *Kakabe-French dictionary*. Paris: INALCO (PhD dissertation).

Wakasa, Motomichi. 2014. Transitivity pairs in Amharic. In *The world atlas of transitivity pairs*. Tokyo: National Institute for Japanese Language and Linguistics (accessed 17 November 2022).

Yoneda, Nobuko. 2014a. Transitivity pairs in Herero. In *The world atlas of transitivity pairs*. Tokyo: National Institute for Japanese Language and Linguistics (accessed 17 November 2022).

Yoneda, Nobuko. 2014b. Transitivity pairs in Swahili. In *The world atlas of transitivity pairs*. Tokyo: National Institute for Japanese Language and Linguistics (accessed 17 November 2022).

Appendix 1

Appendix 1 presents the 13 noncausal/causal pairs of questionnaire A in the 30 languages of the sample.

Balant Ganja

The three possible endings (zero, *e*/*ɛ* and *i*/*ɪ*) of the infinitive form used to quote Balant Ganja verbs make apparent the distinction between three conjugation classes. Note that the addition of a decausative suffix may trigger a change in conjugation class.

1.	break (intr./tr.)	*haal*(*ɛ*)/*haa*	DEC
2.	burn (intr./tr.)	*θed*(*e*)/*θed*	EQU
3.	close (intr./tr.)	*baŋ*(*e*)/*baŋ*	EQU
4.	dry (intr./tr.)	*sɔl*/*sɔl*	AMB
5.	go out/put out (fire)	*mɔtɔ*/*mɔtɔ*	AMB
6.	increase (intr./tr.)	*bʊn*(*ɛ*)/*bʊn*	EQU
7.	melt (intr./tr.)	*wɪl*(*ɛ*)/*wɪl*	EQU
8.	move (intr./tr.)	*yiŋgal*(*ɛ*)/*yiŋga*	DEC
9.	open (intr./tr.)	*wubtul*(*e*)/*wubut*	DEC
10.	split (intr./tr.)	*gbanθirr*(*ɛ*)/*gbanθir*	DEC
11.	spoil (intr./tr.)	*wɔ*/*wɔɔt*	CAU
12.	spread (intr./tr.)	*tɛɛl*(*ɛ*)/*tɛɛ*	DEC
13.	turn upside down (intr./tr.)	*welgentil*(*e*)/*welgent*(*i*)	DEC

Adamawa Fula

1.	break (intr./tr.)	*fusgo*/*fusgo*	AMB
2.	burn (intr./tr.)	*wulgo*/*wulgo*	AMB
3.	close (intr./tr.)	*maɓɓaago*/*maɓɓugo*	EQU
4.	dry (intr./tr.)	*yoorgo*/*yoornugo*	CAU
5.	go out/put out (fire)	*ñifgo*/*ñifgo*	AMB
6.	increase (intr./tr.)	*ɓesdaago*/*ɓesdugo*	EQU
7.	melt (intr./tr.)	*yoosgo*/*yoosnugo*	CAU
8.	move (intr./tr.)	*yeyʃaago*/*yeyʃnugo*	CAU
9.	open (intr./tr.)	*maɓɓitaago*/*maɓɓititgo*	EQU
10.	split (intr./tr.)	*feergo*/*feernugo*	CAU
11.	spoil (intr./tr.)	*wonnaago*/*wonnugo*	EQU
12.	spread (intr./tr.)	*sankitaago*/*sankititgo*	EQU
13.	turn upside down (intr./tr.)	*hippaago*/*hippugo*	EQU

Jóola Fóoñi

Weelo ‘melt’ is a strictly intransitive verb that does not lend itself to causative derivation, but nevertheless can be found in an analytical causative construction in which it combines with *ekaan* ‘make’ in the role of causative auxiliary.

1.	break (intr./tr.)	*fumo*/*fum*	DEC
2.	burn (intr./tr.)	*reem, yab*/*reemen, yaben*	CAU
3.	close (intr./tr.)	*kambeno*/*kamben*	DEC
4.	dry (intr./tr.)	*say*/*sayen*	CAU
5.	go out/put out (fire)	*foko*/*fok*	DEC
6.	increase (intr./tr.)	*beneno*/*benen*	DEC
7.	melt (intr./tr.)	*weelo*/–	CAU
8.	move (intr./tr.)	*goroor*/*goren*	EQU
9.	open (intr./tr.)	*kámbúló*/*kámbúl*	DEC
10.	split (intr./tr.)	*giso*/*gis*	DEC
11.	spoil (intr./tr.)	*kaño*/*kajen*	EQU
12.	spread (intr./tr.)	*yiisoor*/*yiis*	DEC
13.	turn upside down (intr./tr.)	*rúŋó*/*rúŋ*	DEC

