Three-Way Systems Do Not Exist

Gereon Müller & Daniela Thomas (Universität Leipzig)

Abstract

We argue that argument encoding systems that seem to involve three syntactic core cases (nominative/absolutive, ergative, accusative) are actually common ergative *or* accusative systems syntactically, with overt case markers for each of the two cases that disappear in intransitive contexts. Based on evidence from Kham, Djapu, Nez Perce, Upriver Halkomelem, Dyirbal, and Pitjantjatjara, we show that a purely morphological approach to differential marking in terms of scale-driven optimization via harmonic alignment and local conjunction (based on Aissen (2003)) can derive these systems straightforwardly if a transitivity scale is postulated in addition to the standard definiteness, animacy, and person scales (Hale (1972), Silverstein (1976)). Since apparent three-way systems usually also involve differential marking sensitive to Hale/Silverstein scales, a conservative extension to (in)transitivity suggests itself. In the final part of the paper, we show that the new morphological approach is either directly supported by, or at least compatible with, the available syntactic evidence.

Keywords

case allomorphy, differential argument encoding, 2f2c, scales, impoverishment, optimality theory, harmonic alignment, local conjunction, natural classes, syntactic ergativity, Agree

1. Background

There are three main types of encoding systems (via case or agreement) for core arguments in the world's languages, where core arguments are external (DP_{ext}) and internal arguments (DP_{int}) of transitive (V_t) and intransitive verbs (V_i) that are not lexically, or idiosyncratically, case-marked. In ergative systems, DP_{ext} of V_t is marked in some special way, as ergative, that is different from the marking of DP_{int} of V_t, DP_{ext} of V_i (unergative intransitive context), and DP_{int} of V_i (unaccusative intransitve context), all of which bear absolutive; see (1-a). In contrast, in accusative encoding systems, the DP_{int} of V_t is singled out (by bearing accusative), and the remaining core arguments are grouped together (nominative); see (1-b). Finally, in active systems, argument encoding is oblivious to transitivity: DP_{ext} is encoded in one way, and DP_{int} is encoded in some other way, with both V_t and V_i; see (1-c). Such an active system of argument encoding may then in principle qualify either as an ergative system at its core (where the distribution of the ergative is extended to DP_{ext} of V_i; see Dixon (1994)), or as a modified accusative system (where the distribution of the accusative is extended to DP_{int} of V_i; see Bittner & Hale (1996a;b)).

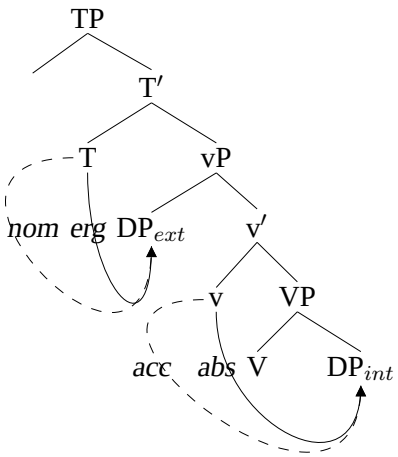
(1)

a. *Ergative system*		b. *Accusative system*		c. *Active system*	
DP_{ext}-V_i	DP_{int}-V_i	DP_{ext}-V_i	DP_{int}-V_i	DP_{ext}-V_i	DP_{int}-V_i
DP_{ext}-V_t	DP_{int}-V_t	DP_{ext}-V_t	DP_{int}-V_t	DP_{ext}-V_t	DP_{int}-V_t
erg	abs	nom	acc	erg/nom	abs/acc

These basic systems of argument encoding have been given simple accounts in Principles-and-Parameters-type approaches. A common basic idea that has often been pursued is that there are uniformly two functional heads (which for present purposes we may identify with T and v) that assign one structural case each in transitive contexts; and only one of the two case assigners remains active in intransitive contexts. On this view, of the four cases currently under consideration

– ergative, absolutive, nominative, accusative – there are actually only two: one assigned by T, and one assigned by v. We will refer to this general type of analysis as a *2f2c approach* ("two functional heads, two structural cases"). The 2f2c approach comes in two varieties. In the first type of analysis, ergative and accusative systems are assumed to be identical in *transitive* contexts (i.e., ergative is identified with nominative, and accusative with absolutive); see Levin & Massam (1985), Chomsky (1995, ch.3), Bobaljik (1993), Laka (1993), Rezac (2003), and Bobaljik & Branigan (2006), among others. In the second type of analysis, ergative and accusative systems are assumed to be identical in *intransitive* contexts (here, ergative is identified with accusative, and nominative with absolutive); see Murasugi (1992), Jelinek (1993), Ura (2000; 2006), Müller (2009), and Assmann et al. (2012). Let us call the former type of analysis a 2f2c$_t$ approach, and the second one a 2f2c$_i$ approach. On the basis of a TP-vP representation of clause structure, the gist of the 2f2c$_t$ approach can be characterized as follows. Ergative/nominative is the structural case assigned by T to Specv, and absolutive/accusative is the structural case assigned by v to CompV. As shown in (2), in a transitive context, ergative and accusative encoding systems thus turn out to be completely identical.[1]

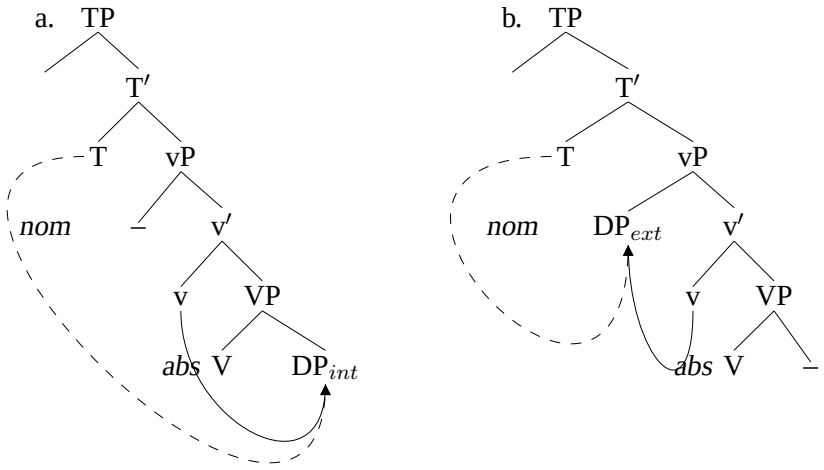
(2) *Transitive context, 2f2c$_t$ analysis*



In intranstive contexts, only one case-assigning functional head can remain active; and it is at this point that the two systems differ. In an ergative system, v remains active, assigning case to either DP$_{int}$ (with unaccusative verbs, see (3-a)) or DP$_{ext}$ (with unergative verbs, see (3-b)). In contrast, in an accusative system, T remains active in intransitive contexts, assigning case to either DP$_{int}$ or DP$_{ext}$. Whether it is T or v which remains active with intransitive verbs thus emerges as the core parameter distinguishing ergative and accusative systems (Bobaljik (1993) calls this the Obligatory Case Parameter). As far as the morphological realization of structural case is concerned, there is a tendency among the world's languages to use shorter, often null, forms for nominative and absolutive; this can be captured in a 2f2c$_t$ approach by assuming that the morphological case associated with the dominant head (i.e., the head that remains active in intransitive contexts) is morphologically less marked.

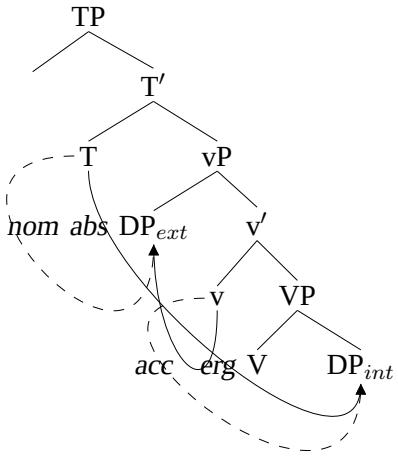
[1] Here and in what follows, accusative encoding is represented by dashed lines in syntactic trees, ergative encoding by full lines. Note also that in our reconstructions of existing approaches, we adopt an Agree-based approach (as in Chomsky (2001; 2008)) throughout, and disregard the possibility of case assignment being tied to movement of DPs.

(3) *Intransitive unaccusative and unergative contexts, 2f2c$_t$ analysis*



Let us turn to the 2f2c$_i$ approach next. Given a TP-vP analysis of clause structure, ergative/accusative is a structural case assigned by v to either Specv or CompV in transitive contexts, and nominative/absolutive is uniformly the case assigned by T. As shown in (4), on this view ergative and accusative systems differ in transitive contexts. Here v assigns case to DP$_{ext}$ in ergative systems, and to DP$_{int}$ in accusative systems. T assigns case to the remaining argument (i.e., DP$_{int}$ in ergative systems, and DP$_{ext}$ in accusative systems).

(4) *Transitive context, 2f2c$_i$ analysis*



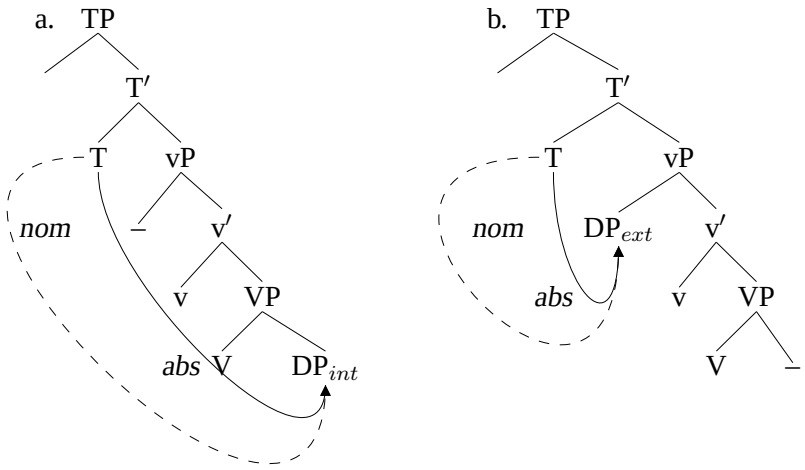
In 2f2c$_i$ analyses, the parameter distinguishing ergative and accusative systems can be assumed to exclusively concern v: Both upward and downward case assignment must be possible in principle (as in the 2f2c$_t$ approach sketched above), but there is a preference for upward case assignment in ergative systems, and a preference for downward case assignment in accusative systems.[2]

In contrast, ergative and accusative systems work in exactly the same way in intransitive contexts in 2f2c$_i$ approaches: Only T remains as a case-assigning head here, with both DP$_{int}$ (see

[2] Assmann et al. (2012) explicitly postulate a "Specifier-Head Bias" which, if accompanied by an opposite "Complement-Head Bias", would capture the parametrization. However, Assmann et al.'s (2012) implementation of this general assumption is eventually somewhat more involved since the Specifier Head Bias is actually assumed to be universal, and the parametrization is reduced to a question of order of operations (viz., whether DP$_{ext}$ is or is not yet part of the structure when v assigns case). These complications need not concern us in the present context, though.

(5-a)) and DP_{ext} (see (5-b)). This corresponds directly to tendencies of morphological marking: It can be assumed that the case associated with T is typically morphologically less marked than verbal case assigned by v.

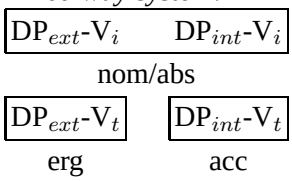
(5) *Intransitive unaccusative and unergative contexts, 2f2c$_i$ analysis*



Both 2f2c$_t$ and 2f2c$_i$ approaches can be extended to active systems; still, this is arguably easier for 2f2c$_i$ analyses than for 2f2c$_t$ analyses. Thus, 2f2c$_i$ analyses can accommodate active systems by postulating that whether T or v is the case assigner in intransitive contexts may be governed by different conditions, among which languages can choose. If v (rather than T) can be the sole remaining case-assinging head in unergative contexts, an ergative system is transformed into an active system; and if v can be the sole remaining case-assigning head in unaccusative contexts, an accusative system can become an active system, too. In contrast, in 2f2c$_t$ analyses, active systems cannot be derived by simply modifying assumptions about what remains as the sole case-assigning head in intransitive contexts – if, say, T were to take over as the dominant head in unergative contexts (which would produce an ergative active pattern), the correlation with morphological markedness would break down. However, active systems can be (and have often been) derived in 2f2c$_t$ approaches by postulating that unergative structures involve hidden transitives – i.e., there is in fact a non-overt second DP argument (also requiring case) present in the structure; see Nash (1996), Bobaljik (1993) and Bittner & Hale (1996a;b), among many others. In the same way, a hidden DP_{ext} could be postulated so as to derive an accusative-type active pattern (see Reinhart (2003) for justification of this general option, in a slightly different context). Such an account of active systems based on hidden DPs would of course in principle also be available under a 2f2c$_i$ approach.

