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The coding of ditransitivity in Tocharian[1]

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1. Introduction

This paper will deal with ditransitive verbs and the third argument in Tocharian. Tocharian consist of two dialects, Tocharian A and B, known by fragments and wall inscriptions from Chinese Central Asia, dating from 500-1000 A.D. Tocharian B is relatively well attested (ca 3,000 manuscripts), whereas Tocharian A is known from 550 text fragments only. However, both dialects are insufficiently investigated, and the study of the languages – at all levels – presents severe difficulties.

The study of syntax in a language in which many philological problems still are unsolved creates special problems. Using a theoretical framework as the basis for collecting and defining data does not always work. Questions that are prototypical for the researcher with access to native speakers like "How do you express this or this?" or "Is this construction/ this form/ this word order possible or not?" cannot be asked. It is hardly possible to know anything about an individual form or construction before we have evidence. As for Tocharian, philological progress continously increases the possibilities to investigate syntactic constructions.

The present material has been collected for two reasons: 1. with focus on the case forms, especially the genitive, 2. with focus on the verb forms, especially those which are marked as ditransitives. However, this creates another problem: 'Ditransitive marking' of verbs is a concept that is completely absent within Tocharian philology, and the risk of circular argumentation is very high here: Ditransitivity is defined by the number of core arguments, but the core arguments are defined by the presumed verbal

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Table 1. The Tocharian case paradigm (exemplified with the word 'horse')

	Tocharian A		Tocharian B	
	Sg.	Pl.	Sg.	Pl.
Nom.	yuk	yukañ	yakwe	yakwi
Obl.	yuk	yukas	yakwe	yäkweṃts
Gen.	yukes	yukaśśi	yäkwentse	yakweṃ
Instr.	yuk-yo	yukas-yo	—	—
Perl.	yuk-ā	yukas-ā	yakwe-sa	yakwen-tsa
Comit.	yuk-aśśäl	yukas-aśśäl	yakwe-meṃ	yakweṃ-mpa
All.	yuk-ac	yukas-ac	yakwe-ś(c)	yakweṃ-ś(c)
Abl.	yuk-äṣ	yukas-äṣ	yakwe-meṃ	yakweṃ-meṃ
Loc.	yuk-aṃ	yukas-aṃ	yakwe-ne	yakweṃ-ne

valency. The morphological system by which verbal valency in Tocharian can be expressed, is extremely complicated and it has not been investigated in detail. Before I turn to ditransitivity and the marking of the third argument, a few words should be said about case morphology and verbal valency.

2. Tocharian case morphology

The Tocharian case system is built up in layers, a principle that is otherwise known from the Indo-Aryan languages (cf. Masica 1991:230ff.). In contrast with many Indo-Aryan languages, Tocharian has only two layers, one inflectional, 'primary cases', and one agglutinative, 'secondary cases'. The primary cases (nominative, oblique and genitive) are most probably the remnants of a richer, inflectional system, like the one reconstructed for Indo-European. The secondary case affixes are monofunctional, i.e. they are not distinguished by stem class, number, or gender. They are attached to the oblique stem in singular, dual or plural. The secondary cases are instrumental (A), perlative, comitative, allative, ablative, locative and causal (B) (paradigm see Table 1).

A few things should be noted concerning the morphology of this system. Nominative, oblique and genitive present a large number of variants, distinguished by gender, number, and stem class (see Krause & Thomas 1964:138ff.).

Tocharian has two genders: masculine and feminine. A third gender, which historically reflects the Indo-European neuter, called 'genus alternans' is inflected in accordance with the masculine in the singular and the feminine in the plural. Most inanimate/non-sentient nouns (cf. below) are classified according to stems that are marked by zero endings in the nominative as well

as in the oblique singular; some nouns show an alternation of the stem vowel in the oblique. For sentient beings, i.e. human beings and 'dog' (AB *ku*, obl. A *koṃ* B *kweṃ*) there is a special oblique case ending in *-ṃ* (for a discussion of the word AB *ku*, see Pinault 1989:80). This ending is obviously an innovation, since it is not found in archaic paradigms, as A *pācar* B *pācer* 'father', oblique A *pācar* B *pātär*. Tocharian B shows a greater diversity of primary case morphemes than Tocharian A. In Tocharian B we have a group of nouns ending in a vowel, with a few exceptions in feminine gender, which have different nominative and oblique singular forms: *-a : -o, -ya : -yai, -a : -ai, -o : -ai, -yo : -yai, -o : -a* (see Pinault 1989:86).