Seereer

1.	break (intr./tr.)	*ɓolox*/*ɓol*	DEC
2.	burn (intr./tr.)	*dox*/*doxin*	CAU
3.	close (intr./tr.)	*wegox*/*weg*	DEC
4.	dry (intr./tr.)	*weer*/*weerin*	CAU
5.	go out/put out (fire)	*ñuf*/*ñuf*	AMB
6.	increase (intr./tr.)	*ɓaatox*/*ɓaat*	DEC
7.	melt (intr./tr.)	*naay*/*naayin*	CAU
8.	move (intr./tr.)	*yooinox*/*yooin*	DEC
9.	open (intr./tr.)	*wegtox*/*wegit*	DEC
10.	split (intr./tr.)	*facox*/*fac*	DEC
11.	spoil (intr./tr.)	*yaqox*/*yaq*	DEC
12.	spread (intr./tr.)	*ɓaxox*/*ɓax*	DEC
13.	turn upside down (intr./tr.)	*liptox*/*lipit*	DEC

Wolof

1.	break (intr./tr.)	*lakk*/*lakk*	AMB
2.	burn (intr./tr.)	*toj*/*toj*	AMB
3.	close (intr./tr.)	*teju, ubu*/*tëj, ub*	DEC
4.	dry (intr./tr.)	*wow*/*wowal*	CAU
5.	go out/put out (fire)	*fey*/*fey*	AMB
6.	increase (intr./tr.)	*yokku*/*yokk*	DEC
7.	melt (intr./tr.)	*seey*/*seeyal*	CAU
8.	move (intr./tr.)	*yëngu*/*yëngal*	EQU
9.	open (intr./tr.)	*tijjiku, ubbiku*/*tijji, ubbi*	DEC
10.	split (intr./tr.)	*xar*/*xar*	AMB
11.	spoil (intr./tr.)	*yàqu*/*yàq*	DEC
12.	spread (intr./tr.)	*tas*/*tas*	AMB
13.	turn upside down (intr./tr.)	*dëppu*/*dëpp*	DEC

Emai

1.	break (intr./tr.)	*gbe*/*gbe*	AMB
2.	burn (intr./tr.)	*too*/*too*	AMB
3.	close (intr./tr.)	*khuye*/*khuye*	AMB
4.	dry (intr./tr.)	*kaka*/*kaka*	AMB
5.	go out/put out (fire)	*funɔ*/*funɔ*	AMB
6.	increase (intr./tr.)	*vbɛ*/*vbɛ*	AMB
7.	melt (intr./tr.)	*daan*/*daan*	AMB
8.	move (intr./tr.)	*reghe*/*kpeghe*	SUP
9.	open (intr./tr.)	*khuye a*/*khuye a*	AMB
10.	split (intr./tr.)	*ghayɛ*/*ghayɛ*	AMB
11.	spoil (intr./tr.)	*fu*/*fu*	AMB
12.	spread (intr./tr.)	*wɛɛ*/*wɛɛ*	AMB
13.	turn upside down (intr./tr.)	*zughu*/*zughu*	AMB

Herero

1.	break (intr./tr.)	*teka*/*teya*	EQU
		hahauka/*hahaura*	EQU
2.	burn (intr./tr.)	*ningirira*/*ningiririsa*	CAU
		yaka/*yakisa*	CAU
3.	close (intr./tr.)	*pata*/*pata*	AMB
4.	dry (intr./tr.)	*kaha*/*kahisa*	CAU
5.	go out/put out (fire)	*zema*/*zemisa*	CAU
6.	increase (intr./tr.)	*kura*/*kurisa*	CAU
7.	melt (intr./tr.)	*zuzuka*/*zuzura*	EQU
8.	move (intr./tr.)	*nyinganyinga*/*nyinganyingisa*	CAU
9.	open (intr./tr.)	*paturuka*/*paturura*	EQU
10.	split (intr./tr.)	*poka*/*pora*	EQU
		ha<u>n</u>ika/*ha<u>n</u>a*	DEC
11.	spoil (intr./tr.)	*yandekwa*/*yandeka*	DEC
		nyonwa/*nyona*	DEC
12.	spread (intr./tr.)	*nyotoroka*/*nyotorora*	EQU
		handjauka/*handjaura*	EQU
13.	turn upside down (intr./tr.)	*kondoroka*/*kondorokisa*	CAU

Lingala

In pairs 9, 10 and 13, the stem ends with the reversive suffix *-ol*, and *-wan* is the realization of the underlying sequence *-ol-an*.

1.	break (intr./tr.)	*búkana*/*búka*	DEC
2.	burn (intr./tr.)	*zíka*/*zíkisa*	CAU
3.	close (intr./tr.)	*kangama*/*kanga*	DEC
4.	dry (intr./tr.)	*kauka*/*kaukisa*	CAU
5.	go out/put out (fire)	*zímana*/*zímisa*	EQU
6.	increase (intr./tr.)	*bakisama*/*bakisa*	DEC
7.	melt (intr./tr.)	*nyángwa*/*nyángwisa*	CAU
8.	move (intr./tr.)	*ningana*/*ningisa*	EQU
9.	open (intr./tr.)	*fungwana*/*fungola*	DEC
10.	split (intr./tr.)	*paswana*/*pasola*	DEC
11.	spoil (intr./tr.)	*béba*/*bébisa*	CAU
12.	spread (intr./tr.)	*panzana*/*panza*	DEC
13.	turn upside down (intr./tr.)	*bóngwana*/*bóngola*	DEC

Swahili

Note that the characterization retained here for several Swahili noncausal/causal pairs is controversial, since it is not always easy to determine to what extent their history should still be considered relevant in a synchronic analysis. See Dom *et al.* (this issue) for a discussion of alternative analyses.