To sum up so far, 2f2c approaches provide simple, elegant accounts of the basic patterns of argument encoding in the world's languages. Given the identification of two case-assigning heads with two structural cases, the question arises of how these approaches fare with three-way (tripartite) systems of argument encoding, as they are schematically depicted in (6) (see Dixon (1994), among others).

(6) *Three-way system*:



In a three-way system, there are three structural cases for core arguments, viz., nominative/absolutive for the sole DP of V_i, ergative for DP_{ext} of V_t, and accusative for DP_{int} of V_t. As described in Bittner & Hale (1996a), the Central Australian language Antekerrepenhe instantiates such a three-way system; see (7).

(7) a. Arengke-le aye-nhe ke-ke
dog-ERG me-ACC bite-PST
'The dog bit me.'

b. Apwerte-le athe arengke-nhe we-ke
stones-INS I-ERG dog-ACC pelt-PST
'I pelted the dog with stones.'

c. Arengke nterre-ke
dog-NOM run-PST
'The dog ran.'

Three-way systems are potentially problematic for 2f2c analyses, where two case assigners (T, v) are responsible for two structural cases and each of {erg, acc} is identified with exactly one case of the other system (in both the 2f2c$_t$ and 2f2c$_i$ versions). Interestingly, this conclusion does not hold for approaches where structural case assignment in transitive contexts is *relational*. Here, there are two separate sources for the ergative (which, on this view, basically indicates that there is a lower argument DP_{int} requiring structural case in the structure) and for the accusative (which indicates that there is a higher argument DP_{ext}). In addition, the nominative/absolutive is a default case for sole argument DPs (external or internal) in intransitive contexts, with a separate source (since there is neither a lower nor a higher argument DP present); see Marantz (1991), Bittner & Hale (1996b), Kiparsky (1999), Stiebels (2002), McFadden (2004), Wunderlich (2006), and Schäfer (2012) for analyses of this type. Of course, since such approaches explicitly envisage three separate sources for three cases (DP_{ext} for accusative, DP_{int} for ergative, no DP for nominative/absolutive), accounts of three-way systems along these lines are completely straightforward. However, the very ease with which three-way systems can be accommodated in these relational approaches to case points to a deeper problem: It is not clear whether these analyses have anything interesting to say about the cross-linguistic rarity of three-way systems.[3] What is more, in at least some of these analyses, a three-way system is actually predicted as the *ideal* realization of case assignment to core arguments, and a co-occurrence of ergative and accusative needs to be suppressed in the vast majority of the world's languages by invoking additional assumptions. This conclusion holds in an especially obvious way in optimality-theoretic approaches such as Kiparsky (1999) or Stiebels (2002), where ergative and accusative emerge as the *faithful* realizations of input requirements that can only be blocked by invoking higher-ranked markedness constraints selectively blocking the realization of these cases; here, the situation that exactly one of the two cases is usually blocked can

[3] Also note that three-way systems qualify as *non-canonical* encoding systems in the canonical approach to typology; see Corbett (2005); Corbett & Fedden (2014).

only arise as the result of a conspiracy of individual constraint rankings. For these reasons, we will disregard relational approaches in what follows.

What can be done in view of this state of affairs? For 2f2c analyses, there are basically two kinds of solutions to the problem posed by three-way systems. One possible way out is to enrich 2f2c analyses with ad hoc assumptions about additional case features, such that, e.g., it is stipulated that transitive v may exceptionally have an additional case feature to assign (in a 2f2c$_i$ analaysis) – assuming that case assignment by T can then be suppressed in this context, this will produce a three-way system. Such a strategy will technically work (see Müller (2009) for a simple version), but it does not strike us as particularly insightful. A second option is to leave the syntactic 2f2c analysis as is, thus exclusively deriving two-way systems, and relocate the phenomenon to morphology. On this view, three-way case systems do not exist as a syntactic phenomenon. It is this latter view that we will pursue in what follows.

From the point of view of a 2f2c approach, the challenge for a morphological reanalysis of seemingly tripartite systems is twofold. First, it must be shown that a simple morphological analysis can indeed be given, one that does not have to resort to unnatural classes (see Bierkandt (2006) for this objection to the general enterprise, based on evidence from Diyari), and that is ideally independently corroborated. And second, it must be shown that the hypothesis that syntactically there are only two cases where traditionally three have been postulated, can be maintained in view of the classes of DP arguments that syntactic operations access in the relevant languages. The main bulk of the present paper addresses the first question in sections 2 and 3; we turn to the second question in section 4.

A first indication that a morphological reanalysis of three-way systems might be worth pursuing is that independent evidence for distinguishing between case as a syntactic category and case as a morphological exponent has recently come to the fore. On the one hand, one and the same morphological case exponent may correspond to two different syntactic cases. Thus, as has been argued in Legate (2008), a zero exponent may either indicate a syntactic nominative, or it may act as the default realization of some other case (like accusative or ergative), depending on the language. On the other hand, one and the same syntactic case may correspond to two different morphological case exponents in a given language. In particular, it is argued in Keine & Müller (2011; 2014) that scale-based differential object marking can and should be realized as a morphological phenomenon (i.e., as scale-driven allomorphy associated with a single syntactic case).

Crucially, three-way systems typically also involve scale effects, such that, e.g., only non-prototypical DP$_{int}$ arguments receive what at first sight looks like an accusative, or only non-prototypical DP$_{ext}$ arguments bear what at first sight looks like an ergative. This situation obtains in Nez Perce (see Rude (1985), Woolford (1997)): There is (what has been called) an accusative exponent for DP$_{int}$ of V$_t$; there is (what has been called) an ergative exponent for DP$_{ext}$-3rd-person of V$_t$ (but not for other, more typical DP$_{ext}$ types with V$_t$, i.e., for 1st/2nd-person); and there is a nominative (zero) exponent for DP$_{int}$, DP$_{ext}$ of V$_i$, and for DP$_{ext}$-1st/2nd-person of V$_t$. All this is shown by the data in (8).

(8) a. Kaa wéet'u' núun-e ká'la hinéesqicxne
and not 1PL-ACC just 3NOM.PLDO.take.care.of.PERF
'And he just didn't take care of us.' (Rude (1985, 93))

b. ’Iceyéeye-nm xáxaasna hináaswapci’yawna
coyote-ERG grizzly-ACC 3NOM.PLDO.kill.PERF
‘Coyote killed the grizzlies.’ (Rude (1985, 88))

c. (i) Núun ∅-papáayna
we 1/2NOM-PL.NOM.arrive.PERF
‘We arrived.’

(ii) núun ’epe’wíye
we 1/2TR.shoot.PERF
’We shot him.’ (Rude (1985, 85))

Given this state of affairs, our main goal in what follows is to show that the morphological approach to differential object marking in terms of scale-driven impoverishment developed in Keine & Müller (2011; 2014) (on the basis of Aissen (1999; 2003)) can be extended to three-way systems without major problems. It turns out that only one important new assumption is required: In addition to the standard prominence scales related to person, animacy, and definiteness (going back to Hale (1972) and Silverstein (1976)), we postulate that there is also a transitivity scale which participates in harmonic alignment processes that eventually bring about post-syntactic impoverishment. We will argue that, as a consequence of scale-driven impoverishment, case features are deleted in certain contexts (intransitive and “prototypical” transitive contexts in particular), and this leads to zero exponence with certain arguments bearing structural ergative or accusative case. Thus, we contend that what seem to be three-way systems on the surface are underlyingly common ergative or accusative systems with overt markers for each of the two cases that disappear in intransitive (and, typically, other) contexts.

2. Theoretical assumptions

The optimality-theoretic approach to prominence scale-based differential argument encoding developed in Aissen (1999; 2003) in terms of harmonic alignment and local conjunction does not distinguish between case as a morphological category and case as a syntactic category; it predicts that variation in, say, differential object marking can only be between an overt case exponent (i.e., presence of case) and no exponent (i.e., absence of case). In Keine & Müller (2014), it is shown that variation in argument encoding that is governed by exactly the same prominence scales can also be between two different overt case exponents; so there are non-zero/non-zero alternations just as there are non-zero/zero alternations. To capture both kinds of effects, Aissen’s approach is reconstructed as an optimization procedure that applies at the interface between syntax and (post-syntactic) morphology, and that deletes certain (but not necessarily all) subfeatures of syntactic cases that must independently be assumed to capture instances of syncretism (see Jakobson (1936), Bierwisch (1967)).

For instance, assuming that the accusative is composed of the abstract case features [+gov,–obl] in syntax, post-syntactic optimization may result in the deletion of [–obl] but not [+gov] in certain (prototypical) contexts, and subsequent vocabulary insertion (Halle & Marantz (1993)) may then choose a vocabulary item /α/ bearing only the feature [+gov] rather than the otherwise expected, more specific vocabulary item /β/ characterized by the features [+gov,–obl] because the latter is not compatible with the insertion site anymore (it does not realize a subset of the features of the syntactic context). Thus, these optimization procedures can be viewed as principled versions of impoverishment rules as they have widely been adopted in Distributed

Morphology (see Halle & Marantz (1993)). Of course, in many instances the less specific morphological exponent that must be chosen after feature deletion will be a zero exponent; but it does not have to be, and this provides an argument for a morphological (rather than syntactic) approach.[4] All that said, whereas we will presuppose the morphological version of Aissen's harmonic alignment approach to differential argument encoding developed in Keine & Müller (2011; 2014) in what follows, we will not actually consider data where there is a non-zero/non-zero alternation; rather, all alternations discussed below will be between non-zero and zero exponents.

To begin with, suppose that the core structural cases are defined by the features in (9).

(9) *Feature decomposition of cases*

a. ergative/accusative: [+gov–obl] (assigned by v)
b. absolutive/nominative: [–gov,–obl] (assigned by T)

(9) implies that we assume a 2f2c$_i$ approach as in the above reconstruction of Murasugi's (1992) analysis, where ergative and accusative are [+governed] cases assigned by v, and absolutive and nominative are [–governed] cases assigned by T. Both cases are structural (i.e., [–oblique]), which separates them from lexical and oblique cases; however, since the latter do not play a role for the data under consideration in this paper, we will generally ignore the feature [$\pm$obl] in what follows.

Next, consider the prominence scales in (10). (10-abc) go back to Hale (1972), Silverstein (1976), and Aissen (1999; 2003). We take them to be ontological primitives in grammatical theory but will remain neutral as to their ultimate source (part of the language faculty or grounded in some extralinguistic domain).

(10) *Scales*:

a. *Person scale*:
Local Pers. (1,2) $>$ 3. Pers.
b. *Animacy scale*:
Hum(an) $>$ Anim(ate) $>$ Inan(imate)
c. *Definiteness scale*:
Pro(noun) $>$ Name (PN) $>$ Def(inite) $>$ Indefinite Specific (Spec) $>$ NonSpecific (NSpec)
d. *Transitivity scale:*
$\mathrm{v}_{t(rans)} > \mathrm{v}_{i(ntrans)}$

(10-d) is a new scale that we postulate; it will play an important role in deriving three-way systems in a syntactic approach that only envisages two cases. The transitivity scale presupposes that transitive and intransitive v can be distinguished, in both ergative and accusative languages. This is unproblematic under a 2f2c$_i$ analysis, where v is uniformly the inactive head in intransitive contexts.