One Tocharian B class of inanimates has a reverse marking as compared to the sentient animates: nom.sg. *-(i)ye* : obl. *-(i)* (Tocharian A *-(i)* : *-(i)*), i.e. the nominative is marked, whereas the oblique has a bare stem.

In plural, we find two types of stems: 1. nouns where nominative and oblique are identical; 2. nouns where nominative and oblique are different. The first group has the ending nom./obl. B *-a* A *-ā*, which corresponds to the old neuter ending **-h_1*. All nouns of this class are inanimate. The second group comprises a number of different endings, most of them inherited from Indo-European (see Pinault 1989:94ff.).

It is a complicated issue to reconstruct the pre-history of the complete system of the inflectional (primary) endings, since we obviously have radical innovations as compared to Proto-Tocharian. The reason for the breakdown of the system is relatively evident: in Proto-Tocharian, phonological erosion affected all final syllables (except, under certain circumstances, syllables ending in a liquid or a nasal), an evolution that, among other things, erased the difference between nominative and accusative, masculine, neuter and feminine, singular and plural, and so forth. Even though the primary cases are based on Indo-European material, the system has been subjected to innovation and restructuralization. However, the inflectional principle has been kept, and the restructuralization is not as developed as within the secondary endings.

3. Coding verbal valency: The Inflectional Paradigm System

Before we concentrate on the core arguments, a few words should be said about the coding of verbal valency. The present can be inflected according to 12 different inflectional variants (classes), some of which occur in two variants that are basically distinguished by the position of the accent. The subjunctive occurs in 12 classes, and the preterit in 6. In the handbooks of

Table 2. The Tocharian present, subjunctive and preterit classes

Present:	*Subjunctive:*	*Preterit:*
I Athematic	I Athematic	I No suffix
II Thematic	II Thematic	II Reduplicated
III Root vowel B *e* A *a*	III Thematic vowel B *e* A *a*	III *-s-*
IV Root vowel B *o* A *a*	IV AB *-i-*	IV *-ṣṣ-*
V AB *-ā-*	V AB *-ā-*	V *-ñ̃ñ-*
VI AB *-nā-*	VI AB *-nā-*	VI Thematic
VII B Nasal infix	VII Suffix AB *-ñ-*	
VIII(ab) Suffix AB *-s-*		
IXa Suffix B *-sk-*	IX Suffix B *-sk-* A *-s-*	
Xab B *-nā/äsk-*, A *-nā/äs-*	X Suffix B *-nṣsk-*	
XIab B *-sa/ṣsk-* A *-sis-*	XI Suffix B *-ṣṣsk-*	
XII AB *-ñ̃ñ-*	XII Suffix AB *-ñ̃ñ-*	

Krause 1952, Krause & Thomas 1960 and Pinault 1989, the classes are systematized by Roman numerals (see Table 2). Other authors (cf. Winter 1980) try to avoid this system, but for the sake of simplicity, the Roman numeral system has been kept here. The present, subjunctive and preterit classes are normally combined with each other, forming Inflectional Paradigms (term used here only, abb. IP) of an individual verb (see Table 3). It has been noted previously that most present tense classes are either transitive or intransitive (cf. Winter 1980), whereas others are more uncertain (see Table 4). On the corresponding subjunctive and preterit stems, the transitivity is less transparent, since we can find the same subjunctive and preterit stems connected with both intransitive and transitive present forms (for a discussion concerning whether or not transitivity in the subjunctive can be marked by the position of the accent, see Marggraf 1970, Winter 1980 and Eyþórsson 1993).

Many verbs have only *one* Inflectional Paradigm (IP) (present – subjunctive – preterit), whereas others have two. As an exception, we find verbs with three, or even four, IPs. When we have two IPs on a verb, they normally represent the intransitive vs. the transitive variant of a lexical root, i.e. 'hang' (itr.) 'hang' (tr.).[2]

[2]Because of the complexity of the system, the concept 'lexical root' is not self-evident. Dictionaries (Krause 1952, Poucha 1955, Krause & Thomas 1964, Adams 1999) normally use the root of the (IP1) present (with the exception of Hackstein 1995, who uses the present stem, a system which is followed here). As for the semantic side, the active present IP1 meaning is used, except for so-called *media tantum* (for media tantum see Schmidt 1974:18ff.).