1.	break (intr./tr.)	*vunjika*/*vunja*	DEC
2.	burn (intr./tr.)	*waka*/*washa*	CAU
		ungua/*unguza*	CAU
3.	close (intr./tr.)	*fungika*/*funga*	DEC
4.	dry (intr./tr.)	*kauka*/*kausha*	CAU
5.	go out/put out (fire)	*toka*/*toa*	DEC
		zimika/*zima*	DEC
6.	increase (intr./tr.)	*endelea*/*endeleza*	CAU
7.	melt (intr./tr.)	*yeyuka*/*yeyusha*	CAU
8.	move (intr./tr.)	*bembea*/*bembeza*	CAU
		pembea/*pembeza*	CAU
		yumba/*yumbisha*	CAU
9.	open (intr./tr.)	*funguka*/*fungua*	EQU
10.	split (intr./tr.)	*chanika*/*chana*	DEC
		pasuka/*pasua*	EQU
11.	spoil (intr./tr.)	*haribika*/*haribu*	DEC
		bomoka/*bomoa*	EQU
12.	spread (intr./tr.)	*enea*/*eneza*	CAU
		tandaa/*tandaza*	CAU
13.	turn upside down (intr./tr.)	*zunguka*/*zungusha*	CAU

Tswana

In *ša*/*fisa* ‘burn (intr./tr.)’, the causative suffix *-is* is clearly recognizable, and historically, this is undoubtedly a causative pair. Synchronically, it can still be analyzed as a causative pair with stem allomorphy triggered by the causative suffix, although an analysis in terms of suppletion could also be considered.

1.	break (intr./tr.)	*thubega*/*thuba*	DEC
2.	burn (intr./tr.)	*ša*/*fisa*	CAU
3.	close (intr./tr.)	*tswalega*/*tswala*	DEC
4.	dry (intr./tr.)	*oma*/*omisa*	CAU
5.	go out/put out (fire)	*tima*/*tima*	AMB
6.	increase (intr./tr.)	*oketsega*/*oketsa*	DEC
7.	melt (intr./tr.)	*gakologa*/*gakolosa*	CAU
8.	move (intr./tr.)	*tshikinyega*/*tshikinya*	DEC
9.	open (intr./tr.)	*bulega*/*bula*	DEC
10.	split (intr./tr.)	*fatoga*/*fatola*	EQU
11.	spoil (intr./tr.)	*senyega*/*senya*	DEC
12.	spread (intr./tr.)	*anama*/*anamisa*	CAU
13.	turn upside down (intr./tr.)	*fetoga*/*fetola*	EQU

Sar

1.	break (intr./tr.)	*tɔ̄ɔ̄*/*tɔ̄ɔ̄*	AMB
2.	burn (intr./tr.)	*hòr ù̱ù̱*/*ə́ndà hòr*	EQU
3.	close (intr./tr.)	*ùtə̄*/*ùtə̄*	AMB
4.	dry (intr./tr.)	*àȳ*/*àȳ*	AMB
		ndə̀lē/*ndə̀lē*	AMB
5.	go out/put out (fire)	*òy*/*tɔ̄l*	SUP
6.	increase (intr./tr.)	*bàỳ*/*bàỳ*	AMB
		bòò/*bòò*	AMB
7.	melt (intr./tr.)	*jɔ̀rɔ̀*/*jɔ̀rɔ̀*	AMB
		bɔ̄ryɔ̄/*bɔ̄ryɔ̄*	AMB
8.	move (intr./tr.)	*ndèw*/*ndèw*	AMB
		léñg/*léñg*	AMB
9.	open (intr./tr.)	*ɔ̀r̄*/*ɔ̀r̄*	AMB
10.	split (intr./tr.)	*ɲjàr*/*ɲjàr*	AMB
11.	spoil (intr./tr.)	*bɔ̄tə̄*/*bɔ̄tə̄*	AMB
12.	spread (intr./tr.)	*ɓáȳ*/*ɓáȳ*	AMB
13.	turn upside down (intr./tr.)	*bo̱ò*/*bo̱ò*	AMB

Hausa

In the Hausa data, the indications between parentheses refer to conjugation classes.