In addition to these scales (which can in principle have arbitrarily many members), a basic *binary* scale is needed in the theory of harmonic alignment. We assume that this is the DP case

[4] Wiese (1999) observes that iconicity seems to hold of inflectional systems: Similarity of form implies similarity of function, in the sense that the more underspecified a morphological exponent is, the smaller its size typically is. Accordingly, one expects impoverishment to give rise to smaller-sized allomorphs, with radically underspecified elsewhere feature matrices and zero exponents as the delimiting cases (also see Halle & Marantz (1993)).

scale in (11), which simply states that DPs with the marked value for the feature [±gov] (which captures DPs bearing ergative/accusative) are more prominent than DPs with the unmarked value (which captures DPs with nominative/absolutive). This scale replaces the grammatical function scale in Aissen (1999; 2003) and Keine & Müller (2011; 2014).[5]

(11) *DP case scale:*
$\text{DP}_{[+\text{gov}]} > \text{DP}_{[-\text{gov}]}$

Harmonic alignment is defined as in (12) (see Prince & Smolensky (2004)):

(12) *Harmonic Alignment*:
Suppose given a binary dimension D_1 with a scale $\text{X} > \text{Y}$ on its elements {X,Y}, and another dimension D_2 with a scale $\text{a} > \text{b} > ... > \text{z}$ on its elements {a,b,...,z}. The *harmonic alignment* of D_1 and D_2 is the pair of Harmony scales H_X, H_Y:

a. H_X: X/a $\succ$ X/b $\succ$ ... $\succ$ X/z
b. H_Y: Y/z $\succ$ ... $\succ$ Y/b $\succ$ Y/a

The *constraint alignment* is the pair of constraint hierarchies C_X, C_Y:

a. C_X: *X/z $\gg$ ... $\gg$ *X/b $\gg$ *X/a
b. C_Y: *Y/a $\gg$ *Y/b $\gg$ ... $\gg$ *Y/z

Harmonic alignment of the binary DP case scale with the transitivity scale ultimately yields the two constraint hierarchies with invariant internal order in (13).

(13) a. $*\text{DP}_{[+\text{gov}]}/\text{v}_i \gg *\text{DP}_{[+\text{gov}]}/\text{v}_t$
b. $*\text{DP}_{[-\text{gov}]}/\text{v}_t \gg *\text{DP}_{[-\text{gov}]}/\text{v}_i$

As it stands, constraints like $*\text{DP}_{[-\text{gov}]}/\text{v}_t$ and $*\text{DP}_{[-\text{gov}]}/\text{v}_i$ in (13-b) indiscriminately block configurations where a nominative/absolutive DP co-occurs with v_t or v_i in a clause. This is not yet adequate because it is not the DPs themselves that need to be deleted in certain (prototypical) contexts, but rather their case features. For this reason, Aissen (1999; 2003) proposes that a faithfulness constraint demanding case feature preservation is *locally conjoined* with the members of the hierarchies derived by harmonic alignment, which is then counteracted by a general markedness constraint demanding case feature deletion. Local conjunction is a mechanism introduced by Smolensky (1995) (also see Legendre et al. (1998), Smolensky (2006)). Under local conjunction, two constraints *A*, *B* are combined to form a new constraint *A&B* which inherently outranks both *A* and *B*. *A&B* is violated if both conjoined constraints are violated (in a certain local domain). Importantly, local conjuction of a constraint *A* with members of a fixed constraint hierarchy $B_1 \gg B_2 \gg ... \gg B_n$ derived by harmonic alignment preserves order. For the case feature [–gov], the two additional constraints that play a role are given in (14) (analogous constraints exist for [+gov]; see below).

[5] This then qualifies as a second, though minor, difference, in addition to the introduction of the transitivity scale. The underlying reason why the grammatical function scale (consisting of "subject", i.e., Specv, and "object", i.e., CompV) that Keine & Müller (2011; 2014) adopt from Aissen (1999; 2003) needs to be replaced is that the notion of subject becomes unclear when ergative systems and intransitive contexts are taken into consideration (which the analysis in Keine & Müller (2011; 2014) is not concerned with).

(14) a. MAX(case):
Preserve case features.
b. *[–gov]:
Avoid the feature [–gov].

MAX(case) is a faithfulness constraint that demands preservation of a case feature in a syntactic structure in the post-syntactic morphological component; this constraint can be conjoined with a constraint hierarchy derived from harmonic alignment. On the other hand, *[–gov] is a markedness constraint that forces deletion of [–gov] before vocabulary insertion – i.e., it brings about impoverishment; this constraint cannot be conjoined with a constraint hierarchy.[6] The result of local conjunction of MAX(case) with the fixed constraint hierarchy in (13-b) is given in (15).

(15) *$DP_{[-gov]}/v_t$ & MAX(case) $\gg$ *$DP_{[-gov]}/v_i$ & MAX(case)

The constraint *$DP_{[-gov]}/v_t$ & MAX(case) is violated by a post-syntactic (pre-vocabulary insertion) representation if there is a nominative/absolutive DP in a transitive clause that has its [–gov] feature deleted; similarly, *$DP_{[-gov]}/v_i$ & MAX(case) is violated if a nominative/absolutive DP in an intransitive clause gets its [–gov] feature deleted. If both these constraints outrank *[–gov], all syntactic [–gov] case features will be preserved post-syntactically, and the regular exponents for nominative/absolutive will show up as a result of vocabulary insertion. If *[–gov] outranks both these constraints, all syntactic [–gov] case features will be deleted post-syntactically, and as a consequence of this generalized impoverishment, zero marking will often arise – or at least a "retreat to the general case" will take place (see Halle & Marantz (1993)), depending on whether or not there are other, more underspecified non-zero exponents that can realize what is left (e.g., [–obl]). The most interesting situation is where *[–gov] is interspersed between *$DP_{[-gov]}/v_t$ & MAX(case) and *$DP_{[-gov]}/v_i$ & MAX(case) in a language, as in the ranking in (16). (Recall that the order of the two faithfulness constraints themselves is fixed once and for all, as a consequence of harmonic alignment.)

(16) *$DP_{[-gov]}/v_t$ & MAX(case) $\gg$ *[–gov] $\gg$ *$DP_{[-gov]}/v_i$ & MAX(case)

Now [–gov] will be preserved post-syntactically in transitive contexts but deleted in intransitive contexts. Subsequent vocabulary insertion can then lead to a [–gov]-marked exponent as a case marker for DP in transitive contexts, but given that vocabulary insertion obeys the Subset Principle (Halle & Marantz (1993), Halle (1997)), it will have to resort to an underspecified (typically zero) exponent not bearing [–gov] in intransitive contexts. We would like to suggest that this represents one basic situation with apparent three-way systems:[7] What at first sight looks like a separate occurrence of an accusative and an absolutive marker emerges as an allomorphic realization of an absolutive marker; there is no accusative present at any point in the derivation.

At this point, one may think that a viable alternative to feature deletion via optimization based on harmonic alignment and local conjunction might be to postulate an appropriate impoverishment rule like the one in (17) (with the contextual information interpreted loosely, not necessarily requiring either adjacency or the linearization indicated here).

[6] This is exactly as in Aissen (1999; 2003), Keine & Müller (2011; 2014).
[7] The other possible situation is completely analogous, with [–gov] replaced by [+gov]; see below.

(17) [–gov] → Ø/DP_[v_i]

However, whereas (17) simply *stipulates* the context in which deletion takes place, (16) *derives* this context. In addition, (16) (again in contrast to (17)) predicts that there can be no language where deletion of [–gov] takes place in transitive but not in intransitive contexts; and we take this to be a correct generalization. Another difference that strikes us as even more important will become clear below: As noted above, three-way systems typically also involve (other) scale effects; so it remains to be shown how harmonic alignment and local conjunction with the other scales can be brought into the picture. It will turn out that the optimization approach captures these multidimensional scale effects in a fairly straightforward way whereas a standard, rule-based impoverishment approach will face what look like insurmountable obstacles because the deletion contexts do not form natural classes. Still, before addressing this issue by carrying out some case studies, two general technical questions need to be clarified.

The first question concerns *locality*. In order to evaluate a constraint like *DP$_{[-\mathrm{gov}]}$/v$_t$ & MAX(case) or *DP$_{[-\mathrm{gov}]}$/v$_i$ & MAX(case), both the properties of the DP (either DP$_{ext}$ or DP$_{int}$) and the properties of v must be taken into account. This suggests that the local domain for constraint evaluation at the interface might be the phase (see Chomsky (2001)).[8]

The second question concerns the dual use of case features in a constraint like *DP$_{[-\mathrm{gov}]}$/v$_t$ & MAX(case): It must be ensured that a case feature like [–gov] that is deleted (thereby violating MAX(case)) can still be accessed so as to determine the violation (i.e., [–gov] is needed to characterize the class of DPs that are subject to the constraint). In principle, there would seem to be two possibilities. First, one could distinguish between deletion and erasure, as it is suggested in a structurally similar context in Chomsky (1995): On this view, deleted material would be inaccessible for morphological realization, but still accessible for constraint evaluation. Second, one can postulate that constraints like *DP$_{[-\mathrm{gov}]}$/v$_t$ & MAX(case) are not only output-sensitive, but also input-sensitive (see Trommer (2006)). Thus, [–gov] in "*DP$_{[-\mathrm{gov}]}$/v$_t$" refers to the input (i.e., the syntactic representation where feature deletion is not yet an issue), whereas [–gov] in "MAX(case)" refers to the output (i.e., the post-syntactic representation in which feature deletion may or may not have applied). In view of the fact that the relevant constraints arise as a result of combining two separate constraints by local conjunction, and given that we are dealing with syntax/morphology interface optimization procedures, this second solution strikes us as vastly superior, and we will adopt it in the remainder of this paper.

Against this background, let us now turn to some case studies. We will consider putative three-way systems in Kham, Djapu, Nez Perce, Upriver Halkomelem, Dyirbal, and Pitjantjatjara, and we will show how they can all be given simple accounts in terms of syntax/morphology interface optimizations via harmonic alignment and local conjunction.

[8] In addition, one of the standard means must be adopted to keep the information locally accessible in cases of DP movement to higher phases.

3. Case studies

3.1. Kham

3.1.1. Data

The Tibeto-Burman language Kham has been argued to rely on a three-way system of argument encoding by case. The distribution of the case markers is shown in (18) (see (Watters, 2002: p. 66f.)).

(18) *Distribution of case markers*

	1st	2nd	3rd, definite	3rd, indefinite
DP_{ext}-V_t	-∅	-∅	-e/-ye	-e/-ye
$DP_{ext/int}$-V_i	-∅	-∅	-∅	-∅
DP_{int}-V_t	-lai	-lai	-lai	-∅

This can be taken to mean that there is a nominative/absolutive case for sole $DP_{ext/int}$-V_i arguments, for prototypical (local person) DP_{ext}-V_t arguments, and for prototypical (3rd person indefinite) DP_{int}-V_t arguments ; an ergative case for marked 3rd person DP_{ext}-V_t arguments; and finally, an accusative case for marked (local person or 3rd person definite) DP_{int}-V_t arguments. Clearly, a system of rules for syntactic case assignment designed to capture this distribution would necessarily be much more complex than is standardly assumed for structural case. In contrast, as indicated in (18), we argue that Kham basically exhibits a standard ergative system in the syntax, with *-e/-ye* as the canonical ergative marker and *-lai* as the canonical absolutive marker. On this view, the simple person-based split in ergative contexts, and the more complex transitivity-/definiteness-based split in absolutive contexts, are instances of allomorphic variation reducible to scale-driven optimization.[9] Let us address the two cases in turn, beginning with the more complex situation with absolutive realization.

3.1.2. Absolutive marking

In addition to the binary DP case scale as the basic scale (see (11)), (18) illustrates that two scales are relevant, viz., the transitivity scale (see (10-d)) and the definiteness scale (see (10-c)). Harmonic alignment of the case scale with the transitivity scale and the definiteness scale yields the two constraint hierarchies for absolutive ([–gov]) DPs in (19).

(19) a. $*DP_{[-gov]}/v_t \gg *DP_{[-gov]}/v_i$

b. $*DP_{[-gov]}/Pro \gg *DP_{[-gov]}/PN \gg *DP_{[-gov]}/Def \gg *DP_{[-gov]}/Spec \gg *DP_{[-gov]}/NSpec$

Next, the two hierarchies with fixed internal rankings thus derived are locally conjoined with one another, giving rise to *two-dimensional* local conjunction (see Aissen (2003)). Here, each constraint of one hierarchy is locally conjoined with each constraint of the other hierarchy, preserving original orders, as before. The new hierarchies that result are given in (20-ab).[10]

[9] This implies that the absolutive can indeed be a non-zero case throughout in the languages that we consider here, notwithstanding its cross-linguistic tendency to be less marked segmentally. See Handschuh (2014).