Table 3. Possible combinations of stem classes (Inflectional Paradigms)

Present	*Subjunctive*	*Preterit*
I	I, V	I (III)
II	II (I, III)	I (III)
III	V	I (III)
IV	V	I (III)
V	V	I
VI	V	I
VII	V	I
VIII	I,II (III, V, VII, IX)	III (II, I, IV, V)
IXa	IV, I, II, V	III, I (IV)
IXb	IXb (A IX, VII)	II, IV
Xa	I, VII, II, III (VI, V)	III (VI, I)
Xb	X	II, IV
XIa	II, V, IV, XII	I, V (III)
XIb	IV	
XII	XII, V	I

In the traditional handbooks of Tocharian (cf. above), the paradigms are referred to as 'Grundverb' – 'Causative'. This notion is justified to a large extent, since the addition of an IP normally increases the valency in a typical causative manner: → A, S/A → O, Ø → IO (for abbreviations cf. below).

However, in other instances this classification gives a too simplified picture of an extremely complicated system (for critical comments of the 'Grundverb – Causative' division cf. also Lane 1960:124, Hackstein 1995:147f.), especially in situations where we have more than two IPs or the 'causative' definition is too unprecise.

The medio-passive competes with the system of Inflectional Paradigms. Medio-passive is marked by a certain set of endings, distinguished in present (A *-mār, -tār, -tär, -mtär, -cär, -ntär* B *-mar, -tar, -tär, -mt(t)är, -tär, -ntär*), preterit (A *-e, -te, -t, -mät, -c, -nt* B *-mai, -tai, -te, -mt(t)e, -t, -nte*) and imperative (A *-Ø, -äs* B *-Ø, -tso*). The medio-passive has many functions: reflexivization, subjectivization, etc. One of the most important functions is to detransitivize a transitive verb, and in this function the medio-passive often competes with the IP system. With the verb AB *ākl-*, for example, Tocharian A codes the two variants 'teach' (ditransitive) vs 'learn' (transitive) by using middle vs. active forms, whereas Tocharian B uses different IPs. The function of the Tocharian medio-passive was investigated by Schmidt 1974; meanwhile, the interplay between the IPs and the medio-passive is still an uninvestigated field.

Table 4. Inherent transitivity of the present classes

I	Athematic = Transitive/intransitive
II	Thematic = Transitive/intransitive
III	Root vowel B *e* A *a* = Intransitive
IV	Root vowel B *o* A *a* = Intransitive
V	AB *-ā-* = Transitive/intransitive
VI	AB *-nā-* = Transitive
VII	B Nasal infix = Transitive*
VIII	Suffix AB *-s-* = Transitive*
IXa	Suffix B *-sk-* = Transitive*
IXb	= Transitive
Xa	B *-nā/äsk-*, A *-nā/äs-* = Transitive*
Xb	= Transitive
XIa	B *-sa/ṣsk-* A *-sis-* = Transitive/intransitiv
XIb	= Transitive
XII	AB *-ñ̄ñ-* = Transitive/intransitive

* = Medio-passive variants can occur

4. The organisation of the core

4.1 Theoretical considerations

In recent years, many studies of ditransitivity, both language-specific and general, have appeared. The terminology is, as expected, somewhat confused, and there seems to be no consensus as to how – or if – the normal core A, S, O/P/T should be extended in cases of ditransitivity. Dixon & Aikhenvald 2000 use the term E (Extension) for everything which is verb-dependent but outside the A – S – O core. Van Belle & van Langendonck 1996, based on Croft 1990 and Dryer 1986, use the terms G (ditransitive indirect object), T (ditransitive direct object) and P (transitive direct object). Givón 2001 and Van Valin 2001 keep a more traditional terminology: they use DO (Direct Object) and IO (Indirect Object). Givón defines DO/IO in greater detail, making reference to their semantic roles as PAT DO, DAT IO, BEN IO, PAT IO etc. Further, there is a matter of terminological confusion in so far, as the terms *primary/first/direct* and *secondary/second* object are sometimes used (Dryer 1986, Goldberg 1992, etc.) to denote the situation in languages that code the Recipient category in ditransitive clauses in the same way as the Patient in monotransitive ones (Van Valin & LaPolla 1997:270f.). Primary/first/direct object corresponds to the Recipient and secondary/second object to the Theme. Since this is not the case in Tocharian, this latter terminology will not be considered. The traditional teminology A (Agent), S