1.	break (intr./tr.)	*fashɛ̀* (v4)/*fasɑ̀* (v1)	EQU
2.	burn (intr./tr.)	*ci wutā*/*ƙōnɑ̀* (v1), *ƙōnɛ̀* (v4)	SUP
3.	close (intr./tr.)	*rufɛ̀* (v4)/*rufɛ̀* (v4)	AMB
4.	dry (intr./tr.)	*būshɛ̀* (v4)/*būshɛ̀* (v4)	AMB
5.	go out/put out (fire)	*mutù* (v7)/*kashɛ̀* (v4)	SUP
6.	increase (intr./tr.)	*yàwaità* (v3)/*yawàitā* (v1)	EQU
7.	melt (intr./tr.)	*narkɛ̀* (v4)/*narkɑ̀* (v1)	EQU
8.	move (intr./tr.)	*girgìjē* (v4)/*girgìzā* (v1)	EQU
9.	open (intr./tr.)	*budɛ̀* (v4)/*budɛ̀* (v4)	AMB
10.	split (intr./tr.)	*tsāgɑ̀* (v1)/*tsāgɛ̀* (v4)	EQU
11.	spoil (intr./tr.)	*ɓācì* (v3b)/*ɓātɑ̀* (v1)	EQU
12.	spread (intr./tr.)	*wātsɛ̀* (v4)/*wātsɑ̀* (v1)	EQU
		fashɛ̀ (v4)/*fasɑ̀* (v1)	EQU
13.	turn upside down (intr./tr.)	*jūyɛ̀* (v4)/*jūyɑ̀* (v1)	EQU
		kɨfɛ̀ (v4)/*kɨfɑ̀* (v1)	EQU

Afar

1.	break (intr./tr.)	*burùkka-exhe*/*burùkka-hee*	EQU
		iddigile/*iggile*	DEC
2.	burn (intr./tr.)	*carare*/*cararise*	CAU
3.	close (intr./tr.)	*alfime*/*alife*	DEC
4.	dry (intr./tr.)	*kafe*/*kafise*	CAU
5.	go out/put out (fire)	*bade*/*badise*	CAU
6.	increase (intr./tr.)	*muxxute*/*muxxuse*	EQU
7.	melt (intr./tr.)	*dalale*/*dalalise*	CAU
8.	move (intr./tr.)	*engeyye*/*esgeyye*	EQU
9.	open (intr./tr.)	*fakkiime*/*fake*	DEC
10.	split (intr./tr.)	*baqaqe*/*baqaqise*	CAU
11.	spoil (intr./tr.)	*oome*/*oysomme*	CAU
12.	spread (intr./tr.)	*fakkiime*/*fake*	DEC
		fixixe/*fixixise*	CAU
13.	turn upside down (intr./tr.)	*korankorime*/*korankorise*	EQU

Sidaama

1.	break (intr./tr.)	*hiikk'am-*/*hiikk'-*	DEC
2.	burn (intr./tr.)	*giiram-*/*giir-*	DEC
3.	close (intr./tr.)	*c'ufam-*/*c'uf*	DEC
4.	dry (intr./tr.)	*mool-*/*moolš-*	CAU
		moola ikk-/*moola ass-*	EQU
5.	go out/put out (fire)	*t'o-*/*t'ois-*	CAU
6.	increase (intr./tr.)	*lopp'-*/*loss-*	SUP
7.	melt (intr./tr.)	*daak'-*/*daak'is-*	CAU
		k'orišam-/*k'oriš-*	DEC
8.	move (intr./tr.)	*šašafam-*/*šašaf-*	DEC
9.	open (intr./tr.)	*faam-*/*fan-*	DEC
10.	split (intr./tr.)	*daram-*/*dar-*	DEC
11.	spoil (intr./tr.)	*diigam-*/*diig-*	DEC
12.	spread (intr./tr.)	*diriir-*/*diriirs-*	CAU
13.	turn upside down (intr./tr.)	*hig-*/*k'ol-*	SUP

Jamsay

1.	break (intr./tr.)	*jɔ̀ɣɔ́/jɔ̀ɣɔ́*	AMB
2.	burn (intr./tr.)	*dɛ́ː/dɛ́ː*	AMB
3.	close (intr./tr.)	*píné/píné*	AMB
4.	dry (intr./tr.)	*màyⁿá/màyⁿà'wⁿá*	CAU
5.	go out/put out (fire)	*úgó/úgó*	AMB
6.	increase (intr./tr.)	*gànà'rⁿá/gànà'rⁿá*	AMB
7.	melt (intr./tr.)	*nɔ́ŋɔ́rⁿɔ́/nɔ́ŋɔ́rⁿɔ́*	AMB
8.	move (intr./tr.)	*jìgìré/jìgìré*	AMB
9.	open (intr./tr.)	*píní'rⁿé/píní'rⁿé*	AMB
10.	split (intr./tr.)	*gùmó/gùmó*	AMB
11.	spoil (intr./tr.)	*sérⁿéwⁿé/sérⁿéwⁿé*	AMB
12.	spread (intr./tr.)	*sáyná/sáyná'wⁿá*	CAU
13.	turn upside down (intr./tr.)	*jìgìré/jìgìré*	AMB

Kupsabiny

1.	break (intr./tr.)	*yiirakay/yiiri*	DEC
		patacakay/patac	DEC
		yeyikey/yeyi	DEC
2.	burn (intr./tr.)	*pelakay/pel*	DEC
3.	close (intr./tr.)	*kaarakay/kaar*	DEC
4.	dry (intr./tr.)	*mayakay/may*	DEC
5.	go out/put out (fire)	*mus/mis*	SUP
6.	increase (intr./tr.)	*taastakey/taaste*	DEC
		nar/neer	SUP
7.	melt (intr./tr.)	*col/cool*	SUP
8.	move (intr./tr.)	*saššayakay/saššay*	DEC
9.	open (intr./tr.)	*yaatakay/yaat*	DEC
10.	split (intr./tr.)	*karerakay/karer*	DEC
11.	spoil (intr./tr.)	*yoomisakay/yoomis*	DEC
		wur/wurte	CAU
12.	spread (intr./tr.)	*yiitakay/yiite*	DEC
13.	turn upside down (intr./tr.)	*mulakay/mul*	DEC