[10] Following Aissen (2003), we adopt a simplified notational variant where, e.g., "$*DP_{[-gov]}/Pro/v_t$" stands for "$*DP_{[-gov]}/Pro$ & $DP_{[-gov]}/v_t$" (where linear order of the two conjuncts is irrelevant).

(20) a. *DP$_{[-\text{gov}]}$/Pro/v$_t$ ≫ *DP$_{[-\text{gov}]}$/PN/v$_t$ ≫ *DP$_{[-\text{gov}]}$/Def/v$_t$ ≫ *DP$_{[-\text{gov}]}$/Spec/v$_t$ ≫ *DP$_{[-\text{gov}]}$/NSpec/v$_t$

b. *DP$_{[-\text{gov}]}$/Pro/v$_i$ ≫ *DP$_{[-\text{gov}]}$/PN/v$_i$ ≫ *DP$_{[-\text{gov}]}$/Def/v$_i$ ≫ *DP$_{[-\text{gov}]}$/Spec/v$_i$ ≫ *DP$_{[-\text{gov}]}$/NSpec/v$_i$

c. *DP$_{[-\text{gov}]}$/Pro/v$_t$ ≫ *DP$_{[-\text{gov}]}$/Pro/v$_i$

d. *DP$_{[-\text{gov}]}$/PN/v$_t$ ≫ *DP$_{[-\text{gov}]}$/PN/v$_i$

e. *DP$_{[-\text{gov}]}$/Def/v$_t$ ≫ *DP$_{[-\text{gov}]}$/Def/v$_i$

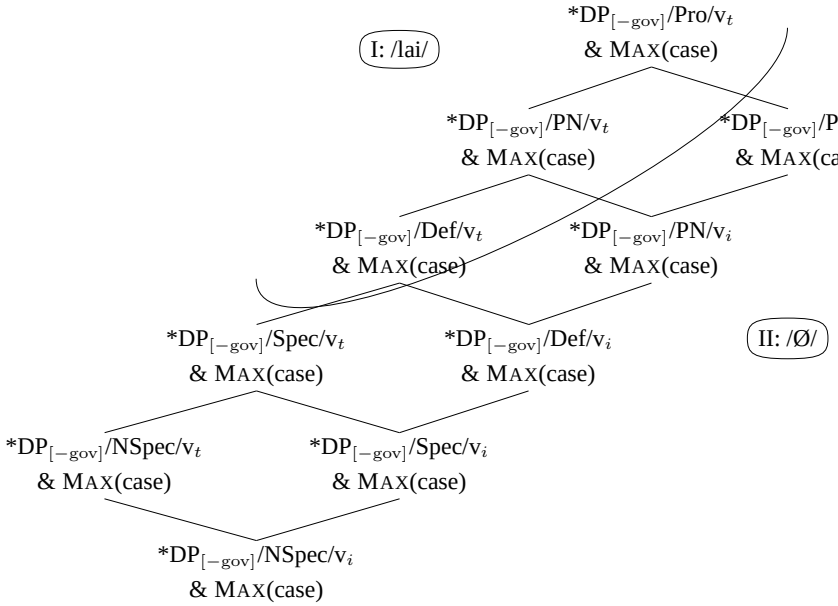
f. *DP$_{[-\text{gov}]}$/Spec/v$_t$ ≫ *DP$_{[-\text{gov}]}$/Spec/v$_i$

g. *DP$_{[-\text{gov}]}$/NSpec/v$_t$ ≫ *DP$_{[-\text{gov}]}$/NSpec/v$_i$

Finally, the hierarchies in (20) are locally conjoined with MAX(case), again preserving original orders. Thus, we end up with constraints like *DP$_{[-\text{gov}]}$/Pro/v$_t$ & MAX(case); this constraint is violated if there is an absolutive DP that is a pronoun, and the absolutive DP shows up with a transitive verb, and its [–gov] case feature is deleted – i.e., if the case feature of an absolutive pronoun is deleted in transitive contexts.

As a consequence, a two-dimensional system of argument encoding arises where some constraint pairs exhibit a fixed ranking, and others do not (such that languages simply can choose how they rank the constraints with respect to one another). Following Aissen's (2003) conventions, fixed and variable rankings among the constraints generated by successive harmonic alignment and local conjunction with MAX(case) can be represented as in (21). In this graph, constraints that stand in a domination relation invariantly have a fixed ranking (as a consequence of the mechanics of harmonic alignment and local conjunction), whereas constraints that do not stand in a domination relation are freely ordered with respect to each other.

(21) *Absolutive allomorphy in Kham*



All the constraints in (21) demand case feature preservation. At this point, the ranking of the conflicting constraint demanding case feature deletion becomes relevant: *[–gov] leads to zero-marking for DPs with the feature combinations identified by the constraints that are ranked below it. In Kham, this constraint must be ranked above *DP$_{[-\text{gov}]}$/Spec/v$_t$ & MAX(case) and

*DP$_{[-\text{gov}]}$/Pro/v$_i$ & MAX(case), and below *DP$_{[-\text{gov}]}$/Def/v$_t$ & MAX(case) and *DP$_{[-\text{gov}]}$/Pro/v$_t$ & MAX(case), thereby separating the system in (21) into two discrete areas (given transitivity of ranking relations and the fixed rankings established under harmonic alignment and local conjunction), which are here referred to as I and II. The absolutive case feature [–gov] is preserved in area I and removed in area II, which leads to the fully specified exponent /lai/ in I configurations and to the elsewhere exponent /Ø/ in II configurations.

We can now ask whether this pattern could also be captured in a similar way by adopting a standard impoverishment rule as the source of case feature deletion. It turns out that this is not the case: One would have to postulate *two separate* impoverishment rules, as in (22), since the contexts in which [–gov] deletion takes place (viz., intransitive clause and indefinite interpretation of DP) cannot be referred to as a natural class. Furthermore, (22) would give rise to redundancies with indefinite (specific or non-specific) DPs in intransitive contexts.

(22) *Impoverishment rules*:

a. [–gov] → ∅ /DP_[v$_i$]

b. [–gov] → ∅ /DP$_{[\text{indef}]}$_

Thus, in contrast to an approach in terms of genuine impoverishment rules, an optimality-theoretic approach employing scale-driven deletion makes it possible to refer to the diverse contexts where case feature deletion takes place as a natural class (defined by the relative ranking of the constraint demanding case feature deletion with respect to the ranking of the constraints demanding case-feature preservation in the various contexts).

3.1.3. Ergative marking

Turning next to allomorphy in ergative realization, the account is simple. It does not involve two-dimensional argument encoding because only the person scale is relevant for harmonic alignment with the binary basic case scale, of which the relevant member now is DP$_{[+\text{gov}]}$. Harmonic alignment of the case scale and the person scale yields the fixed hierarchy in (23) for the ergative.

(23) *DP$_{[+\text{gov}]}$/3 ≫ *DP$_{[+\text{gov}]}$/loc

By local conjunction with MAX(case), we derive the invariant hierarchy in (24).

(24) *DP$_{[+\text{gov}]}$/3 & MAX(case) ≫ *DP$_{[+\text{gov}]}$/loc & MAX(case)

Interleaving of *[+gov] between the two constraints of this hierarchy then produces zero exponence in cases where there is a prototypical external argument DP; see (25).

(25) *Ergative allomorphy in Kham*

*DP$_{[+\text{gov}]}$/3
& MAX(case) — (I: /(y)e/)
|
*[+gov]
|
*DP$_{[+\text{gov}]}$/loc
& MAX(case) — (II: /Ø/)

Thus, overt ergative marking is blocked with transitive 1st or 2nd person subjects (because [+gov] is deleted here, and a retreat to the general elsewhere marker must take place), but available with 3rd person subjects (because [+gov] is preserved here, so that the vocabulary item /(y)e/ that is characterized by the feature [+gov] can be inserted without violating the Subset Principle).

To conclude, Kham has an ergative encoding system where both ergative and absolutive can be non-zero cases, and both ergative and absolutive can be zero-marked, as a consequence of case feature deletion in protoypical configurations.

3.2. Djapu

3.2.1. Data

The Pama-Nyungan language Djapu has also been analyzed in terms of a three-way system comprising nominative/absolutive, ergative, and accusative. The distribution of case exponents is shown in (26) (see Dixon & Blake (1983, 34-35)).

(26) *Distribution of case markers*

	Pron	+HU	−HU
DP_{ext}-V_t	-∅	-DHu	-DHu
$DP_{ext/int}$-V_i	-∅	-∅	-∅
DP_{int}-V_t	-NHA	-NHA	-∅

Again, we assume that Djapu underlyingly exhibits an ergative system, with *-DHu* as the ergative marker and *-NHA* as the absolutive marker. Thus, overt absolutive marking is suspended in intransitive contexts and for non-human objects; overt ergative marking does not show up on pronominal transitive subjects.

3.2.2. Absolutive marking

The relevant scales determining the distribution of morphological case exponents are the transitivity scale and the animacy scale. Both are harmonically aligned with the basic case scale, yielding (27-a) and (27-b) for absolutive contexts.

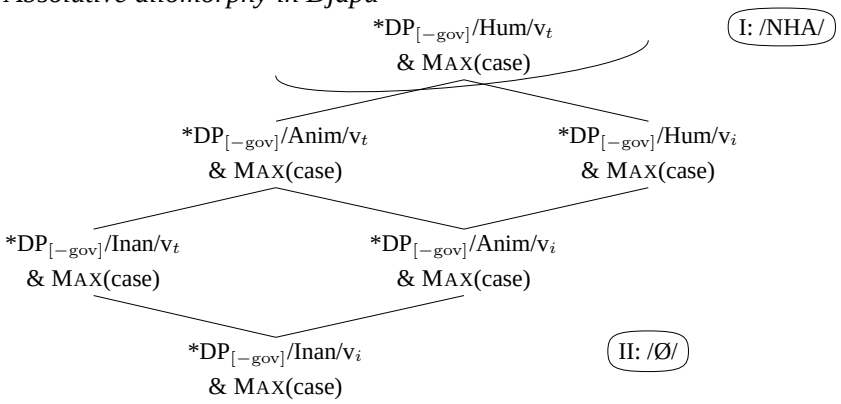
(27) a. *$DP_{[-gov]}/v_t \gg$ *$DP_{[-gov]}/v_i$
b. *$DP_{[-gov]}$/Hum $\gg$ *$DP_{[-gov]}$/Anim $\gg$ *$DP_{[-gov]}$/Inan

Local conjunction among the members of these constraint hierarchies with fixed internal order produces the strict rankings in (28).

(28) a. *$DP_{[-gov]}$/Hum/$v_t \gg$ *$DP_{[-gov]}$/Anim/$v_t \gg$ *$DP_{[-gov]}$/Inan/v_t
b. *$DP_{[-gov]}$/Hum/$v_i \gg$ *$DP_{[-gov]}$/Anim/$v_i \gg$ *$DP_{[-gov]}$/Inan/v_i
c. *$DP_{[-gov]}$/Hum/$v_t \gg$ *$DP_{[-gov]}$/Hum/v_i
d. *$DP_{[-gov]}$/Anim/$v_t \gg$ *$DP_{[-gov]}$/Anim/v_i
e. *$DP_{[-gov]}$/Inan/$v_t \gg$ *$DP_{[-gov]}$/Inan/v_i

Finally, order-preserving local conjunction with MAX(case) gives rise to the two-dimensional system in (29).

(29) *Absolutive allomorphy in Djapu*



Since all absolutive arguments except for human objects remain without an overt marker, the conflicting markedness constraint *[–gov] demanding case feature deletion must be located below *DP$_{[-\text{gov}]}$/Hum/v$_t$ & MAX(case), and directly above both *DP$_{[-\text{gov}]}$/Anim/v$_t$ & MAX(case) on the one hand (in transitive contexts), and *DP$_{[-\text{gov}]}$/Hum/v$_i$ & MAX(case) on the other (in intransitive contexts). Given that the absolutive marker /NHA/ is specified for the feature [–gov], it can only show up in transitive contexts with a human referent interpretation of the internal argument DP. As before, an impoverishment account would be inferior because the contexts in which case feature deletion takes place do not form a natural class definable in terms of shared morpho-syntactic features.

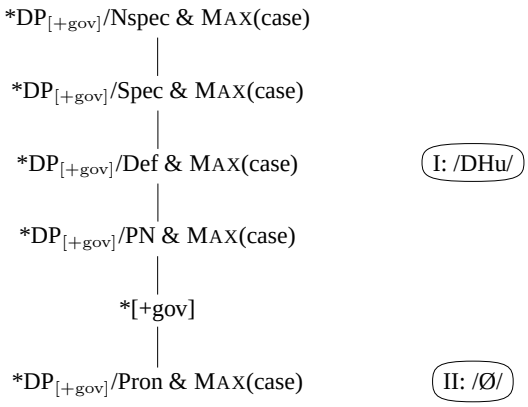
3.2.3. Ergative marking

Again, allomorphic variation in the ergative system is somewhat simpler. The relevant scales are the case scale and the definiteness scale; see (30).

(30) *DP$_{[+\text{gov}]}$/Nspec ≫ *DP$_{[+\text{gov}]}$/Spec ≫ *DP$_{[+\text{gov}]}$/Def ≫ *DP$_{[+\text{gov}]}$/PN ≫ *DP$_{[+\text{gov}]}$/Pron

Local conjunction with MAX(case) and interleaving of *[+gov] between *DP$_{[+\text{gov}]}$/PN & MAX(case) and *DP$_{[+\text{gov}]}$/Pron & MAX(case) yields a distribution of the overt ergative exponent /DHu/ that involves all DP$_{ext}$ arguments of transitive contexts except for pronouns. This is shown in (31).

(31) *Ergative allomorphy in Djapu*:



3.3. Nez Perce

3.3.1. Data

In Nez Perce (Penutian), sole arguments of intransitive verbs are unmarked, as are local person external arguments of transitive verbs; 3rd person external arguments of transitive verbs receive a special marker, and the same goes for all internal arguments of transitive verbs. This pattern is shown in (32) (see Rude (1985, 82f)). As noted above (see discussion of (8)), it is usually taken to imply a three-way system based on a general accusative, a general nominative/absolutive, and a scale-dependent ergative.

(32) *Distribution of case markers*

	1/2 pronouns	3 pronouns	proper names	common nouns
DP_{ext}-V_t	-∅	-(n(i))m	-(n(i))m	-(n(i))m
$DP_{ext/int}$-V_i	-∅	-∅	-∅	-∅
DP_{int}-V_t	-ne	-ne	-ne	-ne

As before, we suggest that this pattern be reanalyzed as a canonical ergative system, with scale-driven allomorphy affecting both ergative and absolutive contexts.

3.3.2. Absolutive marking

This time, the absolutive alternation pattern is very simple: It results from a simple local conjunction of the transitivity and case scales, which yields the fixed order in (33).

(33) $*DP_{[-gov]}/v_t$ & MAX(case) $\gg$ $*DP_{[-gov]}/v_i$ & MAX(case)

The conflicting markedness constraint demanding deletion of [–gov] is ranked between these two constraints in Nez Perce, which produces absence of [–gov] in the morphological component (hence, a zero exponent) in intransitive contexts and retention of [–gov] (hence, a non-zero exponent /*ne*/, which is specified for this feature) with absolutive DPs in transitive contexts.

(34) *Absolutive allomorphy in Nez Perce*:

$*DP_{[-gov]}/v_t$ & MAX(case) — I: /*ne*/

*[–gov]

$*DP_{[-gov]}/v_i$ & MAX(case) — II: /Ø/

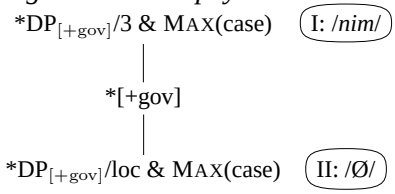
3.3.3. Ergative marking

The scales that play a role in accounting for ergative allomorphy are the person and case scales. Again, deriving the system is unproblematic. Local conjunction of the constraints derived by harmonic alignment with MAX(case) gives rise to the strict hierarchy in (35):

(35) $*DP_{[+gov]}/3$ & MAX(case) $\gg$ $*DP_{[+gov]}/loc$ & MAX(case)

Next, interleaving of *[+gov] leads to zero exponence in local contexts (given that insertion of the ergative marker /*nim*/ depends on the presence of [+gov]); see (36).

(36) *Ergative allomorphy in Nez Perce*:



3.4. Upriver Halkomelem

3.4.1. Data

The evidence from Upriver Halkomelem (Salish) differs from what we have seen so far in two respects. First, argument encoding proceeds by agreement (cross-reference marking) rather than by case-marking; this is unproblematic against the background of 2f2c approaches as they have been discussed in section 1: If assignment of case by a functional head (v, T) to a DP is viewed as an instance of Agree (Chomsky (2001)), i.e., as a probe-goal relation, then the relevant case information will show up on both the head (v, T) and the DP, and can thus be morphologically realized either on the former or on the latter. Second, Upriver Halkomelem exhibits an accusative rather than an ergative basic pattern; in the 2f2c$_i$ approach adopted here, this implies that v structurally encodes (i.e., agrees with) DP$_{int}$ in transitive contexts, and T encodes all other core arguments in transitive and intransitive contexts. The agreement paradigm is given in (37) (see Galloway (1977, 141)).

(37) *Distribution of cross-reference markers*

	1SG	1PL	2SG	2PL	3SG/PL
DP$_{ext}$-V$_t$	-cəl	-cət	-cəx^w	-cɛp	-əs
DP$_{ext/int}$-V$_i$	-cəl	-cət	-cəx^w	-cɛp	-∅
DP$_{int}$-V$_t$	-áy^y	-álx^w	-ámə	-álə	-∅/ -əx^w

As illustrated in (37), the initial evidence for postulating a three-way system in Upriver Halkomelem is confined to zero exponence in 3rd-person intransitive configurations. Under present assumptions, this split is treated as an instance of non-zero/zero allomorphy with nominative exponents.[11]

3.4.2. Nominative marking

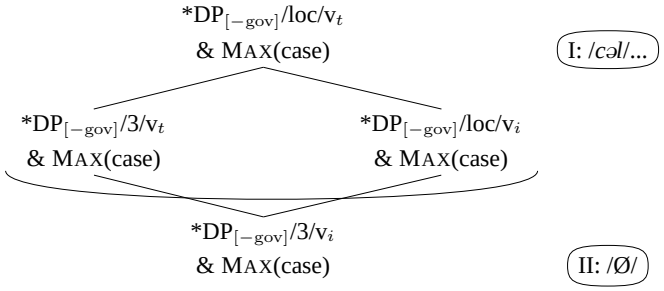
The distribution of nominative exponents (on T, as part of a complex verbal category) reveals harmonic alignment of both the transitivity scale and the person scale with the case scale, yielding the two-dimensional system in (38).

(38) a. *DP$_{[-\text{gov}]}$/loc/v$_t$ ≫ *DP$_{[-\text{gov}]}$/3/v$_t$
b. *DP$_{[-\text{gov}]}$/loc/v$_i$ ≫ *DP$_{[-\text{gov}]}$/3/v$_i$
c. *DP$_{[-\text{gov}]}$/loc/v$_t$ ≫ *DP$_{[-\text{gov}]}$/loc/v$_i$
d. *DP$_{[-\text{gov}]}$/3/v$_t$ ≫ *DP$_{[-\text{gov}]}$/3/v$_i$

[11] There is also an allomorphy with 3rd-person DP$_{int}$ arguments in transitive environments. This is arguably not of direct interest in the present context because it depends on the type of transitivity marker (reflecting the grade of control) on the verb.

After order-preserving local conjunction with MAX(case) (which applies to case features on both DP and T/v), a system of partially free, and partially fixed, rankings is derived. As for the interleaving of *[–gov], it is clear that this constraint must outrank *$DP_{[-gov]}$/3/v_i & MAX(case) since zero exponence occurs in this context, and must in turn be dominated by *$DP_{[-gov]}$/loc/v_i & MAX(case) since the non-zero nominative exponent shows up here; in contrast, in transitive contexts all argument types are overtly encoded, so *[–gov] must be outranked by all pertinent faithfulness constraints. All of this is shown schematically in (39), with the areas marked I and II capturing the two domains.[12]

(39) *Nominative allomorphy in Upriver Halkomelem*



3.4.3. Accusative marking

Accusative marking is consistent and not subject to scale effects; so it can be assumed that the constraint *[+gov] demanding case feature deletion on v is ranked below all faithfulness constraints resulting from harmonic alignment and local conjunction.

3.5. Dyirbal

3.5.1. Data

Dyirbal (Pama-Nyungan) is also typically claimed to instantiate a three-way system, based on the distribution of argument-encoding exponents on DPs in (40) (see Dixon (1972; 1994)). We would like to suggest that Dyirbal case marking is best analyzed in terms of scale-dependent allomorphy on the basis of a simple ergative system.

(40) *Distribution of Case markers*

	1st/2nd pronouns	3rd pronouns	proper names	common nouns
DP_{ext}-V_t	-∅	-ŋgu	-ŋgu	ŋgu
$DP_{ext/int}$-V_i	-∅	-∅	-∅	-∅
DP_{int}-V_t	-na	-∅	-∅	-∅

3.5.2. Ergative marking

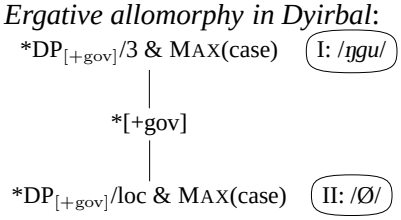
The relevant scales for ergative marking are the case scale and the person scale. Harmonic alignment plus local conjunction with MAX(case) produces the constraints in (41).

(41) *$DP_{[+gov]}$/3 & MAX(case) ≫ *$DP_{[+gov]}$/loc & MAX(case)

[12] Note incidentally that in this particular case, a standard impoverishment rule would also suffice since it is just one specific context in which case feature deletion needs to be brought about. Still, even here, the other two arguments against classical impoverishment given above (in the context of (17)) remain valid (regarding the stipulative vs. derived nature of the process, and regarding implicational generalizations).

By interleaving *[gov] between these two constraints and assuming /*ŋgu*/ to be a vocabulary item specified as [+gov], allomorphic realization of the ergative is correctly predicted; see (42).

(42) *Ergative allomorphy in Dyirbal*:

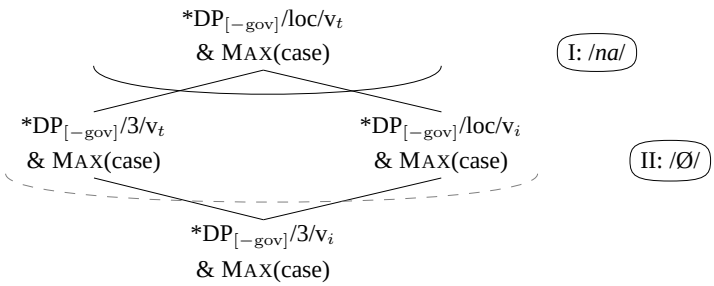


Note that this system is completely identical to the system of ergative allomorphy in Nez Perce.

3.5.3. Absolutive marking

Turning to variation in the realization of absolutive case next, the first thing to note is that the same scales are relevant as they are with nominative allomorphy in Upriver Halkomelem: The basic case scale is harmonically aligned with both the transitivity scale and the person scale, and subsequently, local conjunction with MAX(case) applies to the two constraint hierarchies thus generated, yielding the multidimensional system in (43). Assuming that the exponent /*na*/ is specified for [–gov], the markedness constraint *[–gov] must determine the optimal output (forming the input for morphological realization) in all intransitive contexts, and in 3rd person transitive contexts; i.e., *[+gov] is only dominated by *$DP_{[-gov]}$/loc & MAX(case). The resulting system is shown in (43). The area signalled by I shows non-zero absolutive exponence; the area marked by II has zero exponence.

(43) *Absolutive allomorphy in Dyirbal*



As in several of the cases addressed before, no single impoverishment rule could capture this distribution of zero and non-zero absolutive markers since the contexts in which deletion takes place do not form a natural class. Note also that even though Upriver Halkomelem and Dyirbal differ radically with respect to the basic argument encoding system employed in the language (accusative vs. ergative, cross-reference vs. case), deletion of the unmarked case (nominative/absolutive) involves (a) the same case feature ([–gov]), (b) identical derived faithfulness constraints with identical ranking restrictions ((43) and (39) are basically the same), and an identical markedness constraint demanding case feature deletion (*[–gov]). The only difference concerns the cut-off point between preservation and deletion; to highlight this difference, we have repeated the partition employed by Upriver Halkomelem in (43), in the form of a grey dotted line.

3.6. Pitjantjatjara

The third Pama-Nyungan language that we will discuss is Pitjantjatjara (see Eckert & Hudson (1994)). As we will see, this language is characterized by an interesting quirk. The distribution of

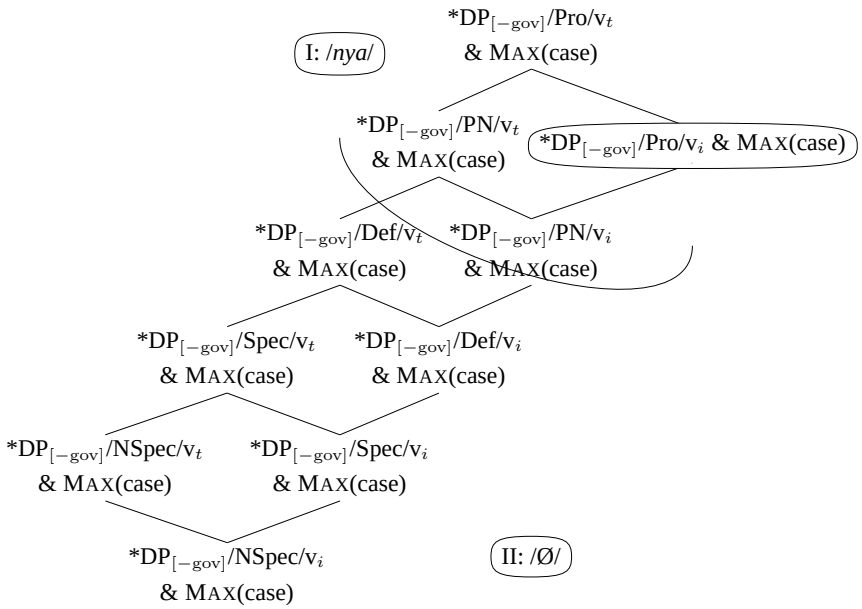
case exponents is as shown in (44).

(44) *Distribution of case markers*

	Pronouns	proper names	common nouns
DP_{ext}-V_t	-∅	-lu/-tju/-tu	-ngku/-tju/-tu
$DP_{ext/int}$-V_i	-∅	-nya,-nga	-∅
DP_{int}-V_t	-nya/-nga	-nya/-nga	-∅

As before, at first sight this looks like a three-way system, and as before, we suggest that we are actually dealing with a regular ergative system syntactically. On this view, the distribution of ergative allomorphy is entirely unproblematic; it looks exactly as in Djapu, and we need not repeat the analysis here. What is interesting, however, is that there is a non-zero exponent for proper names with DPs in intransitive contexts. Since this exponent is evidently the exponent otherwise used for DP_{int} arguments with transitive verbs, this provides prima facie evidence for treating the two contexts identically, as involving an absolutive case throughout. There is a problem, though: By carrying out harmonic alignment of a binary case scale with definiteness and transitivity scales, and subsequently applying order-preserving local conjunction of the constraints of the two hierarchies with one another, and with MAX(case), we end up with the two-dimensional system in (45).

(45) *Absolutive allomorphy in Pitjantjatjara*



Assuming the markedness constraint *[–gov] to be interspersed between the constraints of the two discrete domains I and II in (45), the distribution of absolutive exponents is derived – with one exception: It is a priori unclear why the case feature [–gov] is not maintained with pronouns in intransitive contexts, given that it is maintained with proper names. More generally, the absence of a non-zero exponent with pronouns in $DP_{ext/int}$-V_i environments indicates an exception from what would be expected from a Hale/Silverstein perspective. At present, we take it to be an open question whether this unexpected occurrence of zero exponence (which is marked in (45) by encircling the relevant constraint) is accidental (at least from a synchronic point of view) or can

ultimately be shown to reveal some deeper motivation. However, we can note that from a purely technical perspective, the present, optimality-based approach opens up the general possibility that there might be some higher-ranked, context-specific constraint that reverses a decision that is made by the lower-ranked constraints in (45); in the case at hand, the pertinent constraint would be one that has the effect of preventing pronouns from bearing a case feature in intransitive contexts.

3.7. Interim conclusion

This concludes the first, major part of the analysis: We have shown that it is straightforwardly possible to reanalyze three-way case systems as standard two-way (ergative or accusative) case systems, with all the marker variation derived by scale-driven optimization operations at the syntax/morphology interface. Given that case marker allomorphy based on person, animacy, and definiteness is independently known to be widespread, and given that these effects also show up in all the languages that we have addressed here, the only additional assumption that is needed to capture all effects in a maximally simple way – viz., the postulation of a transitivity scale on a par with other Hale/Silverstein scales – strikes us as well motivated. Furthermore, the fact that putative three-way systems are typically accompanied by Hale/Silverstein scale effects, and that the fact that these effects, though subject to implicational generalizations, are not uniform across languages, together pose what we take to be an enormous challenge for a syntactic approach recognizing three different cases; ambitious recent attempts notwithstanding (see in particular Deal (2014)) we would like to contend that it is hardly possible to come up with a comprehensive syntactic approach to the phenomenon that qualifies as both simple and elegant, and that covers both an individual language's pattern in detail, and captures cross-linguistic variation as well. However, that said, the question of whether a morphological or a syntactic approach to apparent three-way systems is correct is also an empirical one; we address this issue in the final section of this article.

4. Syntactic evidence

The present morphology-based approach to three-way systems differs from syntactic approaches in that it reanalyzes what at first sight looks like an accusative DP (in Kham, Djapu, Nez Perce, Dyirbal, and Pitjantjatjara) as a non-zero-encoded absolutive DP, and what looks like an ergative DP (in Upriver Halkomelem) as a non-zero-encoded nominative DP. The prediction thus is that there might be independent evidence for the status of the pertinent DPs as absolutive/nominative (i.e., [–gov,–obl], assigned by T under the 2f2c$_i$ approach adopted here). More generally, we expect to find evidence for a morphological approach in terms of case allomorphy based on identical syntactic behaviour of the non-zero-marked and zero-marked DPs; in the same way, different syntactic behaviour might provide counter-evidence against the proposal. Let us address some pertinent phenomena in the languages that have been discussed so far.

4.1. Topic Chaining in Dyirbal

A first piece of evidence comes from the topic chaining construction in Dyirbal, an instance of what has sometimes been called syntactic ergativity (Dixon (1972; 1994)). As shown in (46), if the coordinative process of topic chaining combines a transitive clause (with DP$_{ext}$ bearing ergative case and DP$_{int}$ bearing absolutive case) and an intransitive clause where the sole DP$_{ext/int}$ argument is not overtly realized (here encoded by an empty pronoun *pro*, for expository purposes),

then this latter DP, which must bear absolutive case, must be coreferent with the *absolutive* argument of the transitive clause, not with the *ergative* argument; see (46).

(46) [$_{CP_1}$ ŋuma yabu-ŋgu bura-n] [$_{CP_2}$ *pro* banaga-n^{y}u]
father-ABS mother-ERG see-NONFUT pro-ABS return-NONFUT
'Mother saw father and he/*she returned.'

Thus, there is a case-matching requirement active in Dyirbal topic-chaining constructions. Against this background, we can test the predictions made by the different approaches. On the one hand, if local person DP$_{int}$ arguments marked by /*na*/ bear accusative case (as assumed under the standard three-way approach), they should not be able to corefer with a non-overt sole DP argument of an intransitive clause (which bears absolutive case) in a topic chaining construction; on the other hand, if local person DP$_{int}$ arguments marked by /*na*/ bear absolutive case (as assumed under the present analysis), they should be able to corefer with a non-overt DP argument of an intransitive clause. The data in (47) (from Dixon (1972; 1994)) show that the latter prediction is in fact the correct one; as noted by Morgenroth & Salzmann (2013), this provides strong evidence against a separate accusative case, and hence against a three-way system, in Dyirbal.

(47) a. [$_{CP_1}$ ŋana-Ø banaga-n^{y}u] [$_{CP_2}$ n^{y}urra-Ø pro bura-n]
we-ABS return-NONFUT you all-ERG pro-ABS see-NONFUT
'We returned and you all saw us.'

b. [$_{CP_1}$ n^{y}urra-Ø ŋana-na bura-n] [$_{CP_2}$ pro banaga-n^{y}u]
you all-ERG we-ABS see-NONFUT pro-ABS return-NONFUT
'You all saw us and we returned.'

Note that (47-b) shows that the three-way approach not only fails to derive the possibility of coreference of the absolutive argument of the intransitive clause with the DP$_{int}$ argument of the transitive clause (because the latter shows non-zero exponence); assuming that non-zero exponence on DP$_{ext}$ in the transitive clause indicates absolutive case (but see footnote 13 below), it also wrongly predicts coreference of the absolutive argument of the intransitive clause with the DP$_{ext}$ argument of the transitive clause to be possible (since the latter exhibits zero-exponence in the case at hand).

4.2. Modifiers and relative clauses in Dyirbal

This latter consequence with respect to zero-marked DP$_{ext}$ arguments in transitive contexts also arises with modifiers in Dyirbal. The examples in (48) (see Dixon (1972, 133), Mel'čuk (1979, 54)) illustrate that modifiers and relative clauses of a local person DP$_{ext}$ argument of a transitive verb bear ergative case despite the lack of ergative marking of the pronoun itself.

(48) a. ŋaɖa wuygi-ŋgu balan ɖugumbil balga-n
I.NOM old-ERG NCII.there.ABS woman.ABS hit-NFUT
'I, old, hit the woman.'

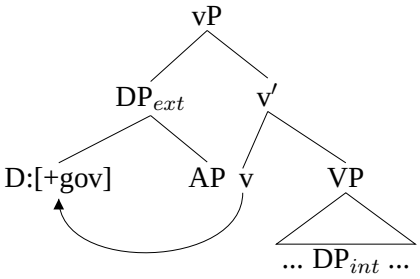
b. ŋaɖa wuygi bani-ɲu
I.NOM old.ABS come-NFUT
'I, old, came.'

c. ŋaɖa [wayɲɖi-ŋu]-ru balan ɖugumbil buɽa-n
I.NOM go.uphill-REL-ERG NCII.there.ABS woman.ABS see-NFUT
'I saw a woman as I was going uphill.'

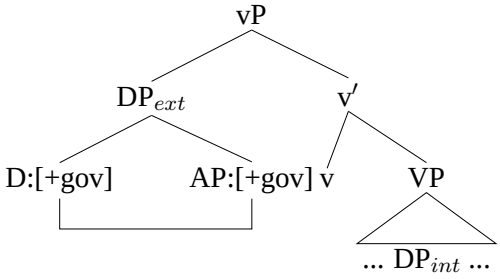
d. ŋaɖa [wayɲɖi-ɲu] miyanda-ɲu
I.NOM go.uphill-REL.ABS laugh-NFUT
'I laughed as I went uphill.'

This clearly shows that ergative is indeed assigned to DP_{ext} in (48-ac) (even though it is not overtly realized by an ergative exponent on the head), and passed on to other DP-internal items via concord (with subsequent morphological non-zero realization on D). In the present analysis, this state of affairs can be addressed straightforwardly, by invoking standard assumptions about the *order of operations* involved here (see Müller (2009), Keine (2010), Georgi (2014)). First, there is assignment of ergative ([+gov,–obl]) case to DP_{ext} (hence, D) by v; we assume this case feature to be transferred automatically to a potential NP selected by D (this is irrelevant in the case of pronouns, as in (48), but it would be relevant with non-pronominal 3rd person DPs). Second, there is another operation ('concord') that copies the feature from the nominal spine (D, N) to AP and CP modifiers. And third, scale-driven optimization (leading to deletion of [+gov]) targets DP, deleting the feature on D (and, if present, N) but leaving it intact on AP and CP modifiers. This sequence of operations is schematically shown in (49). (Note that this technically instantiates a *counter-bleeding* effect – deletion would bleed concord but comes too late to do so.)

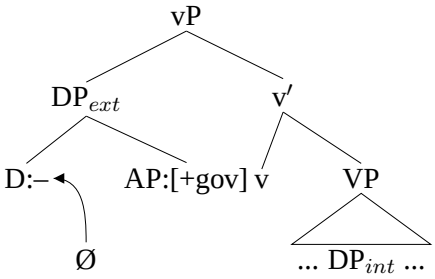
(49) a. *Case assignment*



b. *Concord*



c. *Scale-driven deletion*



In contrast, if the case feature assigned to local person DP_{ext} of transitive verbs in Dyirbal is absolutive rather than ergative, the source of the ergative exponents on DP-internal items in (48) must remain a mystery.[13]

[13] To be sure, adopting a three-way approach involving ergative, accusative and nominative/absolutive for the distribution of markers in (40) does not per se imply that the source of zero exponence with local person DP_{ext}-V_t is the same as the source of zero exponence with DP_{ext}/DP_{int}-V_i (or with 3rd person DP_{int}-V_t, for that matter); in other words, one could in principle assume that Dyirbal has three structural cases, but some instances of zero marking involve a morphologically unrealized ergative rather than syntactically assigned nominative/absolutive. If so, an approach along the lines just sketched (cf. (49)) would also be available in a three-way approach to case marking in Dyirbal (based on nominative/absolutive, ergative, and accusative); but such a move would be highly unattractive from a conceptual point of view – the non-zero/zero alternation with DP_{ext}-V_t is clearly governed by the same factor that also restricts the non-zero/zero alternation with DP_{int}-V_t (viz., the person scale).

4.3. Complex DPs in Djapu

Further independent evidence for treating an apparent co-existence of absolutive and accusative as allomorphic realization of a single case (viz., absolutive, in our analysis) comes from Djapu. The following example from Dixon & Blake (1983, 136) illustrates that a non-zero exponent can show up on a DP_{int}-V_t (glossed here as ACC, following the literature) whereas a modifier phrase agreeing with this DP exhibits zero exponence (glossed here as ABS).

(50) dhuwal ŋarra yothu-n yukurra ŋ-ä-ma [ŋäthi-nyar]
this.ABS 1SG.NOM child-ACC lie.UNM hear-UNM [cry-NMLZ.ABS]
'I can hear a child crying.'

Similarly, Legate (2008, 77) observes that a demonstrative will show zero exponence where a non-zero exponent occurs with a (human) D_{int}-V_t. Following Legate, we take this to indicate that the same case feature is involved on the noun and the modifier or demonstrative, and that the variable exponence is a purely morphological phenomenon, reducible to the availability or lack of compatible vocabulary items. However, our analysis differs from Legate's (2008) account in one crucial respect: Legate postulates a three-way system for Djapu and considers the source of zero exponence with $\text{DP}_{ext/int}$ in intransitive contexts to be different from the source of zero exponence with DP_{int} in transtitive contexts (absolutive vs. unmarked accusative), which gives rise to the conceptual problem mentioned in footnote 13. In contrast, the present approach offers a uniform analysis of zero exponence in all contexts in Djapu.

4.4. Relative clauses in Kham

Like Dyirbal, Kham has non-zero ergative exponence on relative clauses associated with local person DP_{ext}-V_t arguments that do not exhibit any morphological case marker themselves; cf. (51) (from Watters (2002, 201,205)).

(51) a. geː ma-ba-o-ra-e ge-ma-dəi-ye
we NEG-go-NML-PL-ERG 1PL-NEG-receive-IMPFV
'Those of us who didn't go didn't get any.'

b. ŋaː, ao tha perĩ-zya-o-ye ...
I this news send-IMPFV-NML-ERG ...
'I, the sender of this news, ... '

Again, this asymmetry follows directly under the present approach, along the lines of the derivation in (49); but it raises severe problems under a three-way approach.

4.5. Modifiers in Nez Perce

Recall from section 4.2. that cases where zero and non-zero exponence of case cooccur in a single DP follow under the morphological approach but pose a challenge for a syntactic three-way analysis. Conversely, Deal (2014) presents an argument based on the reverse configuration in support of a syntactic rather than morphological analysis. In Nez Perce, modifiers can (optionally) take ergative marking. From a morphological perspective, one might therefore expect this marking to occur on the modifier if it is combined with a local-person transitive subject which does not bear ergative marking. As shown in (52), this is not the case (glossing follows Deal (2014, 17)).

(52) a. Yú's-nim 'iceyéeye-nm, wéet'u minma'í 'itúu-ne pée-p-se-∅
poor-ERG coyote-ERG NEG PRT what-ACC 3/3-eat-IMPERF-PRES
'Poor coyote isn't eating anything.'

b. Yu'c /*Yú's-nim (*pro*), wéet'u q'o minma'í 'itúu-ne
poor.NOM /*poor-ERG PRO.1SG NEG PRT PRT what-ACC
'ee-pí-se-∅
3OBJ-eat-IMPERF-PRES
'Poor me isn't eating anything.'

However, closer inspection reveals that (52-b) is in fact unproblematic under the approach adopted here. Recall from (49) that we expect marker preservation on modifiers if the order of operations is (i) case assignment (of [+gov] to DP_{ext} by v), (ii) concord (of D and AP/CP), and (iii) scale-driven deletion, an instance of optimization. Suppose now that the last two operations can also apply in reverse order, such that feature deletion can precede concord; and that this is the case in Nez Perce (but not in, say, Dyirbal).[14] If so, the absence of a case exponent on the modifier in (52-b) is derived: [+gov] is deleted on D *before* concord with AP is effected. (This constitutes a standard *bleeding* effect.)

4.6. Coordination in Nez Perce

Deal (2014, 20f) gives a second argument in support of a three-way analysis of Nez Perce. Coordination in Nez Perce is not subject to any restrictions when it occurs with $DP_{ext/int}$-V_i arguments or with DP_{int}-V_t arguments. In these contexts, all kinds of person combinations are allowed. (Case marking may appear on both coordinates or just the final one.) However, there are restrictions in the case of coordination of DP_{ext}-V_t arguments. Coordinations of two local person pronouns and of two 3rd person pronouns/nouns are unproblematic (cf. (53-ab)), whereas the combination of local person and 3rd person turns out to be ungrammatical (see (53-cde)):

(53) a. Kátie(-nim) kaa Hárold-nim pée-'pewi-six-∅ Múna-ne.
Katie(-ERG) and Harold-ERG 3/3-look.for-IMPERF.PL-PRES Muna.ACC
'Katie and Harold are looking for Muna.'

b. 'Iim 'íitq'o 'iin kíye 'e-pe-múu-no'qa Ángel-ne
2SG.NOM or 1SG.NOM 1PL.INCL.CLITIC 3OBJ-S.PL-call-MODAL Angel-ACC
'íitq'o Tátlo-ne.
or Tatlo-ACC
'You or I should call Angel or Tatlo.'

c. *'Iin kaa Ángel(-nim) 'e-nées-tecukwe-cix-∅ (*pro*).
1SG.NOM and Angel(-ERG) 3OBJ-O.PL-teach-IMPERF.PL-PRES (PRO.3.PL)
'I and Angel are teaching them.'

d. *Ángel-nim kaa 'iin 'e-nées-tecukwe-cix-∅ (*pro*).
Angel-ERG and 1SG.NOM 3OBJ-O.PL-teach-IMPERF.PL-PRES (PRO.3.PL)
'I and Angel are teaching them.'

e. ?Ángel kaa 'iin 'e-nées-tecukwe-cix-∅ (*pro*).
Angel and 1SG.NOM 3OBJ-O.PL-teach-IMPERF.PL-PRES (PRO.3.PL)
'I and Angel are teaching them.'

[14] As a matter of fact, such early, inner-syntactic impoverishment-by-optimization has been argued for in some detail as a parametric option for a variety of independent phenomena in Keine (2010) and Doliana (2013).

Ungrammaticality in (53-cde) can easily be made to follow under an approach that envisages the possibility of an absolutive case for some DP_{ext}-V_t arguments in an otherwise ergative sytem (based on conflicting demands of case-assignment); but closer scrutiny reveals that the present analysis (where all coordinated DPs in (53) bear ergative case) also does not face any particular difficulties in accounting for the pattern. Assuming that & is the head of a coordinate structure &P, ergative case assignment by v will first instantiate [+gov] on &. As argued in the previous section, scale-driven deletion applies next in Nez Perce, before &-internal concord (which transfers [+gov] to the two DPs in coordinate structures). However, at this point, there is incompatible contextual information: For the first DP in an example like (53-c), optimization applying to & would rely on a local person feature; for the second, it would rely on a 3rd person feature; and the outcome of optimization would be different (deletion vs. preservation of [+gov]). It is conceivable that languages in principle may have the option to give preference to one of the two outcomes of optimization in this kind of situation (giving rise, e.g., to first- vs. last conjunct agreement); however, in Nez Perce, it leads to a breakdown of the derivation.[15] In contrast, in other coordination environments (as in (53-ab), or with $DP_{ext/int}$-V_i, or with DP_{int}-V_t), the two DP contexts for & uniformly demand deletion or preservation of the case feature; so no problem of conflicting instructions regarding case feature deletion will arise.

4.7. Cases in non-finite contexts in Warlpiri

To end this paper, we will briefly discuss what strikes us as the strongest argument in favour of a three-way system distinguishing accusative and nominative/absolutive in the presence of an undisputed ergative. As noted by Legate (2008), a $DP_{ext/int}$-V_i and a DP_{int}-V_t that are both zero-marked in finite contexts in Warlpiri behave differently in non-finite contexts, such that the former becomes impossible and the latter persists; see (54-a) vs. (54-b) (glosses follow Legate (2008, 62-63)).

(54) a. *Kurdu-lpa manyu-karri-ja [$_{CP_{inf}}$ ngati-nyanu
child.ABS-PAST.IMPERF play-stand-PAST mother-ANAPH.ABS
jarda-nguna-nja-rlarni]
sleep-lie-NONFIN-OBV.C
'The child was playing while his mother was asleep.'

b. Ngarrka-patu-rlu ka-lu-jana puluku
man-PAUC-ERG PRES.IMPERF-3PL.SUBJ-3PL.OBJ bullock.ABS
turnu-ma-ni, [$_{CP_{inf}}$ karnta-patu-rlu miyi purra-nja-puru]
group-CAUSE-NONPAST woman-PAUC-ERG food.ABS cook-NONFIN-TEMP.C
'The men are mustering cattle while the women are cooking the food.'

If Warlpiri has a genuine three-way system, with nominative/absolutive assigned by T and accusative (and ergative) assigned by v, the asymmetry in (54) can be accounted for by invoking the standard assumption that non-finite T cannot assign (nominative/absolutive) case: This rules out $DP_{ext/int}$-V_i in (54-a) but not DP_{int}-V_t in (54-b). In contrast, if $DP_{ext/int}$-V_i and DP_{int}-V_t bear the same structural case – viz., uniformly absolutive ([–gov,–obl]) in our approach –, the non-identical behaviour is initially surprising. Still, a possible solution suggests itself when we consider how the preservation of T's case feature in intransitive contexts is brought about in the

[15] Here we follow Deal (2014) in assuming that the somewhat variable status of (53-e) does not in fact indicate an intermediate degree of acceptability but goes back to interference from English.

first place in a 2f2c$_i$ analysis of the type adopted here. In Müller (2009), it is suggested that if there are more case-assigning functional heads than case-dependent nominals in the numeration, one or more of these heads must lose its case feature, such that there is a one-to-one correspondence (an instance of count-invariance). In the unmarked case, the head that maintains its case feature is T (but see the remarks on active systems in section 1 above). However, as proposed in Thomas (2013) in order to derive cases of clause type-based split ergativity, non-finite T may qualify as *defective*; if so, it cannot be chosen as the surviving case-assigning head in numerations underlying intransitive contexts. With clause type-based split ergativity in languages like Sierra Popoluca and Jacaltec, v can then take over in non-finite intransitive contexts; but another possible option is that there will then be no structural case assigning head left at all. If this is the case in Warlpiri, (54-ab) is accounted for.[16]

More generally, then, we may venture the hypothesis that the available syntactic evidence either directly supports the hypothesis that there are no three-way systems, or can at least be addressed on the basis of a 2f2c approach in an insightful way. From an even more general perspective, if what precedes is on the right track, we can conclude that by addressing instances of variation in case exponence in the *morphological* component of the grammar, where it can be given a principled account in terms of optimization-based deletion based on Hale/Silverstein scales, the *syntactic* component can be kept simple and elegant, with three-way systems emerging as an artefact.

References

Aissen, Judith (1999): Markedness and Subject Choice in Optimality Theory, *Natural Language and Linguistic Theory* 17, 673–711.

Aissen, Judith (2003): Differential Object Marking: Iconicity vs. Economy, *Natural Language and Linguistic Theory* 21, 435–483.

Assmann, Anke, Doreen Georgi, Fabian Heck, Gereon Müller & Philipp Weisser (2012): Ergatives Move Too Early. Ms., Universität Leipzig (*Linguistische Arbeits Berichte* 90, 2013). To appear in *Syntax*.

Bierkandt, Lennart (2006): Kasusmorphologie des Diyari. Ein Ansatz im Rahmen der Distribuierten Morphologie. In: G. Müller & J. Trommer, eds., *Subanalysis of Argument Encoding in Distributed Morphology*. Vol. 84 of *Linguistische Arbeitsberichte*, Universität Leipzig, pp. 43–62.

Bierwisch, Manfred (1967): Syntactic Features in Morphology: General Problems of So-Called Pronominal Inflection in German. In: *To Honor Roman Jakobson*. Mouton, The Hague/Paris, pp. 239–270.

Bittner, Maria & Ken Hale (1996a): Ergativity: Toward a Theory of a Heterogeneous Class, *Linguistic Inquiry* pp. 531–604.

Bittner, Maria & Ken Hale (1996b): The Structural Determination of Case and Agreement, *Linguistic Inquiry* pp. 1–68.

Bobaljik, Jonathan (1993): Ergativity and Ergative Unergatives. In: C. Phillips, ed., *Papers on*

[16] Note that, under the analysis in Thomas (2013), there is no intrinsic ban non-finite T bearing a case feature (as in (54-b)); rather, being defective, non-finite T cannot be *selected* as the sole case assigner in intransitive contexts.

Case and Agreement II. Vol. 19 of *MIT Working Papers in Linguistics*, MITWPL, MIT: Cambridge, Mass., pp. 45–88.

Bobaljik, Jonathan & Phil Branigan (2006): Eccentric Agreement and Multiple Case Checking. In: A. Johns, D. Massam & J. Ndayiragije, eds., *Ergativity*. Springer, pp. 47–77.

Chomsky, Noam (1995): *The Minimalist Program*. MIT Press, Cambridge, Mass.

Chomsky, Noam (2001): Derivation by Phase. In: M. Kenstowicz, ed., *Ken Hale. A Life in Language*. MIT Press, Cambridge, Mass., pp. 1–52.

Chomsky, Noam (2008): On Phases. In: R. Freidin, C. Otero & M. L. Zubizarreta, eds., *Foundational Issues in Linguistic Theory*. MIT Press, Cambridge, Mass., pp. 133–166.

Corbett, Greville (2005): The Canonical Approach in Typology. In: Z. Frajzyngier, A. Hodges & D. Rood, eds., *Linguistic Diversity and Language Theories*. John Benjamins, Amsterdam, pp. 25–49.

Corbett, Greville & Sebastian Fedden (2014): Multiple Categorization: The Case of Mian. Ms., Surrey Morphology Group.

Deal, Amy Rose (2014): Person-Based Split Ergativity in Nez Perce is Syntactic. Ms., University of California, Santa Cruz.

Dixon, R.M.W. (1972): *The Dyirbal Language of North Queensland*. Cambridge University Press, Cambridge.

Dixon, R.M.W. (1994): *Ergativity*. Cambridge University Press, Cambridge.

Dixon, Robert MW & Barry J. Blake (1983): *Handbook of Australian Languages, Vol. 3*. John Benjamins Publishing, Amsterdam.

Doliana, Aaron (2013): The Super-Strong Person-Case Constraint: Scarcity of Resources by Scale-Driven Impoverishment. In: *Rule Interaction in Grammar*. Vol. 90 of *Linguistische Arbeits Berichte*, Institut für Linguistik, Universität Leipzig, pp. 177–202.

Eckert, Paul & Joyce Hudson (1994): *Wangka Wiru: A Handbook for the Pitjantjatjara Language Learner*. Aboriginal Studies and Teacher Education Centre, Underdale, Australia.

Galloway, Brent Douglas (1977): *A grammar of Chilliwack Halkomelem*. Vol. 1, University of California.

Georgi, Doreen (2014): Opaque Interactions of Merge and Agree. PhD thesis, Universität Leipzig.

Hale, Ken (1972): A New Perspective on American Indian Linguistics. In: A. Ortiz, ed., *New Perspectives on the Pueblos*. University of New Mexico Press, Albuquerque, pp. 87–103.

Halle, Morris (1997): Distributed Morphology: Impoverishment and Fission. In: B. Bruening, Y. Kang & M. McGinnis, eds., *Papers at the Interface*. Vol. 30, MITWPL, pp. 425–449.

Halle, Morris & Alec Marantz (1993): Distributed Morphology and the Pieces of Inflection. In: K. Hale & S. J. Keyser, eds., *The View from Building 20*. MIT Press, Cambridge, Mass., pp. 111–176.

Handschuh, Corinna (2014): *A Typology of Marked-S Languages*. Language Science Press, Berlin.

Jakobson, Roman (1936): Beitrag zur allgemeinen Kasuslehre: Gesamtbedeutungen der russischen Kasus, *Travaux du Cercle Linguistique de Prague VI* pp. 240–299. Reprinted in E. Hamp, et al. (eds.) (1966), *Readings in Linguistics II*, 51-89.

Jelinek, Eloise (1993): Ergative 'Splits' and Argument Type. In: J. Bobaljik & C. Phillips, eds., *Papers on Case and Agreement I*. Vol. 18 of *MIT Working Papers in Linguistics*, MITWPL, MIT: Cambridge, Mass., pp. 15–42.

Keine, Stefan (2010): *Case and Agreement from Fringe to Core. Impoverishment Effects on Agree*. Linguistische Arbeiten, Mouton de Gruyter, Berlin.

Keine, Stefan & Gereon Müller (2011): Non-Zero/Non-Zero Alternations in Differential Object Marking. In: S. Lima, K. Mullin & B. Smith, eds., *Proceedings of the 39th Meeting of the North East Linguistics Society*. GLSA, Amherst, Mass., pp. 441–454.

Keine, Stefan & Gereon Müller (2014): Differential Argument Encoding by Impoverishment. In: I. Bornkessel-Schlesewsky, A. Malchukov & M. Richards, eds., *Scales and Hierarchies*. Trends in Linguistics, Mouton de Gruyter, Berlin, pp. 75–130.

Kiparsky, Paul (1999): Analogy and OT: Morphological Change as Emergence of the Unmarked. Ms., Stanford University.

Laka, Itziar (1993): Unergatives that Assign Ergative, Unaccusatives that Assign Accusative. In: J. Bobaljik & C. Phillips, eds., *Papers on Case and Agreement I*. Vol. 18 of *MIT Working Papers in Linguistics*, MITWPL, MIT: Cambridge, Mass., pp. 149–172.

Legate, Julie Anne (2008): Morphological and Abstract Case, *Linguistic Inquiry* 39(1), 55–101.

Legendre, Géraldine, Paul Smolensky & Colin Wilson (1998): When is Less More? Faithfulness and Minimal Links in Wh-Chains. In: P. Barbosa, D. Fox, P. Hagstrom, M. McGinnis & D. Pesetsky, eds., *Is the Best Good Enough?*. MIT Press and MITWPL, Cambridge, Mass., pp. 249–289.

Levin, Juliette & Diane Massam (1985): Surface Ergativity: Case/Theta Relations Reexamined. In: S. Berman, ed., *Proceedings of NELS 15*. BLS, Amherst, Mass.

Marantz, Alec (1991): Case and Licensing. In: German Westphal, B. Ao & H.-R. Chae, eds., *Proceedings of the Eigth Eastern States Conference on Linguistics*. University of Maryland, pp. 234–253.

McFadden, Thomas (2004): The Position of Morphological Case in the Derivation: A Study on the Syntax-Morphology Interface. PhD thesis, University of Pennsylvania.

Mel'čuk, Igor' Aleksandrovič (1979): The Predication Construction in Dyirbal. In: I. A. Mel'čuk, ed., *Studies in Dependency Syntax*. Karoma Publishers, Ann Arbor, pp. 23–90.

Morgenroth, Lisa & Martin Salzmann (2013): Reanalyse syntaktischer Ergativität. Ms., Universität Leipzig.

Müller, Gereon (2009): Ergativity, Accusativity, and the Order of Merge and Agree. In: K. K. Grohmann, ed., *Explorations of Phase Theory. Features and Arguments*. Mouton de Gruyter, Berlin, pp. 269–308.

Murasugi, Kumiko (1992): Crossing and Nested Paths. PhD thesis, MIT, Cambridge, Mass.

Nash, Léa (1996): The Internal Ergative Subject Hypothesis. In: K. Kusumoto, ed., *Proceedings of NELS 26*. GLSA, Amherst, Mass, pp. 195–209.

Prince, Alan & Paul Smolensky (2004): *Optimality Theory. Constraint Interaction in Generative Grammar*. Blackwell, Oxford.

Reinhart, Tanya (2003): The Theta System – An Overview, *Theoretical Linguistics* 28, 1–35.

Rezac, Milan (2003): The Fine Structure of Cyclic Agree, *Syntax* 6, 156–182.

Rude, Noel Emerson (1985): Studies in Nez Perce Grammar and Discourse. PhD thesis, University of Oregon.

Schäfer, Florian (2012): Local Case, Cyclic Agree, and the Syntax of Truly Ergative Verbs. In: A. Alexiadou, T. Kiss & G. Müller, eds., *Local Modelling of Non-Local Dependencies in Syntax*.

De Gruyter, Berlin, pp. 273–304.

Silverstein, Michael (1976): Hierarchy of Features and Ergativity. In: R. Dixon, ed., *Grammatical Categories in Australian Languages*. Australian Institute of Aboriginal Studies, Canberra, pp. 112–171.

Smolensky, Paul (1995): On the Internal Structure of Con, the Constraint Component of UG. Ms., Johns Hopkins University.

Smolensky, Paul (2006): Harmonic Completeness, Local Constraint Conjunction, and Feature Domain Markedness. In: P. Smolensky & G. Legendre, eds., *The Harmonic Mind*. Vol. II, MIT Press, Cambridge, Mass., chapter 14, pp. 27–160.

Stiebels, Barbara (2002): *Typologie des Argumentlinkings: Ökonomie und Expressivität*. Akademie Verlag, Berlin.

Thomas, Daniela (2013): Split Ergativity in Subordination. In: *Rule Interaction in Grammar*. Vol. 90 of *Linguistische Arbeits Berichte*, Institut für Linguistik, Universität Leipzig, pp. 1–21.

Trommer, Jochen (2006): Person and Number Agreement in Dumi, *Linguistics* 44, 1011–1057.

Ura, Hiroyuki (2000): *Checking Theory and Grammatical Functions in Universal Grammar*. Oxford University Press, New York.

Ura, Hiroyuki (2006): A Parametric Syntax of Aspectually Conditioned Split-Ergativity. In: A. Johns, D. Massam & J. Ndayiragije, eds., *Ergativity*. Springer, pp. 111–141.

Watters, David E. (2002): *A Grammar of Kham*. Cambridge University Press, Cambridge.

Wiese, Bernd (1999): Unterspezifizierte Paradigmen. Form und Funktion in der pronominalen Deklination, *Linguistik Online* 4. (www.linguistik-online.de/3_99).

Woolford, Ellen (1997): Four-Way Case Systems: Ergative, Nominative, Objective and Accusative, *Natural Language and Linguistic Theory* 15, 181–227.

Wunderlich, Dieter (2006): Towards a Structural Typology of Verb Classes. In: D. Wunderlich, ed., *Advances in the Theory of the Lexicon*. Mouton de Gruyter, Berlin, pp. 57–166.