Table 5. The Tocharian clitics

	TB	TA
Sg. 1	-ñ	-ñi
2	-c	-ci
3	-ne	-ṃ
Pl. 1-3	-me	-m

(Subject), O (monotransitive Object), DO (ditransitive Object), IO (ditransitive Indirect Object) will be preferred. Likewise, the ordering of arguments in ditransitive constructions (A1, A2, A3) well be in accordance with the morphological coding: A = A1, DO = A2 and IO = A3.

As for functional/semantic verbal types, the classification in Gropen et al. 1989 and Goldberg 1992 involves a number of semantic verb types that entail ditransitivity. Not all these verbs require a Recipient, though Recipient constructions seem to be in a majority. Considering our material, the criterion *animacy* of the third argument appears to be of importance for case marking. Ditransitive verbs typically involve an Agent and a Theme, as well as a Recipient/Goal/Source/Experiencer (cf. above). Tocharian has a rich system of local cases which are used to express all kinds of motion or situation in space (allative, locative, ablative, perlative, oblique of direction). The genitive, which is the main case for denoting the Recipient, never occurs in local constructions and it always denotes an animate object (cf. Carling 2000:8ff.). Therefore, the animacy criterion is of primary importance for the evaluation of our material.

If we concentrate on constructions with a Recipient, two basic groups of ditransitive verbs appear: 1. transfer verbs (give, send) and 2. saying/declaration verbs (say something to someone) (cf. Mosel 2002), which will recur in our material. The genitive is of importance in the ditransitive constructions, but it is very often replaced by a clitic, and we also have cases of two obliques, as we will notice later.

4.2 S, A and O

Tocharian is an accusative language, which means that the nominative is used both as S and A. The basic function of the oblique corresponds to that of the accusative in other Indo-European languages: it marks the Direct Object (O) of transitive verbs. With personal pronouns, a cliticized variant, distinguished in 1st, 2nd, 3rd singular and 1st-3rd plural (see Table 5) is sometimes used

instead of the independent forms. However, the clitics occur much more frequently as substitutes for Indirect Objects (IO) than Direct Objects (DO).

Besides, the oblique also has a few typically non-core functions, as Local Extension, Local Distribution, and notion of Position in time (see Carling 2000:5f.). The so-called oblique of direction was the object of a special study by Thomas 1983 and was incorporated in to the study of the local case functions by Carling 2000. This function is somewhat debated: it is obviously a residue of Indo-European, and in Tocharian it seems to be fossilized to a large extent, i.e. it is used only with certain verbs and reference objects.

Winter (personal comment, also indicated in 1980) suggests that the oblique of direction should be moved to the core, since it is used with verbs that are morphologically marked as transitives. This might be true for some of the verbs occurring with the oblique of direction, i.e. AB *räm-* 'bend down (towards)', AB *läm-* 'sit (down)', A *näm-*, A *kārp-* 'step down' (for details, see Winter 1980). The verbs AB *käm-* 'come', and AB *i-* 'to go' do not belong to specific transitivity-marked classes, but they also occur, to a limited extent, with the oblique of direction. On the whole, the oblique of direction occurs most frequently in frozen expressions, as A *ālu ype i-* 'go into another country', A *kälyme i-* B *kälymi i-* 'go in a certain direction'.

4.3 The Indirect Object (IO)

The basic case for denoting Recipient with ditransitive Transfer verbs, as 'give', 'provide', 'sell', or Recipient/Experiencer with ditransitive saying/declaration verbs, as 'announce', 'tell', 'teach' is the *genitive*. As for personal pronouns, the clitic variant is used more frequently than the indepedent genitive in this position. With saying/declaration verbs, as 'announce', 'tell', we also find the oblique as IO in exceptional cases (see below). With ditransitive transportation verbs, as 'bring', place', 'put', the situation seems to be more ambivalent. As indicated above, we have local cases denoting Goal Attainment (locative), Direction (allative), Source (ablative) or Path (perlative) connected with these types of verbs, but we still have some questionable constructions, for instance with the problematic verbs AB *suk-* 'deliver' (which will not be taken up here) or AB *lu-* 'send' (5.1.4), which govern allative besides the genitive, also with animate IOs. However, these few exceptions cannot call in question the position of the genitive as the case of the Recipient.