Minyanka

1.	break (intr./tr.)	*kɛ̀kì*/*kɛ̀kì*	AMB
		jà/*jà*	AMB
2.	burn (intr./tr.)	*sórókó*/*sórókó*	AMB
3.	close (intr./tr.)	*tɔ́*/*tɔ́*	AMB
4.	dry (intr./tr.)	*wàʕà*/*wàʕà*	AMB
5.	go out/put out (fire)	*fúkú*/*fúkú*	AMB
6.	increase (intr./tr.)	*pɛ̀lɛ̂*, *tɔ̀nɔ̀*/*pɛ̀lɛ́ŋɛ̀*, *tɔ̀nɔ̀ŋɔ̀*	CAU
7.	melt (intr./tr.)	*yèelê*/*yèelê*	AMB
8.	move (intr./tr.)	*yíkíyɔ́kɔ̂*, *lèŋèlàŋá*/*yíkíyɔ́kɔ̂*, *lèŋèlàŋá*	AMB
9.	open (intr./tr.)	*múkú*/*múkú*	AMB
10.	split (intr./tr.)	*cɔ̀*/*cɔ̀*	AMB
		jà/*jà*	AMB
11.	spoil (intr./tr.)	*kálaʕáyí*/*kálaʕáyí*	AMB
12.	spread (intr./tr.)	*cạ̀rî*, *yɛ̀rɛ̀kɛ̀*/*cạ̀rî*, *yɛ̀rɛ̀kɛ̀*	AMB
13.	turn upside down (intr./tr.)	*wá-kạ̀ŋạ̀*/*wá-kạ̀ŋạ̀*	AMB

Baule

Baule has no causal counterpart of *wu* ‘dry (intr.)’, but an analytical causative construction is possible (Jérémie Kouadio, p.c.).

1.	break (intr./tr.)	*bu*/*bu*	AMB
2.	burn (intr./tr.)	*yra*/*yra*	AMB
3.	close (intr./tr.)	*nyin*/*nyin*	AMB
4.	dry (intr./tr.)	*wu*/–	CAU
5.	go out/put out (fire)	*nuan*/*nuan*	AMB
6.	increase (intr./tr.)	*trɛ*/*trɛ*	AMB
7.	melt (intr./tr.)	*klo*/*klo*	AMB
8.	move (intr./tr.)	*keje*/*keje*	AMB
9.	open (intr./tr.)	*tike*/*tike*	AMB
10.	split (intr./tr.)	*kpaci*/*kpaci*	AMB
11.	spoil (intr./tr.)	*saci*/*saci*	AMB
12.	spread (intr./tr.)	*tru*/*tru*	AMB
13.	turn upside down (intr./tr.)	*kpɛ ... wun*/*kpɛ ... wun*	AMB

Fon

1.	break (intr./tr.)	*gbà*/*gbà*	AMB
2.	burn (intr./tr.)	*jì zò*/*dǒ zò*	EQU
3.	close (intr./tr.)	*sú*/*sú*	AMB
4.	dry (intr./tr.)	*xú*/*hèn xú*	CAU
5.	go out/put out (fire)	*cí*/*cí*	AMB
6.	increase (intr./tr.)	*jǐ*/*jǐ*	AMB
7.	melt (intr./tr.)	*sínsín*/*sínsín*	AMB
8.	move (intr./tr.)	*dǎn*/*dǎn*	AMB
9.	open (intr./tr.)	*hùn*/*hùn*	AMB
10.	split (intr./tr.)	*fɛ̌n*/*fɛ̌n*	AMB
11.	spoil (intr./tr.)	*gblě*/*gblě*	AMB
12.	spread (intr./tr.)	*vùn*/*vùn*	AMB
13.	turn upside down (intr./tr.)	*flí*/*flí*	AMB

Bambara

1.	break (intr./tr.)	*cì*/*cì*	AMB
2.	burn (intr./tr.)	*jèni*/*jèni*	AMB
3.	close (intr./tr.)	*túgu*/*túgu*	AMB
4.	dry (intr./tr.)	*jà*/*jà*	AMB
5.	go out/put out (fire)	*sà*/*dúgan*	SUP
6.	increase (intr./tr.)	*yíriwa*/*yíriwa*	AMB
7.	melt (intr./tr.)	*yèelen*/*yèelen*	AMB
8.	move (intr./tr.)	*lámaga*/*lámaga*	AMB
9.	open (intr./tr.)	*yɛ̀lɛn*/*yɛ̀lɛn*	AMB
10.	split (intr./tr.)	*fára*/*fára*	AMB
11.	spoil (intr./tr.)	*tínyɛ*/*tínyɛ*	AMB
12.	spread (intr./tr.)	*jɛ́nsɛn*/*jɛ́nsɛn*	AMB
13.	turn upside down (intr./tr.)	*yɛ̀lɛma*/*yɛ̀lɛma*	AMB

