THE HISTORY OF THE MIDDLE IN DOGON*

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Donno So, a Dogon language of Mali, has a class of verbs (C3) that exhibits an interesting set of formal and semantic properties. The verbs in this class have different derivational histories; they also have various typs of meaning (middle; middle-related; non-middle). Although C3 verbs cannot be unified derivationally or semantically, they can all be defined both paradigmatically and in terms of phonotactic constraints, like the other two verb classes in Donno So. Comparison with other Dogon languages shows how the middle evolved in Dogon and how Donno So C3 verbs in turn evolved from the middle. These results expand Kemmer's [1993] discussion of the processes invoved in the evolution of middle systems. The comparison also provides some hypotheses about the history of Dogon.

1. Introduction

Dogon is spoken by 500,000 people in Mali and Burkina Faso. While Dogon is usually considered a Gur language, its classification is not completely clear. Donno So (DS) is one of several varieties (estimates vary from seven to fifteen or so) that range from almost completely mutually intelligible to almost completely mutually unintelligible [Calame-Griaule 1956]. DS is a rigid SOV language with complex verbal morphology.

DS has three classes of verbs, which we refer to as C1, C2, and C3. Examples of verbs from each of these classes are provided in (1).[1]

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[1] All translations of DS are those of the first author. DS is a tonal language, but the tones have not been studied in any detail. In his dictionary, Kervran [1993] gives tones for headwords, but not for words in his examples; the official orthography does not give tones. In general, we follow the official orthography and do not indicate tones, since they are not relevant to our discussion.

(1) a. C1 verbs

banna	'measure'
gere	'get up many times in succession'
mile	'reach the height of'
sugo	'go down'
tɔlɔ	'start'

b. C2 verbs

bɛlɛ	'win, be able to'
gegezee	'gnaw'
minnele	'unfold'
suzɛɛ	'whistle'
tɔɔrɔ	'sow a second time'

c. C3 verbs

baŋɛɛ	'close one's self up in'
genjile	'become big'
minɛɛ	'be swallowed'
summe	'mix/be mixed in'
tɔnɛ	'crouch'

Of particular interest is the third class of verbs, C3, which contains verbs with a variety of formal and semantic properties that differentiate C3 from C1 and C2. In this study, we show that the verbs in this class have different derivational histories. We also show that while numerous verbs in C3 exhibit middle meaning, many do not (see section 2 for a discussion of the term "middle"). Although the verbs in this class cannot be unified derivationally or semantically, we show that they all belong to the same inflectional paradigm and they all follow the same phonotactic constraints. That is, like the other two verb classes in DS, the C3 class of verbs can be defined both paradigmatically and in terms of phonotactic constraints. Comparison of DS with other Dogon languages shows how the middle evolved in Dogon, and how DS C3 in turn evolved from the middle.

There are two important consequences of this study. The first consequence is clarification of the nature of the middle. The discussion of the historical development of the middle in Dogon expands Kemmer's [1993] discussion of diachronic processes involved in the evolution of middle systems. In particular, the Dogon data provide evidence for a degree of grammaticization in the development of middle markers that is not attested in Kemmer [1993]. The potential importance of the causative/inchoative opposition in the spread of the middle marker is also brought to light by the developments in Dogon.

The second consequence is exploration of the history of the Dogon language family. In explaining the historical development of C3 in DS, we provide some hypotheses about the history of the Dogon language family.

The paper is organized as follows: Section 2 provides a discussion of middle voice. Kemmer's [1993] definition of middle voice is used here as a tool for identifying verbs with middle meaning. Section 3 presents an overview of the verbal system in DS. Section 4 discusses the derivational properties of C3 verbs and demonstrates that the verbs in this class are derivationally heterogeneous. Section 5 argues that C3 cannot be analyzed synchronically as the middle. Section 6 shows that C3 verbs can be defined both paradigmatically and in terms of phonotactic constraints, like C1 and C2 verbs. Section 7 discusses the history of C3 in the context of the development of the verbal systems of Dogon varieties.

2. Middle voice defined

The term "middle" is used in the literature to refer to a wide range of linguistic phenomena. Traditionally, "middle voice" is treated as an inflectional category of the verb in Indo-European languages like Greek. In Greek, middle voice indicates that the verbal action "is performed with special reference to the subject" [Smyth 1956:390]. For example, it depicts the subject as doing something to herself, for herself, or with something belonging to herself, as shown in (2).

(2) The middle in Greek
    a. *loûsthai*   'wash oneself'
    b. *porízesthai*   'provide for oneself'
    c. *paréchesthai* 'furnish from one's own resources'

Many current uses of the term "middle" are language specific and designate an array of construction types with a broad range of formal and semantic characteristics. For example, as shown in (3), the French middle exhibits a pronominal clitic (*se*); Icelandic middles are marked with an affix (*-st*); the English middle has no special middle morphology. The Icelandic middle can have reflexive, passive, and inchoative meaning; both English and French middles are passive-like in meaning, but English middles cannot have an eventive interpretation (they describe properties rather than events).

(3) Some ways of expressing the middle
    a. French [Zribi-Hertz 1982:349]

       La question <u>se</u> traite actuellement à l'Assemblée.
       'The issue is being discussed now in the Assembly.'

    b. Icelandic [Valfells 1970:559]

       Hann meiddi<u>st</u> illa.
       'He hurt himself badly.'

    c. English
       This book reads easily.

Kemmer [1993] is a comprehensive attempt to provide a cross-linguistically meaningful definition of middle voice that includes many of the phenomena treated in individual languages under the category of the middle. Lyons's [1969] characterization of the middle serves as Kemmer's starting point. According to Lyons [1969:373], the middle implies that "the 'action' or 'state' affects the subject of the verb or his interests." Kemmer argues that while Lyons's definition identifies the semantic core of the middle, it is both too broad and too narrow. It is too broad in that it includes the reflexive and the passive, which must be kept distinct from the middle; it is too narrow in that it treats only a single property of middle voice, namely, subject affectedness.