The reason for choosing a genitive/oblique or a clitic is not evident. Two clitics cannot occur in the same construction in different syntactic positions,

but a repetition of clitics or clitic doubling sometimes occurs. However, in a construction like 'I give you to the Brahmins as a gift' (see ex. 1a), the son (DO) is a clitic, but not the Brahmins (IO), though the clitics are used much more frequently as IO then as O/DO. The reasons for using a clitic or an independent form seem partly to be other than purely syntactical: topicality, metrics, narration, or the like.

Likewise, the genitive (or clitic) is also used as Indirect Subject in inverse constructions, which occur in Tocharian, but are not very common. There is no word for 'have', instead A *nas-* B *nes-* 'be' or AB *mäsk-* 'become' and a genitive (or clitic) is used.

5. Classification of the ditransitive constructions according to the verbs

Using the ditransitive verbs as a point of reference, we can notice two main variants:

1. *Lexical Ditransitives*. These verbs have only one ditransitive IP, but they might have monotransitive middle variants.

2. *Derived Ditransitives*. These verbs have more than one IP. We can distinguish two variants: IP1 = transitive, IP2 = ditransitive; or IP1 = intransitive, IP2 = ditransitive.

5.1 Lexical Ditransitives

5.1.1 A e- *B* ai- *active 'give' medio-passive 'take, get'*. The verb A *e-* B *ai-* 'give' has typical transitive marking: B *ai-* is inflected in prs. IXa /aisk°/, subj. I and prt. III. A *e-* is inflected in prs. VIII /es°/, subj. I and prt. III.

The verb is normally active with the meaning 'give' and constructed as [S_{NOM} $V_{DI/A}$ $DO_{OBL/CL}$ $IO_{GEN/CL}$]. If DO is a clitic, IO cannot be a clitic (1a) and vice versa (1b). It is also relatively common to find an infinitive as A3 (1c-d).

(1a) larekka brāhmaṇe(ṃ)ts āyor aiskau-c
dearest/VOC Brahmin/GEN.PL gift/OBL give/1SG.PR-CL.2SG
'Dearest, I give you to the Brahmins as a gift' (B 83, 5)

(1b) ce peri nesem tu päs aisem-ne
he/OBL owing be/PR.1PL this/OBL.N away give/1PL.PR-CL3SG
'Him whom we owe, this we give to him' (DAM.507, 9 TB)

(1c) kyal mā näṣ penu cami ṣñi amok lkātsi āyim
why not I now he/GEN.SG own/GEN art see/INF give/1SG.OPT
'Why should I not now give him to look at (=show) my own art?'
(A 8 a2)

(1d) pelaikne klyauṣtsi nauṣ pete-ñ
Law hear/INF earlier give/IPV.2SG-CL.1SG
'Give me to hear the Law!' (B 100 a6)

Two forms have reduced valency: the reflexive and the medio-passive. An active reflexive construction 'let oneself go' is present in (2a). The medio-passive, attested in the subjunctive (Tocharian B only) is monotransitive and means 'take, get' (2b).

(2a) ///(tā)rkatsi ṣañ āñmä aiṣṣäṃ
release/INF own/GEN himself give/3SG.PR.A
'(in order to) release, he lets himself go' (H.149.311 (TB))

(2b) arañc-n= aitär piś-cmelaṣṣe(ṃ)[ts] läkle(nta)
heart-LOC give/3SG.SU.M five-birth/GEN.PL suffering/OBL.PL
'if he takes the sufferings of the five births into his heart' (B 591 b7)

5.1.2 AB āks- *'announce, proclaim, instruct, teach'*. B *āks-* is inflected in prs. XIa /ak-s-əsk°/, subj. II (simple thematic) *ākṣäṃ* and prt. I (*-a-*, palatalized) *akṣāre*. A *āks-* is inflected in prs. XIa *āk-s-is°*, subj. XII and prt. V. In Tocharian A there are no attested finite medio-passive forms and we have only middle participles (see below). In Tocharian B we have a few medio-passive forms (see below). The basic construction is [S_{NOM} $V_{DI/A}$ DO_{OBL} $IO_{GEN/CL}$], i.e. IO is normally expressed by the genitive (3a-b) or a clitic (3c-d).