Kakabe

1.	break (intr./tr.)	*tíŋa*/*tíŋa*	AMB
2.	burn (intr./tr.)	*bìntan*/*bìntan*	AMB
3.	close (intr./tr.)	*tàgun*/*tàgun*	AMB
4.	dry (intr./tr.)	*gbála*/*lagbála*	CAU
5.	go out/put out (fire)	*sà*/*níppɛ*	SUP
6.	increase (intr./tr.)	*yáagɛ*/*layáagɛ*	CAU
7.	melt (intr./tr.)	*lɛ̀*/*lɛ̀*	AMB
8.	move (intr./tr.)	*dìnbi*/*dìnbi*	AMB
9.	open (intr./tr.)	*láka*/*láka*	AMB
10.	split (intr./tr.)	*fára*/*fára*	AMB
11.	spoil (intr./tr.)	*tíŋa*/*tíŋa*	AMB
12.	spread (intr./tr.)	*júrɛjúrɛ*/*júrɛjúrɛ*	AMB
13.	turn upside down (intr./tr.)	*yèlɛman*/*yèlɛman*	AMB

Mandinka

1.	break (intr./tr.)	*jàní*/*jàní*	AMB
2.	burn (intr./tr.)	*tĕe*/*tĕe*	AMB
3.	close (intr./tr.)	*táwûŋ*/*táwûŋ*	AMB
4.	dry (intr./tr.)	*jăa*/*jàndí*	CAU
5.	go out/put out (fire)	*díbêŋ, făa*/*díbêŋ, făa*	AMB
6.	increase (intr./tr.)	*láfâa*/*láfâa*	AMB
		yíríwâa/*yíríwándì*	CAU
7.	melt (intr./tr.)	*yèlûŋ*/*yèlùndí*	CAU
8.	move (intr./tr.)	*màamâŋ*/*maàmàndí*	CAU
9.	open (intr./tr.)	*yèlé*/*yèlé*	AMB
10.	split (intr./tr.)	*fárà*/*fárà*	AMB
11.	spoil (intr./tr.)	*tíñâa*/*tinâa*	AMB
12.	spread (intr./tr.)	*jáñjâŋ*/*jáñjándí*	CAU
13.	turn upside down (intr./tr.)	*kúpì, yèlèmá*/*kúpíndì, yèlèmàndí*	CAU

Mano

Mano has no causal counterpart of *fàā* ‘increase (intr.)’, but an analytical causative construction is possible. (Maria Khachaturyan, p.c.)

1.	break (intr./tr.)	*wí, yé*/*wí, yé*	AMB
2.	burn (intr./tr.)	*gélé*/*gélé*	AMB
3.	close (intr./tr.)	*tā*/*tā*	AMB
4.	dry (intr./tr.)	*kɔ̀ɔ̀*/*kɔ̀ɔ̀*	AMB
5.	go out/put out (fire)	*lópí*/*lópí*	AMB
6.	increase (intr./tr.)	*fàā*/–	CAU
7.	melt (intr./tr.)	*sɛ̀ŋɛ̀*/*sɛ̀ŋɛ̀*	AMB
8.	move (intr./tr.)	*gbìnīgbīní*/*gbìnīgbīní*	AMB
9.	open (intr./tr.)	*lé ɓō*/*lé ɓō*	AMB
10.	split (intr./tr.)	*pɛ́ɛ́*/*pɛ́ɛ́*	AMB
11.	spoil (intr./tr.)	*sīè*/*sīè*	AMB
12.	spread (intr./tr.)	*ŋwɛ̀ŋ̄*/*ŋwɛ̀ŋ̄*	AMB
13.	turn upside down (intr./tr.)	*káá*/*káá*	AMB

Soninke

Soninke has a detransitivizing suffix *-i* that surfaces as a distinct segment with monosyllabic stems but fuses with the final vowel of non-monosyllabic stems, for example *kárá* + *-i* > *káré*. This is the reason why some pairs that look like equipollent pairs are analyzed as decausative. As regards *kàrá*/*kàrí*, the apparent *a*/*i* alternation is completely isolated in the verbal lexicon of Soninke, which justifies analyzing this pair as suppletive.

1.	break (intr./tr.)	*káré*/*kárá*	DEC
2.	burn (intr./tr.)	*bíyí*/*bíyí*	AMB
3.	close (intr./tr.)	*téxé*/*téxé*	AMB
4.	dry (intr./tr.)	*káawá*/*káawándí*	CAU
5.	go out/put out (fire)	*kàrá*/*kàrí*	SUP
6.	increase (intr./tr.)	*qòoró*/*qòoròndí*	CAU
7.	melt (intr./tr.)	*qàjé*/*qàjá*	DEC
8.	move (intr./tr.)	*yònké*/*yònkó*	DEC
9.	open (intr./tr.)	*ŋùñí*/*ŋùñí*	AMB
10.	split (intr./tr.)	*káré*/*kárá*	DEC
11.	spoil (intr./tr.)	*bònó*/*bònòndí*	CAU
12.	spread (intr./tr.)	*sánqì*/*sánqì*	AMB
13.	turn upside down (intr./tr.)	*yíllè*/*yíllà*	DEC

Kanuri

1.	break (intr./tr.)	*namtə́kin*/*namngîn*	DEC
2.	burn (intr./tr.)	*yámbukin*/*wárngin*	SUP
3.	close (intr./tr.)	*zaktə́kin*/*zanggîn*	DEC
4.	dry (intr./tr.)	*hárngin*/*yitahárgəkin*	CAU
5.	go out/put out (fire)	*núkin*/*yezə́kin*	SUP
6.	increase (intr./tr.)	*ngəwujîn*/*yirgákin*	SUP
7.	melt (intr./tr.)	*fángin*/*yitafágəkin*	CAU
8.	move (intr./tr.)	*təgəndə́kin*/*gəndə́kin*	DEC
9.	open (intr./tr.)	*fərə́mtəkin*/*fərə́mngin*	DEC
10.	split (intr./tr.)	*rétin*/*réngin*	DEC
11.	spoil (intr./tr.)	*bannatîn*/*bannangîn*	DEC
12.	spread (intr./tr.)	*tártəkin*/*tárngin*	DEC
13.	turn upside down (intr./tr.)	*kálákktəkin*/*kálánggin*	DEC

Sandawe

For pairs 12 and 13, I was not able to find the exact equivalents of ‘spread’ and ‘turn upside down’, and I took the liberty of replacing them by semantically close verbs.

1.	break (intr./tr.)	*||ŋwèénts’i̧*/*||ŋwèé*	DEC
2.	burn (intr./tr.)	*nâʔa̧*/*nàʔa̧sé*	CAU
3.	close (intr./tr.)	*xíɬi*/*xíɬise*	CAU
4.	dry (intr./tr.)	*nǐ́k’e*/*nǐ́k’ese*	CAU
5.	go out/put out (fire)	*núts’i*/*nu*	DEC
6.	increase (intr./tr.)	*!’ókhwats’i*/*!’ókhwa*	DEC
7.	melt (intr./tr.)	*ts’alala*/*ts’alalasé*	CAU
8.	move (intr./tr.)	*||hâts’i̧*/*||hâ*	DEC
9.	open (intr./tr.)	*ŋ!òóts’í*/*ŋ!òó*	DEC
10.	split (intr./tr.)	*ɬǎnts’i̧*/*ɬàámé*	DEC
11.	spoil (intr./tr.)	*kòònáwàts’í*/*kòònáwà*	DEC
12.	spread (intr./tr.)	*khuʔ*/*khuʔsé* (spill)	CAU
13.	turn upside down (intr./tr.)	*tɬ’êʔȩ*/*tɬ’èʔȩsé* (deviate)	CAU

Amharic

1.	break (intr./tr.)	*täsäbbärä*/*säbbärä*	DEC
2.	burn (intr./tr.)	*täqatʼtʼälä*/*aqatʼtʼälä*	EQU
3.	close (intr./tr.)	*täzägga*/*zägga*	DEC
4.	dry (intr./tr.)	*därräqä*/*adärräqä*	CAU
5.	go out/put out (fire)	*wätʼtʼä*/*awätʼtʼä*	CAU
6.	increase (intr./tr.)	*addägä*/*asaddägä*	CAU
		sälätʼtʼänä/*asälätʼtʼänä*	CAU
7.	melt (intr./tr.)	*qällätʼä*/*aqällätʼä*	CAU
8.	move (intr./tr.)	*täwäzawwäzä*/*wäzawwäzä*	DEC
9.	open (intr./tr.)	*täkäffätä*/*käffätä*	DEC
10.	split (intr./tr.)	*täsänätʼtʼäqä*/*sänätʼtʼäqä*	DEC
		täfällätʼä/*fällätʼä*	DEC
11.	spoil (intr./tr.)	*wäddämä*/*awäddämä*	CAU
		tädämässäsä/*dämässäsä*	DEC
12.	spread (intr./tr.)	*täsfaffa*/*asfaffa*	EQU
13.	turn upside down (intr./tr.)	*zorä*/*azorä*	CAU

Humburi Senni

Humburi Senni has noncausal/causal pairs that at first sight look like equipollent pairs but in which the noncausal member can be analyzed as resulting from the addition or a detransitivizing suffix *-a* that triggers the deletion of the last vowel of the stem.