According to Kemmer, a language with a middle system is one in which middle semantics is associated with an overt marker, where middle semantics has two properties: (1) the initiator of an event is also an affected entity, and (2) there is a low degree to which the components of an event (the participants, the possible subevents) are distinguished. Semantically, the middle is a "coherent but relatively diffuse category that comprises a set of loosely linked semantic subdomains" [Kemmer 1993:238]. Some examples of subdomains of the middle that are attested in German are given in (4).

(4) Some subdomains of the middle attested in German
   a. grooming actions: *sich anziehen*   'dress'
   b. change in body posture actions: *sich hinlegen*   'lie down'
   c. nontranslational motion actions: *sich verbeugen* 'bow'
   d. emotion middle: *sich fürchten*   'be/become frightened'
   e. emotive speech actions: *sich beschweren* 'complain'

Kemmer provides a useful guide for determining whether C3 verbs are the DS middle voice. She defines middle voice very broadly and thus provides a relatively unrestricted context within which C3 verbs can be evaluated. At the same time, the various subdomains of the middle that she identifies serve as very concrete reference points for analyzing individual C3 predicates. In section 5.2 we use Kemmer's treatment of middle voice as the basis for our investigation into the semantic status of C3 verbs.

3. The verbal system in Donno So

Before we look more closely at the derivational properties of verbs in C3, we provide some general information about the verbal system in DS; we also compare some of the morphological properties of C3 verbs with those of verbs in C1 and C2.

Verbs in DS inflect for person, number, tense, aspect, and polarity. The schematic form of the verb in DS is given in (5). Negation varies by tense/aspect, but generally is or contains /l/ or /n/. The person/number affixes are listed in (6). The present progressive for representative verbs from each of the three verb classes is

(5)   ROOT - Tense/Aspect/Negation - Person/Number

(6)   Singular   Plural
      1   *-m*   *-ñ*
      2   *-w*   *-ñ*
      3   *Ø*   *-i*

(7) Present progressive (cf. Kervran and Prost [1986:76])[2]
    a.   Present progressive of *kige* 'stop/be sideways' (C1)

Subject	Affirmative	Negative
1 SG	*kig-ɛ́zɛ-m*	*kig-ɛ́lɛ-m*
2 SG	*kig-ɛ́zɛ-w*	*kig-ɛ́lɛ-w*
3 SG	*kig-ɛ́zɛ-Ø*	*kig-ɛ́lɛ-Ø*
1 PL	*kig-ɛ́zɛ-ñ*	*kig-ɛ́lɛ-ñ*
2 PL	*kig-ɛ́zɛ-ñ*	*kig-ɛ́lɛ-ñ*
3 PL	*kig-ɛ́z-i*	*kig-ɛ́nn-i*

    b.   Present progressive of *kibube* 'have a distinctive odor' (C2)

Subject	Affirmative	Negative
1 SG	*kibub-ɛ́zɛ-m*	*kibub-ɛ́lɛ-m*
2 SG	*kibub-ɛ́zɛ-w*	*kibub-ɛ́lɛ-w*
3 SG	*kibub-ɛ́zɛ-Ø*	*kibub-ɛ́lɛ-Ø*
1 PL	*kibub-ɛ́zɛ-ñ*	*kibub-ɛ́lɛ-ñ*
2 PL	*kibub-ɛ́zɛ-ñ*	*kibub-ɛ́lɛ-ñ*
3 PL	*kibub-ɛ́z-i*	*kibub-ɛ́nn-i*

    c.   Present progressive of *kiige* 'stutter' (C3)

Subject	Affirmative	Negative
1 SG	*kiig-ɛ́zɛ-m*	*kiig-ɛ́lɛ-m*
2 SG	*kiig-ɛ́zɛ-w*	*kiig-ɛ́lɛ-w*
3 SG	*kiig-ɛ́zɛ-Ø*	*kiig-ɛ́lɛ-Ø*
1 PL	*kiig-ɛ́zɛ-ñ*	*kiig-ɛ́lɛ-ñ*
2 PL	*kiig-ɛ́zɛ-ñ*	*kiig-ɛ́lɛ-ñ*
3 PL	*kiig-ɛ́z-i*	*kiig-ɛ́nn-i*

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[2] The acute accent in the examples in (7) indicates high tone, and the grave accent in the examples in (8) indicates low tone. We mark tone in these examples because it distinguishes the present habitual from the present progressive; compare the third singular forms in (7) with those in (8).

given in (7).[3] Although the present progressive forms are identical across the verb classes, other verb forms are not. For example, the negative (but not the affirmative) present habitual for C3 is slightly different from that for C1 and C2, which are identical. C3 has an extra *i* not present in C1 and C2. A simple comparison using the same verbs as above is given in (8).

(8) Third singular present habitual

	C1	C2	C3
	kige	*kibube*	*kiige*
Affirmative	*kig-ɛzè-Ø*	*kibub-ɛzè-Ø*	*kiig-ɛzè-Ø*
Negative	*kig-ɛlè-Ø*	*kibub-ɛlè-Ø*	*kiig-i̯ɛlè-Ø*

In contrast, the past affirmative of C1 does not comprise *i* and is thus different from that of C2 and C3, which are identical, as the examples in (9) show.

(9) Third singular past

	C1	C2	C3
	kige	*kibube*	*kiige*
Affirmative	*kig-e-Ø*	*kibub-i-Ø*	*kiig-i-Ø*

We will look further at the formal properties of verbs in each of the three classes when we discuss additional patterns of inflection and phonotactic constraints in section 6. In the following section we focus on the formal properties of C3 verbs that involve derivation.

4. The derivational properties of C3 verbs

Verbs in C3 are derivationally heterogeneous. Approximately three quarters of C3 verbs are derived from other verbs; others are derived from nouns or adjectives. There are also verbs in C3 that are not derived.