(3a) ///[u]pādhyāy (b)ādharis caṣ wram ā(kṣi)ñ[ñ]am
teacher/GEN.SG Bādhari/GEN this/OBL thing teach/1SG.SU
'I am going to report this matter to Bādhari the teacher'
(YQ 1.10 b7 + A 261 a(>b)2)

(3b) ṣāmani aśiyanaṃts pelaikne aksaskeṃ
monk/NOM.PL nun/GEN.PL Law teach/PR.3PL
'The monks teach the Law to the nuns' (PK.AS.18B a4 TB)

(3c) ākṣiññär-äm kranś ptāñkte märkampal pekluneṣipñi
teach/PRT.3PL-CL.3SG good/NOM.PL Buddha/GEN Dharma ofwriting profit
'the Good ones have taught us the profit of writing the Law of the Buddha' (A 311 a5)

(3d) videhak riy-äṣ lcär cam wram ṣñi ṣñi
Videhaka city-ABL go/PRT.3PL this thing/OBL own own
ypey-ac kälkoräṣ läñcäśśi ākṣiññär
country-ALL gone/ABS king/GEN.PL announce/PRT.3PL
'Thereupon the messengers went out from the city Videhaka and announced, having arrived in their respective countries, this matter to the kings' (A 66 b6)

In lexicalized constructions with the verb AB *yām-* 'do', as A *kṣānti yām-* 'do pardon; cause forgiveness', A *spaktāṃ yām-* 'do a favour, serve', B *yarke yām-* 'do honour, worship' (see ex. 4).

(4) ñi yantarṣi śomiṃ cami spaktām ypā
my/GEN mechanichal girl/NOM he/GEN favour do/IPF.3GG
'My mechanical doll served him' (A 8 a6)

5.1.3 A ākl- *act. 'teach', mid. 'learn'*. A *ākl-* is inflected in pres. VIII /ākls°/ (only attested in 3sg. *ākläṣ*). The active forms mean 'teach'. We have only constructions attested with genitive as IO [S_{NOM} $V_{DI/A}$ DO_{OBL} IO_{GEN}] (5a). The medio-passive examples mean 'learn' (5b).

(5a) kospreṃ manarkāśśi śastrāntu ākläṣ
how Brahmin youth/GEN.PL Śāstra/NOM.PL teach/PR.3SG. A
'How many Śāstras does he teach the Brahmin youths?' (A 213 b2 = YQ 1.11 a6)

(5b) kra[nt mär]kampal klyosäṃseñc ākälsanträ pikanträ
good Law hear/PR.3PL.A learn/PR.3PL.M write/PR.3PL.M
'They hear, learn and write the good Law' [A 302 b2]

5.1.4 AB lu- *'send'*. AB *lu-* 'send' is a problematic verb. In Tocharian A, we have no attested present forms, only subj. V and prt. I, and there are no traces of a second IP. These subjunctives/preterits could belong to prs. III (itr.) or prs. VI (tr.). In Tocharian B, we have one IP, prs. III, subj. V and prt. I – a typically intransitive pattern. Nevertheless, the verb is ditransitive in Tocharian A as well as in Tocharian B. A *lu-* has active forms only, whereas B *lu-* has active as well as middle forms, without any visible difference in meaning. Both A and B have a clitic or a genitive as IO (8a and b). In the Tocharian A examples, we have a clitic (6a) or a genitive (6b). One exception, A 21 b1 (7), has the allative as A3.