1.	break (intr./tr.)	*céyrí*/*cèyrì bòwà*/*bòw*	EQU
			DEC
2.	burn (intr./tr.)	*tóná*/*tòn*	DEC
3.	close (intr./tr.)	*dàabà*/*dáabù*	DEC
4.	dry (intr./tr.)	*kóogú*/*kóoyéyndí*	CAU
5.	go out/put out (fire)	*búu*/*wíi*	SUP
6.	increase (intr./tr.)	*bé:rî*/*bé:réyndí*	CAU
7.	melt (intr./tr.)	*ménéné*/*ménéné*	AMB
8.	move (intr./tr.)	*yówyów*/*yówyów*	AMB
9.	open (intr./tr.)	*férí*/*fèrì*	EQU
		hây/*hây*	AMB
10.	split (intr./tr.)	*zèmnà*/*zèmnà*	AMB
11.	spoil (intr./tr.)	*hàsàrâ*/*hàsàrâ*	AMB
12.	spread (intr./tr.)	*sèy*/*sèy*	AMB
13.	turn upside down (intr./tr.)	*bèrè*/*béré*	EQU

Koroboro Senni

Like Humburi Senni, Koroboro Senni has noncausal/causal pairs that at first sight look like equipollent pairs but in which the noncausal member can be analyzed as resulting from the addition or a detransitivizing suffix *-a* that triggers the deletion of the last vowel of the stem.

1.	break (intr./tr.)	*keyri*/*keyri*	AMB
2.	burn (intr./tr.)	*dii*/*diyandi*	CAU
3.	close (intr./tr.)	*daaba*/*dabu*	DEC
4.	dry (intr./tr.)	*koogu*/*koogandi*	CAU
5.	go out/put out (fire)	*buu*/*wii*	SUP
6.	increase (intr./tr.)	*boobo*/*boobandi*	CAU
7.	melt (intr./tr.)	*menne*/*mennendi*	CAU
8.	move (intr./tr.)	*ñooti*/*ñooti*	AMB
9.	open (intr./tr.)	*hay*/*hay*	AMB
		feera/*feeri*	DEC
10.	split (intr./tr.)	*kottu*/*kottu*	AMB
11.	spoil (intr./tr.)	*hasara*/*hasara*	AMB
12.	spread (intr./tr.)	*sey*/*sey*	AMB
13.	turn upside down (intr./tr.)	*bere*/*bere*	AMB

Gbaya

Gbaya has no causal counterpart of the intransitive verbs for ‘dry’, but the causal meaning can be expressed by an analytical causative construction. (Paulette Roulon-Doko, p.c.)

1.	break (intr./tr.)	*ʔo*/*ʔo*	AMB
2.	burn (intr./tr.)	*bei*/*dɔ*	SUP
3.	close (intr./tr.)	*kpe*/*kpe*	AMB
4.	dry (intr./tr.)	*zɔm, kesi, kor*/–	CAU
5.	go out/put out (fire)	*bi*/*bi*	AMB
6.	increase (intr./tr.)	*hg̱*/*hg̱*	AMB
7.	melt (intr./tr.)	*yeli*/*yeli*	AMB
8.	move (intr./tr.)	*mii*/*mii*	AMB
9.	open (intr./tr.)	*hu̱i̱*/*hu̱i̱*	AMB
10.	split (intr./tr.)	*mbaŋ*/*mbaŋ*	AMB
11.	spoil (intr./tr.)	*ɗaŋ*/*ɗaŋ*	AMB
12.	spread (intr./tr.)	*gbai, yai*/*gbai, yai*	AMB
13.	turn upside down (intr./tr.)	*kifi*/*kifi*	AMB

APPENDIX 2

Appendix 2 summarizes the coding of the 13 noncausal/causal pairs of verb meanings that constitute questionnaire A in the 30 languages of the sample. Boldface signals values that significantly exceed the average value (see Section 4.1).

		AMB	DEC	CAU	EQU	SUP	Total undirected
Atlantic	Balant Ganja	2	**6**	1	**4**	0	6
	Fula (Adamawa)	3	0	4	**6**	0	9
	Jóola Fóoñi	0	**8**	3	2	0	2
	Seereer	1	**9**	3	0	0	1
	Wolof	5	5	2	1	0	6
Benue-Congo	Emai	**12**	0	0	0	1	13
	Herero	1	1.5	**6**	**4.5**	0	5.5
	Lingala	0	**7**	4	2	0	2
	Swahili	0	4	**7**	2	0	2
	Tswana	1	**6**	4	2	0	3
Central Sudanic	Sar	**11**	0	0	1	1	13
Chadic	Hausa	3	0	0	**8**	2	13
Cushitic	Afar	0	3	**6.5**	**3.5**	0	3.5
	Sidaama	0	**7.5**	3	0.5	2	2.5
Dogon	Jamsay	**11**	0	2	0	0	11
Eastern Sudanic	Kupsabiny	0	**10**	0.5	0	2.5	2.5
Gur	Minyanka	**12**	0	1	0	0	12
Kwa	Baule	**12**	0	1	0	0	12
	Fon	**11**	0	1	1	0	12
Mande	Bambara	**12**	0	0	0	1	13
	Kakabe	**10**	0	2	0	1	11
	Mandinka	**7.5**	0	**5.5**	0	0	7.5
	Mano	**12**	0	1	0	0	12
	Soninke	4	5	3	0	1	5
Saharan	Kanuri	0	**8**	2	0	3	3
Sandawe	Sandawe	0	**7**	**6**	0	0	0
Semitic	Amharic	0	**5.5**	**5.5**	2	0	2
Songhay	Humburi Senni	5.5	2.5	2	2	1	8.5
	Koroboro Senni	6.5	1.5	4	0	1	7.5
Ubangian	Gbaya	**11**	0	1	0	1	12