A primary means of deriving C3 verbs from other verbs is by a process that Kervran and Prost [1986:61] describe as follows: final vowels change to *e/ɛ* and

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[3] The following abbreviations are used in the glosses in this paper:

ACC	accusative	LOC	locative	PRP	present participle
ANTP	anterior participle	MM	middle marker	PSP	past participle
AOR	aorist	NEG	negation	PSR	possessor
AUX	auxiliary	PERF	perfect	PST	past
D1	D1 (derivational process)	PL	plural	REC	reciprocal
DEF	definite	POSS	possessive	REFL	reflexive marker
HAB	habitual	PRES	present	SG	singular
IMP	imperative	PRO	prohibitive		

intermediate vowels in verbs of three syllables or more become *u/i*.[4] We will refer to this process as the D1 (first derivational) process and the verbs formed by it as D1 C3 verbs. Kervran refers to this process as "reflexivization" [Kervran 1993, henceforth DD (Donno So Dictionary); Kervran and Prost 1986, henceforth DG (Donno So Grammar)]; however, as we see below, reflexive meaning is only one of the meanings associated with these C3 verbs. According to Kervran, verbs derived by the D1 process have one of the four types of meanings given in (10). Some examples illustrating these meanings are provided in (11).

(10)   Four types of meaning associated with D1 C3 verbs [DG:61-62; DD:8]
      a. an action done by subject on itself
      b. reciprocal
      c. possibility or impossibility of an action
      d. obligation/interdiction or suitability of an action

(11)   Examples of D1 C3 verbs [DG:61-62]
      a. reflexive (*pagɛɛ* < *paga* 'attach')

         poguru u   mɔ̃   pagɛɛ
         belt   you POSS attach-D1
         'Attach your belt to you.'

      b. reciprocal (*barɛ* < *bara* 'help')

         tumɔn le barɛw   wuiya
         REC   and help-D1-PRP AUX-3PL
         'They help each other.'

      c. possibility/impossibility (*angulɛ* < *angala* 'dislodge')

         tanna angalam   mi giaa,   angulɛli
         stick dislodge-PRP   I   wanted dislodge-D1-PAST.NEG.3SG
         'I wanted to dislodge a stick; it wouldn't become dislodged.'

      d. obligation etc. (*giyyɛ* < *gɛ* 'say')

         sɔ   kɔ   giyyielɛ
         word this say-D1-PRES.NEG.3SG
         'This (word, thing) isn't said.'

    Although this process typically derives C3 verbs from verbs in C1 and C2, there are some C3 verbs that are apparently derived by D1 from other C3 verbs; these are listed in (12).

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[4] The choice of *e/ɛ* is determined by vowel harmony with the stem. We will use the archiphoneme *E* when referring to this pair.

(12)   D1 C3 verbs derived from other C3 verbs
   a. *dinindεε*   'be divided up' <   *dinεndεε* 'make go to (divide up)'
   b. *giyyε*   'be said'   <   *gε*   'say'
   c. *teyye*   'be sent'   <   *te*   'send'
   d. *timbεε*   'advise (recip.)' <   *timbεε* 'advise'
   e. *wayyεε*   'be scorched'   <   *wayyε*   'grill/toast in a container'

   In addition to the D1 process just described, four different processes derive C3
verbs with inchoative (roughly, change of state) meaning. Two processes derive
inchoatives from adjectives (13); one of these uses the suffix *-ndE*,[5] the other *-E*.[6]

(13)   C3 inchoatives derived from adjectives [DG:66-67]
   a.   ADJECTIVE + *ndE*
          genindε 'become good'   <   *gεnε*   'good'
          numundε 'be, become fast' <   *numɔ*   'fast'

   b.   ADJECTIVE + *E*
          banεε   'become red'   <   *banu*   'red'

          doguzee 'become heavy' <   *dogozo* 'heavy'

   Two processes derive inchoatives from nouns (14). These processes are similar
to those that derive C3 verbs from adjectives. One uses the suffix *-gE*; the other
the suffix *-E*.

(14)   C3 inchoatives derived from nouns [DG:66-67]
   a.   NOUN + *gE*
          dεwgε   'become poor'   <   *dεw*   'poverty'
          sembugε 'become strong' <   *sembε* 'strength'

   b.   NOUN + *E*
          tagεε   'put on shoes'   <   *taga*   'shoe'
          pɔnnεε 'put on shorts'   <   *pɔnnu* 'shorts'

   In addition to the D1 and inchoative verbs that are derived using the regular
processes described above, there are a few C3 verbs that appear to be irregularly
derived. In (15), *dinende* does not have a high penulitmate vowel, contrary to the

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[5] While there is some reason to think that this suffix and the denominal suffix *-gE* discussed
below actually have unspecified vowels slots, the justification for that position would take us far
too deep into the phonology of DS than can be justified here. See Culy [1987] for the general
motivation for the unspecified vowels slots.

[6] In all of these cases, the derived verbs of three or more syllables have high vowels, probably for
phonotactic reasons, to be discussed in section 6.

general phonotactic constraints on C3 (see section 6), and *sonuge* has an epenthetic *u* (i.e., it is not **songe*), which is probably motivated by phonotactic constraints—general constraints for open syllables as well as C3-specific phonotactic constraints.

(15) Irregularly derived C3 verbs
    dinɛndɛ 'make go to (divide up)'   <   *dinɛ* 'to go (fall) to'
    sonuge 'carry astride one's shoulders' <? *sõn* 'horse'

    Although the majority of verbs in C3 are derived, there are also verbs that are not derived; many of these are inchoative in meaning, as the examples in (16) show.

(16) Non-derived C3 inchoatives
    abulɛ   'become old'
    mannyɛ   'dry out, become dry'
    nanundɛ   'become easy'
    pɔlɛ   'become rough, scabby, hairless'
    toonde   'be, become deep'
    yɛnjilɛ   'be, become weak'

    In sum, there are a number of different processes that give rise to C3 verbs. D1 involves stem-internal changes; several different suffixes produce inchoatives, *-ndE*, *-gE*, and *-E*; some verbs are not derived. In addition, the meanings of the verbs in C3 also vary. In the following section we take a closer look at the semantics of C3 verbs, returning in section 6 to the formal similarity among C3 verbs, namely that they all end in *-E*.

5. C3 and middle voice

Because of the kinds of meaning that are associated with many of the verbs in C3, meanings that are typically characterized as "middle" (see, for example, Klaiman [1991], Kemmer [1993], Saeed [1995]; see also the discussion in section 2), it is necessary to investigate the possibility that C3 is the middle (defined in formal and semantic terms) rather than simply a class of verbs defined primarily in formal terms. On the basis of morphological and semantic arguments (sections 5.1 and 5.2 respectively), we show that C3 cannot be analyzed synchronically as the middle.

5.1. A morphological argument. As demonstrated in section 4, verbs in C3 are derivationally heterogeneous. In particular, there is no single affix that is used to derive C3 verbs. D1 involves stem-internal changes; inchoatives are derived using the suffixes *-ndE*, *-gE*, and *-E*. In addition, there are several C3 verbs that are

irregularly derived (see the examples in [15])—as well as verbs that are not derived (see [16]). In short, there is no one affix that could potentially be identified as a middle voice marker. In addition, as we show in the following section, the various affixes that produce C3 verbs do not consistently derive verbs with middle meaning.

Before we turn to the semantics of C3 verbs, let us make a final point about the derivational history of these verbs. All verbs derived by the process we call D1 belong to C3; these verbs form a large subset of C3 verbs. However, even if all of these verbs could be shown to be middles, that is, to have middle semantics (we argue against this below), this would not mean that all C3 verbs are middles. We can draw a parallel with C2, which contains all the verbs derived with the causative suffix *-mɔ̃*. The fact that C2 contains all these causatives does not mean that C2 is a causative class; there are many noncausative verbs in C2.

5.2. Semantic arguments. The semantic arguments against C3 as the middle voice are very simple: the semantics of C3 verbs does not fall solely within the range of meanings expected of middles, as defined by Kemmer [1993].

To begin with, two of the four types of meaning associated with the derived D1 verbs in C3 are distinct from middle meaning, namely, reflexive meaning and reciprocal meaning.[7] Kemmer excludes truly reflexive events from the middle (even though verbs that denote such events are often marked with the same morphology that is used to mark the middle).[8] Some examples from English of truly reflexive events are provided in (17).

(17) Prototypical reflexive events [Kemmer 1993:42]

    a.   I saw myself.

    b.   He adores himself.

    c.   Mary stabbed herself.

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[7] The remaining two meanings of D1 C3 verbs would fit into the subdomain of the middle that Kemmer refers to as the passive middle; see Kemmer [1993:147-149] for further discussion.

[8] In German, for example, which Kemmer identifies as having a "one-form middle system," the middle marker (MM) is morphologically identical to the reflexive marker (REFL):

    (i) *Er sieht sich.*
        he sees REFL
        'He sees himself.' (reflexive meaning)

    (ii) *Er fürchtet sich.*
        he fears MM
        'He is afraid.' (middle meaning)

In "two form languages" like Russian, the "heavy" form (the form with more phonological "body") typically has reflexive meaning, whereas the "light" form exhibits middle meaning:

    (iii) *Viktor nenavidit sebja.*
        Viktor hates REFL
        'Viktor hates himself.' (reflexive meaning)

    (iv) *On utomil+sja.*
        he exhausted+MM
        'He grew weary.' (middle meaning)

(The German and Russian examples here are from Kemmer [1993:24, 27].)

As the examples in (18) demonstrate, C3 includes verbs with prototypical reflexive semantics—semantics that are excluded from the middle under Kemmer's account. Note that Kemmer is not alone in excluding reflexive semantics from the middle. Klaiman [1991:105], for example, argues that semantic reflexive meaning (i.e., truly reflexive meaning) is not specifically encoded by the morphological middle voice.

(18) Derived D1 C3 verbs with prototypical reflexive semantics

    a. *kɔrugulɛ < kɔrɔgɔlɔ* 'make/become impure' [DD:291]

        binu-kizi-nɛ,   *pɔŋɔ nyani ku u   mɔ̃*
        in_charge_of_the_binu fonio eat-PRP head 2SG PSR

        korugulu   naw, kezu
        make_impure-PSP PRO kezu

        'Kezu, in charge of the binu, don't make yourself impure by eating fonio.'

    b. *yabɛ < yaba* 'save' [DD:598]

        indɔ   kɛɛlɛ wo obɔ   le   ku
        person.DEF money 3SG give.DEF with head

        wo mɔ̃ yabɛli
        3SG PSR save-PST.NEG

        'With the money he gave, the man didn't save himself.'

Although Kemmer includes naturally reciprocal events in the domain of the middle—events that are necessarily (e.g., 'meet') or frequently (e.g., 'fight', 'kiss') semantically reciprocal, she does not include the reciprocal proper as belonging to the middle (e.g., *the two girls looked at each other*). Klaiman [1991:105] also excludes "structural reciprocal meaning" from the middle. Thus, the subset of C3 verbs with prototypical reciprocal meaning (see the examples in [19]), provide additional proof that C3 contains verbs with meanings that go beyond the domain of the middle.[9]

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[9] C3 verbs with reflexive or reciprocal readings can occur with or without overt reflexives (*ku* + pronoun + *mɔ̃*) or reciprocals (*tumɔn*). Examples of the reflexive reading with the overt reinforcer are in (18); without the overt reinforcer in (11a). Examples of the reciprocal reading with the overt reinforcer are in (11b) and (19). Examples of the reciprocal reading without an overt reciprocal are difficult to come by in the textual materials. However, the example in (i), with two C3 verbs, is possibly one, though it is hard to distinguish the reciprocal reading from the reflexive one.

    (i) reciprocal (*siɲɛɛ < siɲɛ* 'entangle', *siɲulɛ < siɲɛɛ < siɲɛ* 'disentangle' [DD:477])

        ulun-gɔ   siɲiaa   wɔw, siɲiliaa   ye   dannyiya
        children-DEF entangle-PSP AUX-PRP disentangle-PSP AUX sit-3P.TR
        'The children having gotten tangled up in each other, disentangled themselves
        (from each other) and are seated.'

' (19) Derived D1 C3 verbs with prototypical reciprocal semantics

    a. *tambɛ* < *tamba* 'kick' [DD:507]

       ulun-gɔ   tumɔ̃n le   tambɛw wuiya
       children-DEF REC   with kick-PRP AUX-PRES.3PL
       'The children are kicking each other.'

    b. *barɛ* < *bara* 'help' [DD:39]

       tumɔ̃n tumɔ̃n barɛw   wuiya
       REC   REC   help-PRP AUX-PRES.3PL
       'They're helping each other.'

Thus far we have considered the semantics of the derived verbs in C3. We now turn our attention to non-derived C3 verbs. There certainly are non-derived C3 verbs that have middle semantics, as the examples in (20) show. However, there are also many nonderived C3 verbs whose semantics fall outside the range of middle meanings, as we see in (21).

(20)   Nonderived C3 verbs with possible middle semantics[10]

    a. spontaneous event: *bolɛ*   'cook' (of beer)
    b. indirect middle: *dɛgɛɛ*   'receive, take what is offered'
    c. nontranslational motion: *jigile*   'turn around'
    d. emotion middle: *ninnyɛ*   'fear, be afraid'
    e. cognition middle: *ilɛɛ*   'recognize'

Consider the verb in (21a), *dimbɛ* 'follow', for example. This verb does not exhibit the characteristics of a middle verb, as defined by Kemmer. The initiator of the event is not an affected entity (the person being followed is the affected entity). The degree to which the participants in the event are distinguished is not low (the two participants are separate individuals). The verb in (21b), *dinɛndɛɛ* 'divide up', also lacks middle semantics. The initiator of the event, the divider of the beer, is not an affected entity (the beer is); the participants in the event (the divider, the beer, the crowd) are all clearly distinct. In (21c), with the verb *dɔmmɛ* 'wait for', the initiator of the event is the person waiting and the affected entity is the person being waited for; the event initiator is thus not the affected entity. The two participants in the event are separate individuals; thus the degree to which the participants are distinguished is not low. Like the examples in (21a) through (21c), the remaining examples in (21) can be shown to lack middle semantics. In each case, the event initiator is not an affected entity and the two participants in the event are distinct.

    As a further note, we can point out that the existence of verbs without middle semantics is additional evidence against a purely derivational account of C3 verbs.

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[10] The middle categories listed here are from Kemmer [1993].

(21) Nonderived C3 verbs without middle semantics

    a.   *dimbɛ* 'follow' [DD:101]

        miñ   dimbɛw
        1SG-ACC follow-PRO
        'Don't follow me.'

    b.   *dinɛndɛɛ* 'make go to (divide up)' [DD:103]

        tɛgɛlɛ   kɔnjɔ jamba-gɔñ   dinɛndɛɛ
        large_jar beer   crowd-DEF-ACC divide_up
        'Divide up the beer from a large jar to the crowd.'

    c.   *dɔmmɛ* 'wait for, look after' [DD:113]

        dannyiaani   miñ   dɔmmɛ
        sit_down-ANTP 1SG-ACC wait_for
        'Sit down and wait for me.'

    d.   *ezee* 'hold (a child) in one's lap' [DD:113]

        yaana   minnɔ nɛ i   eziaa   daŋaw be
        woman street LOC child hold_in_one's_lap sit-PRP AUX
        '.... a woman was sitting on the ground, holding a child in her laɲ

    e.   *gɛlee* 'look after, keep' [DD:154]

        atɛmbu   e mɔ̃ gɛlɛñ
        customs 2PL PSR keep-2PL.IMP
        'Preserve your customs (traditions).'

    f.   *kɔlɛ* 'scoop out by scratching' [DD:284]

        dona   kɔlɛzɛ
        mortar scoop_out-PRES.3SG
        'He's scooping out a mortar.'

    g.   *mɔnnɛ* 'take advantage of' [DD:341]

        ya   nama jandaa   mi bozaa
        yesterday meat   cook.PSP 1SG put_down-PSP

        izu miñ   mɔnniaa   jɛ
        dog 1SG-ACC take_advantage_of AUX-PST
        'Yesterday after I had cooked and put down some meat,
        a dog took advantage of me (and ate it).'

    h.   *taalɛ* 'support, bear' [DD:505]

        sɔ   u   le 'ye yɛlaazɔ   taalɛ
        thing 2SG to today come-PERF-DEF bear
        'Bear (up under) what has happened to you today.'

i.   *te* 'send' [DD:513]

    woñ   Banjaara   te
    3SG-ACC   Bandiagara send
    'Send him to Bandiagara.'

j.   *timbɛɛ* 'advise' [DD:530]

    sɛ̃   nɛ   ɛmmɛñ   timbɛɛzɛ
    good   LOC 1PL-ACC advise-PRES-3SG
    'He advises us to be good.'

k.   *tɔrɛ* 'massage by rubbing' [DD:552]

    ginaa   wɔn gɛ, unnu m'   mɔ̃ tɔrɛ
    have_a_dislocated_bone AUX since back 1SG PSR massage
    'Since I have a dislocated bone, massage my back.'

l.   *wayyɛ* 'grill/toast in a container' [DD:577]

    nama   wayyɛ
    meat   grill
    'Grill meat.'

m.   *wɛyyɛ* 'winnow' [DD:583]

    pɔŋɔ wɛyyiaani   gɛ   ra kundo
    fonio winnow.ANTP granary in put
    'Having winnowed the fonio, put it in the granary.'

There is simply no affix or rule that could produce the nonmiddle verbs in (21)—certainly not the middle—since they do not have the appropriate meanings.

In sum, there are many verbs in C3 that fall outside the range of middle semantics as defined by Kemmer (derived verbs with prototypical reflexive and reciprocal semantics; nonderived verbs that do not exhibit Kemmer's two defining characteristics of the middle). For this reason we cannot characterize C3 as the middle voice. Although there are several general meanings that are well represented in C3 (reflexive, reciprocal, inchoative, etc.), we cannot exhaustively characterize C3 verbs in general semantic terms. This is in keeping with our position that C3 is a class of verbs that can be defined in formal, though not necessarily semantic terms. In order to emphasize the fact that the defining properties of C3 are formal rather than semantic, we can refer to this class of verbs as a conjugation.[11]

If we compare C3 and the "middle" in DS (i.e., the derived D1 verbs in C3) to conjugations and voice in more familiar languages, we gain additional insight into the nature of C3. Latin, for example, has conjugations and the passive voice (DS, and Dogon generally, does not have a passive). In Latin, the passive cuts across all conjugations, even the deponent passives, which have no active forms. What is different about DS is that middle meaning does not cut across conjugations; all the

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[11] See section 6 for further discussion of the term "conjugation."

derived (D1) middles are in C3. But as we will see in section 7, this state of affairs is due to the historical development of C3 from the middle.

6. A formal characterization of C3 verbs

In this section, we argue that C3 verbs can be defined both paradigmatically and in terms of phonotactic constraints, that is, in formal terms. We argue that the label "conjugation" is appropriate as a means of characterizing C3, since the verbs in this class can be identified on the basis of shared inflectional properties. Let us look first at important paradigmatic properties of all three verbal classes in DS.

Prost [1969], Kervran & Prost [1986], and Kervran [1993] define what we might call the "principle parts" of the three verb classes as the stem (singular imperative), the third singular affirmative past, and the past participle. These are given schematically in (22), where -V stands for the final stem vowel. The verbs in each class, including C3, share a pattern of inflection among themselves and contrast with the patterns of inflection of the other classes.

(22)   Principle parts of DS verbs

	C1	C2	C3
stem	-*V*	-*V*	-*E*
3 SG affirmative past	-*E*	-*i*	-*i*
past participle	-*aa*	-*aa*	-*iaa*

If we assume the commonplace definition of the term "conjugation" in (23), we see that it is entirely appropriate to characterize C3 as a conjugation. As the list of principle parts in (22) demonstrates, the verbs in C3 share a set of inflectional endings; they can thus be considered to form a conjugation.[12]

(23)   A conjugation is a class of verbs that share a common pattern of inflection.
        (see Matthews [1997:68]; Crystal [1997:81])

Further evidence that C3, as well as C1 and C2, can be viewed as a conjugation is provided by the phonotactic constraints on verbs in these classes. Three examples of these constraints are provided in (24); see also Culy [1987] for further discussion.

From the chart in (24), we see that C1 is characterized by words of one or two syllables, while C2 and C3 verbs can be of any length. In addition, C1 is characterized by the lack of /a/; C2 by /a/ harmony (either all the vowels are /a/ or none are); and C3 by the restriction of /a/ to the first syllable. Finally, C1 and C2 have restrictions on high vowels (they are only allowed in the first syllable), as does C3, though these are more complex. The chart in (24) shows that not only does C3

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[12] Kervran & Prost [1986] also propose a conjugational view of the DS verbal system. We conclude, on a wider variety of grounds than Kervran & Prost, that the conjugational view is indeed correct.

(24) Three types of phonotactic constraints on verbs in DS

	Length	/a/	/i/, /u/
C1	≤ 2 syllables	impossible	first syllable only
C2	any length	/a/ harmony	first syllable only
C3	any length	first syllable only	• possible in first syllable • impossible in last syllable • second through penultimate syllables must be /i/ or /u/

have its own set of phonotactic constraints, these constraints are similar, and in some cases identical, to the phonotactic constraints of C1 and C2. If we recognize phonotactic constraints as valid defining characteristics of conjugations, in the same way that we recognize inflectional patterns, then C3, as well as C1 and C2, can be considered conjugations. Note that shared phonotactic constraints, like shared inflectional patterns, are formal means of identifying conjugations.

Although the verbs in C3 are derivationally heterogeneous and do not form a unified class semantically, they can be defined in purely formal terms, like C1 and C2: each class can be defined both paradigmatically and in terms of phonotactic constraints.

To better understand the formal and semantic properties of C3 verbs in DS, we turn now to a discussion of the history of C3 in the context of the development of the verbal systems of other Dogon languages. Comparison of DS with other Dogon varieties shows how the middle developed in Dogon and how C3 in DS developed from the middle.

7. The history of C3 and the middle in Dogon

Two varieties of Dogon in addition to DS have been described as having a middle: Tommo So [TMS: Plungian 1993] and Toro So [TS: Calame-Griaule 1963, 1968]. All three of these varieties are part of the same subgroup of Dogon varieties. Two other varieties from a different subgroup seem not to have a middle: Togo Kã [TK: Prost 1969; first author's fieldnotes] and Tomo Kan [TMK: Leger 1971].[13]

Thus, the existence of the middle seems to be a property of the "S" subgroup and not the "K" subgroup (giving names to the groups based on their words for 'language'). While we do not have definitive evidence, we can hypothesize that the S-group innovated the middle, probably from a reflexive (see below), since there is no reflex of any kind of related suffix in the K-group.

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[13] Two more varieties have incomplete descriptions: Jamsay [Ongoïba 1988] and Sigui So [Leiris 1948].

Turning now to the S-group, we can sketch an idea of how the middle and C3 have evolved. Starting with the morphological history first, we see that the middle in TS is the suffix *-ie*, while in TMS it is the suffix *-i(e/E)*, that is, *-i(E)*.[14]
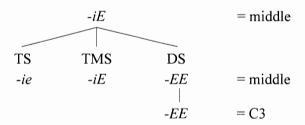
It seems likely that the older form is a suffix of the form *-iE* (where E stands for the front mid vowel archiphoneme). Whether it underwent vowel harmony or not cannot be determined at this time. Further evidence for this form of the suffix in DS comes from the constraint on C3 verbs that the second through penultimate vowels be high. The *-i* of the old middle triggered this effect, much as the narrative past suffix *-i* does in contemporary DS, as shown in (25).

(25) Raising of intermediate vowels in DS narrative past [DG:78]

Verb		Narrative past
damanda	'raise'	*damindi*
tɛbɛlɛ	'hit'	*tɛbili*
sugomɔ̃	'lower'	*sugumi*

As proposed by Plungian [p.c.], the *-i* of the old middle suffix assimilated to the following *E* in DS, and the suffix became *-EE*. According to the analysis presented here, this suffix was reanalyzed as part of the phonotactic constraints of a new conjugation (C3).[15, 16] We can summarize the morphological history as in (26).

(26) Morphological history of the middle/C3

Turning now to the semantic history, we can start by comparing the meanings of the middle in TS and TMS with the range of middle meanings found in C3 in DS. Calame-Griaule describes the TS middle as having almost the same range of

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[14] As in DS, the choice of e/ɛ is determined by vowel harmony with the stem root. Although e/ɛ always follows the middle, Plungian [p.c.] prefers not to analyze it as part of the middle itself.

[15] DS has undergone many other restructurings of the verbal system that are beyond the scope of this paper.

[16] TS has suffixes cognate to DS *-ndE* and *-gE* [Calame-Griaule 1968:xxi], but does not seem to have conjugations with phonotactic constraints the way DS does (or at least there is no published work to this effect that we are aware of). Thus for TS, and possibly for older stages of the S-branch more generally, we can say that these suffixes create deponent middle verbs, deponent in the sense that they have no corresponding non-middle verb source. Notice that this is not the case for DS, since we have shown that there are non-middle verbs that also belong to C3, so *E* cannot be a middle marker and is indeed a conjugation marker.

meanings as we find in DS C3; see (27). What we do not find in TS are the meanings of possibility or obligation. Note that we include reflexive and reciprocal meaning in this discussion—even though these meanings are not, strictly speaking, middle—since we are interested here in all of the meanings expressed by the suffix *-iE* in each of the S-group languages.

(27) Middle meanings in TS [Calame-Griaule 1963:103f.]
    a. Reflexive (e.g., *gorie* 'put on one's own hat')
    b. State (e.g., *lie* 'be afraid' *bã* 'be sleepy', *bimilie* 'be drunk')
    c. Inchoative (e.g., *ɛzinie* 'become pretty', *pilinie* 'become white',
      buzie 'spill')

In TMS, the range of meaning is again similar to that found in DS C3; see the list and examples in (28).

(28)   Middle meanings in TMS [Plungian 1993, 1995; Issiaka Tembiné p.c.]
    a.   Reflexive [Plungian 1993:232]
       mi   jɔŋ-i-i-m
       1SG heal-[D1]-AOR-1SG
       'I healed myself.'

    b.   Reciprocal [Plungian 1993:233]
       sana le   kanda le   bɛ-i-i-ŋ
       sana and kanda and hit-[D1]-AOR-3PL
       'Sana and Kanda hit each other.'

    c.   Absolutive [Plungian 1993:233]
       sana gam-i-edɛ-Ø
       sana scold-[D1]-HAB-3SG
       'Sana scolds forcefully.'

    d.   Inchoative [Plungian 1993:233]
       di   gɛ yub-i-a   wɔ-Ø
       water DEF spill-[D1]-PSP AUX-3SG
       'The water (has) spilled.'

    e.   Possibility of the action ("Potential passive") [Plungian 1993:233]
       nama gɛ   yɔɔ-i-elɛ-Ø
       meat DEF grill-[D1]-HAB.NEG-3SG
       'The meat can't be grilled.' (= 'The meat isn't grillable.')

We can summarize the range of meanings as in (29). From this summary, we see that the reflexive and inchoative meanings are the only common meanings. It is very likely that the original meaning of *-iE* was the reflexive. As Kemmer notes,

(29) Summary of C3 and middle meanings

	DS C3	TMS	TS
Reflexive	x	x	x
Reciprocal	x	x	
Possibility of action	x	x	
Obligation of action	x		
Inchoative	x	x	x
Absolutive		x	
State	x		x

reflexive markers are very often the diachronic source for middle markers. The development of middle meaning from reflexive meaning in this subset of Dogon languages can be viewed in general as a detransitivising process. The suffix *-iE* was first associated with reflexive meaning, which involves two (referentially non-distinct) participants, an agent and a patient.[17] The different types of middle meaning attested in Dogon all involve a single participant.[18] The reflexive suffix *-iE* was already associated with reduced transitivity (a reflexive clause is less transitive than a prototypically transitive clause, which has two referentially distinct participants).[19] Thus, it is not surprising that reflexive morphology in Dogon came to be associated with other types of reduced transitivity.

Many inchoatives, which are found in all three S-group languages, were very likely derived from transitives with a causative meaning, with the patient object of the transitive form realized as the patient subject of the middle form ('she spilled the water' > 'the water spilled'). It seems reasonable to assume that these inchoatives, or change-of-state verbs, gave rise directly to the use of the middle in DS and TS to express states. In fact, some C3 middle predicates in DS, for example, have both state and change-of-state interpretations (DS *numundε* 'be, become fast', *toonde* 'be, become deep', *yεnjilε* 'be, become weak').

It is not clear that Kemmer's "body action" middles form a semantically salient group in the various Dogon varieties. There are middle verbs in these languages that describe "events in which a human being carries out an action on or through his or her own body" [Kemmer 1993:41]. For example, in DS we have, among others, *mɔgε* 'wash one's self', *kumbe* 'make a fist', *pεεnε* 'escape', *tuɲε* 'kneel'. However, some of these verbs are derived from causative transitives (e.g.,

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[17] Although we use the term "reflexive" here, we understand it to include reciprocal meaning as well, since reciprocal meaning is so closely related to reflexive meaning. Reflexive meaning involves one entity that is both agent and patient. Reciprocal meaning involves two entities, each of which is both agent and patient, but each entity receives the verbal action from and directs the verbal action towards the other.

[18] Possibility-of-action and obligation-of-action middles also have a participant that is understood but not expressed. See the discussion below.

[19] See Hopper and Thompson [1980] for a discussion of the transitive prototype and the various parameters of transitivity.
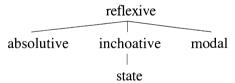
DS *bendee* 'put one's self in a pile' < *bende* 'put in a pile', *munne* 'fold up' < *munno* 'fold', *pibee* 'turn' < *pibe* 'turn'). Thus, some of the "body action" middles in Dogon without causative transitive counterparts may have developed on the basis of their similarity in meaning to middles that were derived from such transitives. Note that although Kemmer identifies a number of situation types that fall into the middle domain (the body action domain, the domain of spontaneous events, etc.), her analysis does not depend on the notion of domains or on the particular domains she identifies [Kemmer 1993:41f.].

To return to the remaining types of middle meanings summarized in (29), the development of possibility-of-action and obligation-of-action middles (modal middles) was probably similar to the development of inchoatives, namely, based directly on a reflexive model (not mediated by another middle type). Like inchoatives, modal middles have patient subjects. However, they have an added element of modality, an understood (rather than nonexistent) agent, and are derived from a larger class of transitives, which includes causatives as well as non-causatives ('he says that' > 'that isn't [mustn't be] said').

The absolutives, apparently attested only in TMS, are somewhat unusual, since they have agent rather than patient subjects ('Sana scolds forcefully.'). This middle type, like the modal middles and inchoatives, very likely developed directly from a reflexive model.

The development of middle meaning in Dogon that has been sketched here can be diagrammed as in (30).

(30) Development of middle meanings from reflexive meaning

```
                        reflexive
              ┌─────────────┼─────────────┐
        absolutive      inchoative       modal
                            │
                          state
```
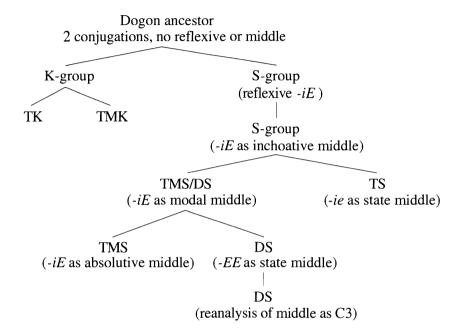
Tying the morphological and semantic histories together, it seems reasonable to suppose that an older stage of Dogon had only two conjugations (à la the K-group), and that the S-group innovated a reflexive suffix, *-iE*. This suffix was extended to encompass middle semantics. Through a process of semantic bleaching or broadening, it lost its referential content and acquired a function of marking reduced transitivity. In DS it underwent further phonological change and semantic bleaching to become a marker of a new conjugation, C3.

The semantic history of the middle can lead us to speculate on the history of the S-group more generally. Given that the modal middle is less common than the state middle, it seems likely that DS and TMS developed the modal middle together after diverging from TS, rather than innovating separately. TMS further innovated the relatively rare absolutive middle, while DS developed the state middle, either by contact with TS or independent innovation (the state middle is fairly common). Finally, DS reanalyzed the middle as the C3 conjugation. This history of Dogon is summarized in (31). This family tree fits the broad outlines of

earlier work on Dogon [Calame-Griaule 1956, Bertho 1953]. Interestingly enough, more recent work by Culy & McIntyre [2001] argues for the grouping of DS and TMS against TS within the S-group on the grounds of completely independent phonological reconstruction.

(31)   Hypothesized history of (part of) Dogon

```
                        Dogon ancestor
                 2 conjugations, no reflexive or middle
              _____|_____
             |                                                 |
          K-group                                           S-group
          __|__                                           (reflexive -iE )
         |     |                                               |
        TK    TMK                                           S-group
                                                      (-iE as inchoative middle)
                                                 _____|_____
                                                |                                     |
                                            TMS/DS                                    TS
                                       (-iE as modal middle)               (-ie as state middle)
                                    _____|_____
                                   |                 |
                                 TMS                 DS
                        (-iE as absolutive middle)  (-EE as state middle)
                                                     |
                                                     DS
                                          (reanalysis of middle as C3)
```

8. Conclusion

We have argued in this paper that DS C3 is a conjugation, not the middle per se. The large proportion of derived middle verbs in C3 is due to the historical reanalysis of the middle as a conjugation marker. The arguments presented here bolster the case for associating phonotactic constraints with conjugations made in Culy [1987]. In addition, drawing on cross-varietal variation and typological evidence about the different meanings associated with the middle, we have hypothesized about the history of the Dogon language family.

The historical developments in Dogon that we have presented here augment the diachronic picture of middles given in Kemmer [1993]. In a discussion of the grammaticization processes that affect middle markers, Kemmer documents the development of affixes with middle semantics from pronominal forms with reflexive meaning (Surselvan *se-* < Latin *sē*; Old Norse *-sk* < Germanic **sik*). The development of a conjugation marker from a middle affix that we find in DS pro-

vides evidence for a further degree of grammaticization of middle markers not attested in Kemmer.

The semantic development of the middle in Dogon that we propose here provides information with which one can begin to answer a question that Kemmer raises but leaves for further exploration [93:245]: "To what extent does the semantic opposition between causative and inchoative affect the development and functioning of middle systems? Does the participation of an MM [middle marker] in such a system affect its subsequent semantic development?" The data in Dogon suggest that the causative/inchoative opposition can play a crucial role in the development of a middle system. We have hypothesized that it was this opposition that first exhibited the extension of reflexive morphology to nonreflexive situations as a marker of reduced transitivity.

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