(6a) ///āqkaräs lywā-ci
tusks/OBL send/PRT.1SG.A-ECL3.SG
'I have sent you the tusks' (A 77 b1)

(6b) ///yomnac oqkraci : ṣakkats śkaṃ ñi
reach/SU.2PL immortality/OBL.SG sure also I/GEN.SG
tmäṣ pāk plos ymā(r ṣkārā)
then part send/IPV.2SG fast back
'(When) you reach immortality, be sure and send part of it quickly (back) to me!' (YQ 1.14 b6)

(7) sey-acc oki näṣ cw-ac lyu ptāñkät käṣṣi
son-ALL like I/OBL you-ALL send/PRT.3SG Buddha
'Like to a son the Buddha sent me to you' (A 21 b1)

(8a) parso lywāwa-ś plāś aṣkār mā lywāsta
letter/OBL send/PRT.1SG.A-CL.2SG speech/OBL back not send/PRT.2SG
'I sent thee a letter [but] thou hast sent no [answer] back' (B 492 a3/4)

(8b) ṃahāsaṃmati [lā]nte [e]piyacäññe lyewītär
Mahāsamati king/GEN memento/OBL send/OPT.3SG.M
cau-mpa ṣesa waṣamñe enkaṣṣitär
he-COM together with friendship/OBL take/IPF.3SG.M
'he sent a memento to king Mahāsamati [in order that] he could establish friendship with him' (PK.AS.16.3 b6 TB)

5.2 Derived ditransitives

The verbs of this group are lexical monotransitives or (exceptionally) intransitives that also have a ditransitive IP.

5.2.1 B ākl- *'learn'*. IP1: For B *ākl-* we have attested forms in subj. IV (*-i-*) (which formally belongs to present IXa; see Hackstein 1995:220) *aklyītsi* (inf.), and prt. I (*-a-*, palatalized) *aklyamai* (1sg.), *aklyyate* (3sg.); see Winter 1990:377 for deletion of *-y-* in metrical texts. All finite IP1 forms are medio-passive (subj. IV and prt. I), meaning 'learn' (9).

(9) latau ost-meṃ poyśi-ś aklyamai
leave/PRT.1SG. A house-ABL All-knowing-ALL learn/PRT.1SG.M
po solme tarya piṭikänta
all completely three Piṭaka/NOM.PL
'I went from the house to the All-knowing and learned the three Piṭakas completely' (B 400 b3)

IP2: The present IXb forms mean 'teach'. There are only three attested passages, one active (fragmentary, no third argument), one medio-passive with a clitic (10) and one present participle.

(10) āklästär-ne krent [pelaikne]
teach/PR.2PL.M-CL.3SG good/OBL Law
'you teach him the good Law' (B 26 a1)

5.2.2 B kälp- *'find, get, obtain, achieve'*. IP1: B *kälp-* is inflected in prs. IXa /kəlpask°/ *kälpāṣṣäṃ* (1sg.), subj. VI *kallaṃ* (3sg.) and prt. I *kalpa* (3sg.). We have examples in active and medio-passive. The active examples are construed with an oblique as O (11).

(11) yākṣi maiyya kälpāskeṃ kauseṃ wnolmeṃ māka
Yākṣa/NOM.PL strength find/PR.3PL.A kill/PR.3PL.A beings/OBL.PL many
'The Yākṣas find strength and kill many beings' (B 3 a1)

In one passage, the medio-passive *kälpāsträ* translates a Skt. passive *vidyate* (12).

(12) (no) ñak kälpästrä
however now find/PR.3SG.M
Yugavarga XXIX:46 *na cāpy etarhi vidyate* (U 18 a4, TB)

IP2: With present IXb, all attested examples are active. The verb is ditransitive and construed as [S_{NOM} $V_{DI/A}$ DO_{OBL} IO_{GEN}] (13).

(13) ost-meṃ lantsi preke ñi yapoy yesäm kalpäskau
house-ABL leave/SU.INF time I/GEN country you/GEN bestow/PR.1SG.A
'It is time for me to leave the house and [i.e. become a monk] and I bestow on you my kingdom' (A 372 b4)

5.2.3 A kälp- *'find, get, obtain, achieve'*. IP1: A *kälp-* is inflected with the transitive prs. VI *kälpnātär* (3sg.), subj. V *kälpātär* (3sg.) and prt. I *kälpāte* (3sg.). As compared to B *kälp-*, which is attested in IP1 both as active and medio-passive, A *kälp-* is attested in medio-passive only (see Schmidt 1974:195f.). The verb is monotransitive, with oblique as O (14).

(14) waṣt-äṣ läntässi plāksāt waṣt-äṣ läntässi
house-ABL leave/INF ask permission/PRT.3SG.A house-ABL leave/INF
tärkor mā kälpāt
permission not get/PRT.3SG
'He asked permission to leave the house [i.e. become a monk], [but] he did not get permission to leave the house.' (A 394 a3f.)

IP2: The two attested forms are both active, as with B *kälp-* above. We have two types of constructions: One with a clitic [S_{NOM} $V_{DI/A}$ DO_{OBL} IO_{CL}] (15a), and one with an oblique (15b).

(15a) läntune kalälypā-ṃ
dignity of a king bestow/PRT.1SG-CL.3SG
'The dignity of a king I bestowed on him' (A 130 a2)

(15b) ānāsās was ke aśśi senik kälpäṣt
miserable we/OBL who/GEN well shelter bestow/PRS.2SG.A
'Into the care of whom did you make us miserable ones come?' (YQ 1.13 a5)

5.2.4 B kärs-. IP1: B *kärs-* (prs. VI, su. V, prt. I) is a normal monotransitive verb, 'know', construed with an oblique.[3]

IP2: In the ditransitive paradigm (prs. IXb, prt. II) 'let know, make known', we find an oblique as IO (Double Object Construction) (see ex 16). A *kärs-* has a similar structure: IP1 (prs. VI, subj. V, prt. I) 'know', IP2 (prs. VIII, prt. II) 'tell, instruct', but there are no attested constructions with IO.

(16) kuse (pi) ksa wesäñ kekamor orocce lānt śarsäṣṣi
who/NOM well any our/GEN entering/OBL great king/GEN announce/IPF.3SG
'Who announced our entrance to the great king?' (B 81 b3)

Summary

In Tocharian, ditransitivity can be coded in two manners: at first *morphologically,* on the verbal stem (by different IPs) or by means of the endings (active/medio-passive). However, it is to be noted that this category is *relative,* not *absolute,* since such a thing as a special *ditransitive* marker does not exist. In the case of parallel forms, i.e. active ~ medio-passive or IP1 ~ IP2, where the *least* transitive variant is a mono-transitive, the other variant is normally ditransitive (there are also exceptions to this general tendency).

Second, ditransitivity can be expressed *syntactically,* by the use of primary cases or a combination of primary cases and clitics. In a ditransitive construction, the normal hierarchy of marking is as follows: A = nominative, DO = oblique > clitics, IO = genitive/clitic > oblique > allative (?).

It seems that Tocharian relatively consistently keeps the core within the system of primary cases. This clearly indicates that the organization of the case system in layers is not just a matter of historical coincidence, since it also has functional-syntactic consequences. On the other hand, it is also possible to assume that functional-semantic structures have implicitly played a role in the restructuralization of the complete system.

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[3] A *kärs-* has the following structure: IP1 (tr.) prs. VI 'know' ~ IP2 (di.) prs. VIII 'inform'. The examples do not provide any ditransitive constructions.

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Analogical morphology is undecidable

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Analogical morphology

Analogical morphology (Eeg-Olofsson 1989) is a generative morphological theory based on the intuitive concept of analogy. In analogical morphology this concept is made explicit by being formalized in special derivational rules. Such formal analogies can be used for deriving word forms from other word forms derived previously. The basis of all derivations is a lexicon consisting of fully specified word forms. A word form W = (S,G) is defined formally as a pair consisting of a string, S, and a list of features, G ("grammar"). Strings are made up of characters representing segments like phonemes or graphemes. Features may specify number, gender, declension etc.

Definition of analogy

An analogy can be described as a quintuple (P1, G1, P2, G2, C), where P1 and P2 are string patterns and G1, G2, and C are feature specifications. It is to be interpreted as the statement that a word form that has the features G2 and matches the string pattern P2 can be derived from any word form matching P1 with features G1. In addition, the word forms must both have the feature values specified in C, which is a list of common feature values.

For example, an analogy like

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([X], [number:sing], [X,"s"], [number:plur], [cat:n, gender:G])
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might be employed to describe plural formation in some language by suffixation of the string s. X is a string variable, in this case matching the entire word form string in the singular. The word forms must both have n as the value of the feature cat. In addition, the variable G creates a linkage for the gender feature. Both word forms must have the same value for this feature, e.g. both masculine or both feminine.

More formally, derivation by application of an analogy can be described as follows: