Number as Person
Stephen Wechsler

1   Introduction

Many European languages have two second person pronouns, one for *informal* and one for *formal* address, such as French *tu* and *vous*, respectively.[1] Such pronouns pose an interesting problem for number agreement. A second person formal subject pronoun triggers plural agreement on the finite verb regardless of whether the referent is one addressee or multiple addressees. Number agreement on non-finite elements, meanwhile, corresponds to semantic number, i.e. cardinality.[2] Thus when used with singular reference, such pronouns trigger mixed agreement. Examples from French and Bulgarian are given in (1) and (2).[3]

(1)   a.   Vous   êtes   loyal.
           you.PL/FORMAL be.2PL loyal.SG
           'You (one formal addressee) are loyal.'

      b.   Vous   êtes   loyaux.
           you.PL/FORMAL be.2PL loyal.PL
           'You (multiple addressees) are loyal.'

(2)   a.   Vie   ste   učtiv i   vnimatelen.
           you.PL/FORMAL be.2PL polite.SG and attentive.SG
           'You (one formal addressee) are polite and attentive.'

      b.   Vie   ste   učtivi i   vnimatelni.
           you.PL/FORMAL be.2PL polite.PL and attentive.PL
           'You (multiple addressees) are polite and attentive.'

In (1) and (2) the finite verbal element (*êtes, ste*) shows plural agreement while the predicate adjective shows singular or plural agreement, depending as the subject pronoun refers, respectively, to one addressee alone or to a larger set of people that includes the addressee(s). Examples (1)a and (2)a are cases of MIXED AGREEMENT: the subject appears to be triggering different number values on the two agreement targets. The problem addressed here is how to square this mixed agreement with the assumption of normal agreement, defined here as the systematic covariation of grammatical form.

   Some mixed agreement phenomena are best analyzed by distinguishing two agreement feature bundles on the trigger (Kathol 1999, Wechsler and Zlatić 2000, 2003). For example, the Serbian/Croatian noun *deca* 'children' consistently triggers feminine singular agreement on one set of targets and

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[1]Thanks to Pascal Denis and Knud Lambrecht for help with French data, and to Larisa Zlatić for help with Serbian/Croatian data.

[2]—in some languages. See Section 7.

[3](2) is taken from Corbett (1983:47).

neuter plural on another (Corbett 1983). Wechsler and Zlatić (2000, 2003) posit two feature bundles on the Serbian/Croatian noun, then systematically relate each of them respectively to morphological and semantic properties of the noun. But this two-feature approach does not appear to be justified for the problem illustrated in (1)-(2) (pace Kathol 1999).[4]

A related hypothesis is that predicate adjectives show semantic agreement while finite verbs show grammatical agreement (Pollard and Sag 1994, p. 97). A pronoun like *vous* is morphosyntactically (second person) plural, and the finite verb is sensitive to this feature. But it is unmarked with respect to semantic number, i.e. cardinality. The number inflection on the predicate adjective is semantically interpreted, hence adjective number and cardinality covary, as shown in (1)-(2). Call this the SEMANTIC AGREEMENT HYPOTHESIS.

The SEMANTIC AGREEMENT HYPOTHESIS is plausible but it encounters the following problem: predicate adjectives sometimes appear to show grammatical agreement, for example with *pluralia tantum* subjects with singular reference:[5]

(3)   Ces   ciseaux   sont   idéaux/   *idéal   pour couper le velour.
      this.PL scissors(PL) are.PL ideal.M.PL/ *ideal.M.SG for cut.INF the velour

      'These scissors are ideal for cutting velour.'

The plural adjective form is required regardless of whether we refer to one pair of scissors or many.[6] Moreover, it can be shown that no further adjustment of the features of the agreement triggers and targets will solve this problem. Let us add the second person singular *tu* to our stock of examples:

(4)   Tu   es   loyal.
      PRO.2SG be.2SG loyal.M.SG

      'You (singular, informal) are loyal.'

Now compare the three respective agreement patterns for singular-referent formal *vous* (1a), pluralia tantum (3), and second person singular informal *tu* (4). As summarized in the following table, all three subjects—*vous*, *ces ciseaux*, and *tu*—are semantically singular. Yet they give rise to three different agreement patterns on the verb and adjective.

(5)   The NUMBER AGREEMENT CONUNDRUM.

	Grammatical	**Semantic**	**Finite V**	**Pred.Adj.**
tu	sg	sg	sg	sg
vous (formal, one addressee)	sg?/pl?	sg	pl	sg
ciseaux (one pair)	pl	sg	pl	pl

Regardless of what grammatical number feature we assign to the triggers, we cannot explain the three distinct patterns found on the targets, because it is impossible to distinguish three agreement patterns with one bivalent grammatical number feature of the trigger. But adding a new feature or number value—such as a special plural feature for pluralia tantum nouns—would be totally *ad hoc*

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[4]Applied to this problem, a two-feature approach would contradict certain cross-linguistic generalizations captured by the Wechsler and Zlatić (2000, 2003) system. On the other hand, divorced from such a theory, the two-feature account describes the facts but fails to explain them. See Wechsler and Zlatić 2000, Chapter 6, for discussion.

[5]This example is due to Sabrina Parent.

[6]A variant of the SEMANTIC AGREEMENT HYPOTHESIS that solves this problem will be proposed below.

and unsupported by French morphology. French has only one plural category. This problem will be called the NUMBER AGREEMENT CONUNDRUM.

This paper proposes a solution to the Number Agreement Conundrum, formalized within Lexical Functional Grammar. Section 2 expands the scope to include other French agreement mismatches. Section 3 presents a simple principle governing the interaction between grammatical and semantic agreement features, and introduces a formal LFG mechanism that captures that principle. This mechanism alone does not solve the Number Agreement Conundrum, assuming the traditional person/number paradigm. Traditionally forms are cross-classified by person (with three values) and number (with two values) into six cells.

(6) Traditional person/number paradigm.

	[NUMBER *sg*]	[NUMBER *pl*]
[PERSON *1st*]	*je suis loyal*	*nous sommes loyaux*
[PERSON *2nd*]	*tu es loyal*	*vous êtes loyaux*
[PERSON *3rd*]	*il est loyal*	*ils sont loyaux*

As shown in Section 4, the Number Agreement Conundrum disappears, assuming the independently motivated general principle governing grammatical and semantic agreement features, if the paradigm is modified such that the category of NUMBER is banished from the first and second person forms, surviving only within the third person. Section 5 provides substantial evidence for this alteration to the traditional paradigm. While this proposal may appear radical from the point of view of traditional grammar, it is entirely consonant with French morphology, and indeed with the results of broad cross-linguistic studies of person paradigms (Cysouw 2003, Harley and Ritter 2002). An alternative analysis is considered and rejected in Section 6. Section 7 discusses broader implications for the distinction between formal and informal second person pronouns.

2   More French number mismatches

Number agreement mismatches of the sort illustrated above occur not only in second person, but in first and third person as well. In certain contexts *nous* 'we' can have singular reference, such as the authorial *nous* found in discursive prose:

(7) Nous avons   toujours été   loyal   envers la   grammaire générative.
    we   AUX.1PL always   been loyal.M.SG toward the.F grammar   generative

    'I (one male author; lit. 'we') have always been loyal to generative grammar.' (discursive prose style)

In (7) *nous* refers to the author. The masculine singular predicate adjective inflection reflects the semantic number and gender of the author(s); hence an essay containing sentence (7) must be singly-authored by a male. But the finite verb always shows first person plural agreement with *nous*, leading to a number mismatch in this example.

Similarly, the so-called generic third person singular pronoun *on* is commonly used to mean either 'we', 'people', 'someone', or 'you' (Koenig 1999, Koenig and Mauner 1999, i.a.):[7]

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[7]In spoken French the weak subject form *nous* (as in *Nous sommes loyaux* 'We are loyal') has almost entirely disappeared, replaced by *on*. Other uses of nous (as object, left-dislocated topic, etc.) survive in spoken French. The first person plural verb form can scarcely be heard, except in the hortative construction (e.g. *Allons-y* 'Let's go!')

(8) a. On a   été loyaux.
         one AUX.3SG been loyal.PL
         'We have been loyal.'

     b. On a   été loyal.
         one AUX.3SG been loyal.SG
         'You (one addressee) have been loyal.'

Again, the number feature of the predicate adjective reflects the meaning, while the finite verb or auxiliary agreeing with *on* is consistently singular.

Summarizing, number mismatches are found across the entire person paradigm: in first person *nous*, second person *vous*, and third person *on*. In all cases the finite verb's number is determined by subject *form* (*on* is singular, *nous* and *vous* are plural), while a predicate adjective reflects the cardinality of the referent.

3   Some preliminaries: default semantics of agreement targets

Before turning to our main topic, the revision of the person/number paradigm, we need an account of the interaction of semantic and grammatical agreement. As noted above, the SEMANTIC AGREE-MENT HYPOTHESIS, according to which predicate adjectives show semantic agreement, encounters a problem with *pluralia tantum* subjects: they trigger plural agreement even if the referent is singular (example (3)). It seems clear that this plural agreement reflects the plural morphology of the subject, violating the SEMANTIC AGREEMENT HYPOTHESIS. This section presents a modification of this hypothesis. Then it will be shown that this modification still fails to solve the Person Agreement Conundrum, unless we fundamentally alter our model of the person/number paradigm.

We modify the SEMANTIC AGREEMENT HYPOTHESIS by making the semantic number value of the predicate adjective a default that must apply *when the subject trigger lacks plural morphology*. This is a classic markedness (or perhaps economy) phenomenon: intuitively, the plural number mor-phology on an agreement target must be there for a reason. It reflects either the aggregate reference (semantic plurality) of the subject or its morphological plurality. Because *ciseaux* 'scissors' is inher-ently (morphologically) plural, a plural agreement target loses its semantic potency with respect to number.

This common phenomenon can be illustrated with English agreement (see Farkas and Zec (1995), Wechsler (to appear), Wechsler and Zlatić (2003)):

(9) a. These scissors are dull.

     b. His lifelong companion and the editor of his autobiography is at his bedside.

     c. His lifelong companion and the editor of his autobiography are at his bedside.

English verbs show plural agreement with pluralia tantum subjects, as in (9a), reflecting the morpho-logical plural of the subject. But the coordinate subjects in (9b) and (9c) lack morphological number, because coordinate structures are exocentric (Wechsler (to appear)). So the plural verb becomes se-mantically potent: sentence (9b), with singular agreement, is appropriate where the companion/editor is one person, while example (9c) requires that they be two distinct individuals. This observation that agreement features on certain targets have semantic content only where the agreement trigger lacks inherent morphosyntactic number can be captured formally in Lexical Functional Grammar by means of CONSTRAINING EQUATIONS (cp. 'feature checking'). Unification-based formalisms such as LFG

model agreement as a correlation arising because features of a single grammatical representation, namely the functional structure (f-structure) in the case of LFG, are specified by two distinct elements in the sentence. This specification occurs via equations, of two types: DEFINING EQUATIONS, which build the f-structure, and CONSTRAINING EQUATIONS, notated with $=_c$, which check the f-structure for the presence of a feature. We illustrate with (simplified) lexical specifications for the English verb forms *is* and *are*:

(10)   LFG Lexical forms.

    a. *is:* I ($\uparrow$SUBJ PERS) = 3rd

    b.   ($\uparrow$SUBJ NUM) = sg

    c.   (($\uparrow$SUBJ)$_\sigma$ AGGREGATE) = −

    d. *are:* I ($\uparrow$SUBJ PERS) = 3rd

    e.   ($\uparrow$SUBJ NUM) $=_c$ pl $\lor$ (($\uparrow$SUBJ)$_\sigma$ AGGREGATE) = +

In this illustration, *is* encodes both grammatical and semantic information about its subject. Grammatically the subject is third person, plural; semantically it refers to a non-aggregate. The first two equations for *is*, (10a,b), are defining equations that contribute PERSon and NUMber features to the f-structure representation of the verb's SUBJect. The third equation, (10c), contributes the feature [AGGREGATE −] to the semantic structure (σ-structure) of the subject (σ is the semantic projection function). The boolean feature AGGREGATE is used here a placeholder for a more serious semantics of cardinality. A value of [AGGREGATE +] indicates an aggregate or 'semantic plural', while [AGGREGATE −] applies to all others, including singulars and masses. For simplicity we assume that the semantic structure has the same feature architecture as f-structure. Hence any semantic structure supplied with conflicting values for AGGREGATE (namely + and −) is semantically ill-formed, just as any f-structure supplied with conflicting values for a feature is grammatically ill-formed.

The plural form *are* is similar, only instead of a conjunction of grammatical and semantic number equations, it specifies a *disjunction* between two equations (see (10e)): a constraining equation that checks for the *grammatical* number of the agreement trigger, and a defining equation that contributes *semantic* number. That is, a plural verb **either** checks for the [NUMBER pl] feature of its subject, **or** contributes plurality to the semantic representation of the subject. This reconciles the apparently contradictory grammatical and semantic agreement illustrated in (9), correctly predicting the following grammaticality and interpretation pattern:

(11)   a.   The book is... (non-aggregate)

        b.   * The book are...

        c.   * The books is...

        d.   The books are... (aggregate)

        e.   * The scissors is...

        f.   The scissors are... (non-aggregate or aggregate)

        g.   His companion and the editor is... (non-aggregate)

        h.   His companion and the editor are... (aggregate)

The following table demonstrates how the lexical forms in (10) predict the grammaticality and interpretation of (11). The disjunction of two f-descriptions defines a set of two alternative f-structures (Bresnan 2000, p. 61); or, in our case, a set of two alternative f-structure/σ-structure pairs.[8] If

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[8]The f-description is the set of defining equations associated with the derivation of a sentence.

both pairs are ill-formed (either at f- or σ-structure) then the sentence is ruled out; if at least one is well-formed it is grammatical; and if both are well-formed then the sentence has two derivations.

(12)

		is NUM = sg AGG = −	**are** NUM $=_c$ pl $\qquad$ ∨ $\qquad$ AGG = +	
the book	$[\text{NUM sg}]_f$ $[\text{AGG} -]_\sigma$	$[\text{NUM sg}]_f$ $[\text{AGG} -]_\sigma$	*no $[\text{NUM pl}]_f$!	*$[\text{AGG !!}]_f$
the books	$[\text{NUM pl}]_f$ $[\text{AGG} +]_\sigma$	*$[\text{NUM !!}]_f$ *$[\text{AGG !!}]_\sigma$	$[\text{NUM pl}]_f$ $[\text{AGG} +]_\sigma$	$[\text{NUM pl}]_f$ $[\text{AGG} +]_\sigma$
the scissors	$[\text{NUM pl}]_f$ $[\text{AGG} +/-]_\sigma$	*$[\text{NUM !!}]_f$	$[\text{NUM pl}]_f$ $[\text{AGG} +/-]_\sigma$	$[\text{NUM pl}]_f$ $[\text{AGG} +]_\sigma$
NP and NP	$[\ (\text{no NUM})\ ]_f$ $[\text{AGG} +/-]_\sigma$	$[\text{NUM sg}]_f$ $[\text{AGG} -]_\sigma$	*no $[\text{NUM pl}]_f$!	 $[\text{AGG} +]_\sigma$

The cell for *The books are...* indicates two derivations with identical results: that is, the verb can either be checking the plural feature of the subject, or redundantly imposing aggregate semantics on an NP that already denotes an aggregate of books. The two derivations for *The scissors are...* differ slightly: in one, *are* checks morphological plurality, hence allowing either non-aggregate (one pair of scissors) or aggregate (multiple pairs) interpretation; in the other, *are* imposes aggregate semantics. The latter derivation provides an alternative route to an interpretation made available anyway by the former derivation.

This grammar predicts that an NP subject of *are* that lacks the [NUM pl] feature has aggregate semantics.
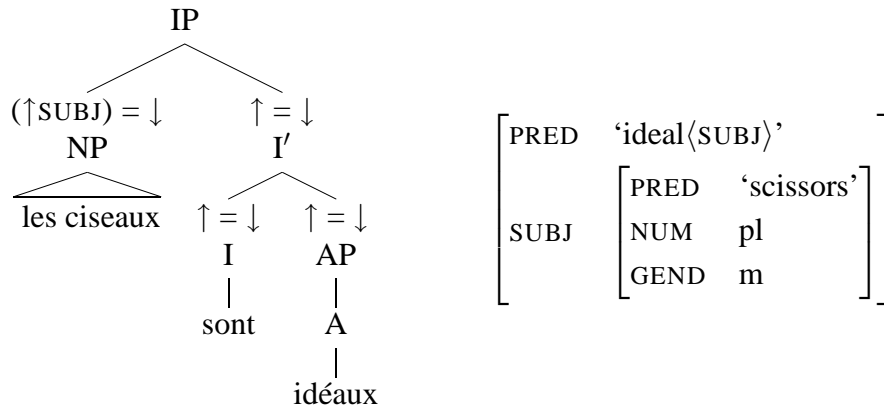
Returning now to French, we posit similar disjunctive equations for the plural target forms *idéaux* and *sont*:
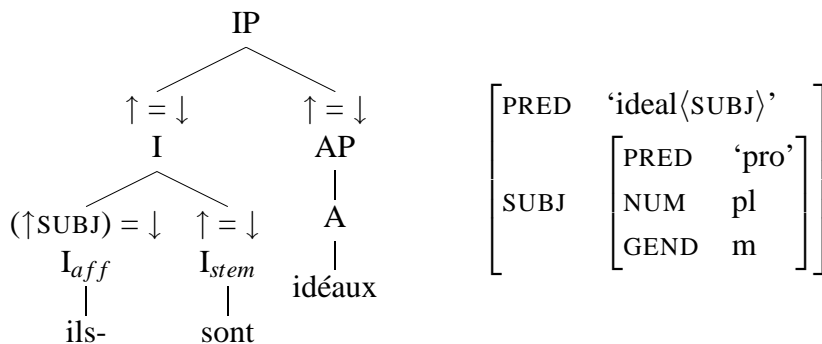
(13)   Some French lexical entries.

idéal: A   (↑PRED) = 'ideal⟨SUBJ⟩'
               (↑SUBJ GEND) = m
               (↑SUBJ NUM) = sg
               ((↑SUBJ)$_\sigma$ AGGREGATE) = −

idéaux: A   (↑PRED) = 'ideal⟨SUBJ⟩'
               (↑SUBJ GEND) = m
               (↑SUBJ NUM) $=_c$ pl ∨ ((↑SUBJ)$_\sigma$ AGGREGATE) = +

ciseaux: N   (↑PRED) = 'scissors'
               ¬(↑PERS)
               (↑NUM) = pl
               (↑GEND) = m

sont: I$_{stem}$ ¬(↑SUBJ PERS)
               (↑SUBJ NUM) $=_c$ pl ∨ ((↑SUBJ)$_\sigma$ AGGREGATE) = +

ils-:   I$_{aff}$ (↑PRED) = 'pro'
               ¬(↑PERS)
               (↑NUM) = pl
               (↑GEND) = m

Weak subject pronouns are verbal prefixes (Miller 1992, Miller and Sag 1997). Assuming a word syntax model of morphology in which functional annotations appear on sublexical nodes, the first prefix slot is designated for the subject function, as illustrated in (15).

(14)   c- and f-structures for (3):

$$
\begin{bmatrix}
\text{PRED} & \text{`ideal}\langle\text{SUBJ}\rangle\text{'} \\
\text{SUBJ} & \begin{bmatrix} \text{PRED} & \text{`scissors'} \\ \text{NUM} & \text{pl} \\ \text{GEND} & \text{m} \end{bmatrix}
\end{bmatrix}
$$

(15)   c- and f-structures for *Ils sont idéaux*:

$$
\begin{bmatrix}
\text{PRED} & \text{`ideal}\langle\text{SUBJ}\rangle\text{'} \\
\text{SUBJ} & \begin{bmatrix} \text{PRED} & \text{`pro'} \\ \text{NUM} & \text{pl} \\ \text{GEND} & \text{m} \end{bmatrix}
\end{bmatrix}
$$

Turning now to the singular form *idéal*, the lexical entry states that the subject must be morphologically *and* semantically singular (see the last two equations in the lexical form).

The semantic condition is controversial: the singular target form has been claimed to act as a default, appearing when the subject lacks agreement features, much as we have said for third person (Da Sylva 1998). Singular is used with clausal and VP subjects (examples from Da Sylva 1998, p. 57):

(16)   a.   Bien manger est   bon   pour la   santé.
              well eat.INF be.3SG good.M.SG for   the.F health
              'Eating well is good for you.'

        b.   Que vous nous ignoriez n'est   pas   surprenant.
              that you us   ignore   NEG'be.3SG NEG surprising.SG
              'That you ignore us is not surprising.'

However it is also possible that the singular forms in (16) reflect semantic agreement with the subject: 'eating well' is a single habit; 'that you ignore us' is a single proposition.

Coordination facts support this view. Coordinate VPs often trigger singular agreement, since the conjunction of two propositions (habits, events, etc.) can often be lumped together into a single

(conjoined) proposition (habit, event, etc.). But they trigger plural agreement as long as the meaning is readily conceptualized as an aggregate.[9]

(17) a. Manger équilibré et faire   du   sport sont bons   / est bon   pour la santé.
          eat.INF balanced and do.INF some sport are good.PL / is good.SG for   the health
          'Eating a balanced diet and doing sports is good for you.'

      b. Dormir   dans un hôtel romantique et   faire   des ballades en gondole sont/*est
          sleep.INF in   a hotel romantic   and do.INF the ballads in gondola are/*is
          inclus   dans le prix.
          included in   the price
          'Sleeping in a romantic hotel and gondola ballads are included in the price.'

      c. Savoir   taper à la machine et connaître   l'anglais   sont nécessaires
          know.INF type at the machine and be.familiar.INF the'English are   necessary.PL
          pour ce   travail.
          for   this work
          'Typing and English fluency are necessary for this work.'

      d. Regarder la télé et boire   de la bière toute la journée sont/*est les deux
          watch.INF the TV and drink.INF of the beer all   the day   are/*is   the two
          seules choses qui l'intéressent.
          only   things that him'interest
          'Watching TV and drinking beer all day are the only two things that interest him.'

Da Sylva (1998, p. 57) argues for the default account, pointing out correctly that there is no plausible source of a number feature in an infinitive or clause. But on the present proposal the subject infinitive or clause itself does not provides a number feature; rather the agreement targets do. The number agreement equation associated with the verb *est*, for example, is a defining equation, not a constraining equation.

4   Dissolving the person/number paradigm

The analysis proposed above fails to account for agreement with *nous* or *vous*. These pronouns must be morphologically plural, since they obligatorily trigger plural agreement on the finite verb:

(18) a. Nous sommes/*suis...
          we   be.1PL/1SG
          'We are...'

      b. Vous êtes/*es...
          you.PL be.2PL/2SG
          'You are...'

But if *nous* and *vous* are plural then our proposal wrongly neutralizes semantic plurality when one of these pronouns triggers plural agreement on a predicate adjective. Recall that the morphological plurality of *ciseaux* robs the predicate adjective's plural feature of its semantic potency (intuitively, because the plural agreement is understood to result from the morphology of *ciseaux*). In contrast, in

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[9]Examples 17a-c are due to Pascal Denis. Olivier Bonami supplied example 17d.

the case of *nous* and *vous*, the adjective number covaries with the semantic interpretation (see (1) and (7)). The conundrum diagramed in (5) above remains unsolved.

As noted above, we can introduce new features, perhaps distinguishing the more 'morphologically salient' plurality of a pluralia tantum nouns from the plurality of *nous* and *vous*. But this would be ad hoc: there is only one plural category in French morphosyntax.

It turns out that this problem is best solved not by *introducing* unmotivated complexity into the grammar, but rather by *removing* unmotivated complexity from the (traditional) grammar.

The essential idea is simply that *nous* and *vous* are not plural forms. Semantically they are actually ASSOCIATIVE forms: *nous/vous* refer to the speaker/hearer plus associates, not to a plurality of speakers/hearers (more on this in the following section). The proposal is that morphosyntactically they are distinguished from *je* and *tu* by the PERSON feature alone. This section presents this proposed revision to the paradigm and shows how it solves the agreement puzzle, while the following section motivates the revised paradigm.

We noted above that the morphosyntactic agreement features of *je* and *nous* must differ in order to account for finite verb agreement; likewise for *tu* versus *vous* (see (18)). So two new PERSON values are proposed: 1a ('first person associative') and 2a ('second person associative'), for *nous* and *vous* respectively. Then *je* and *nous* are distinguished by PERSON, not NUMBER; and likewise for *tu* and *vous*.

(19) a. French PERSON values: 1s, 1a, 2s, 2a

  b. French NUMBER values: sg, pl

Note that 1a and 2a are morphosyntactic atoms, not abbreviations for feature complexes.

Following Benveniste 1966 and many others, so-called third person is treated as the absence of a PERSON feature. Thus VP and clausal subjects, which lack person morphology altogether, trigger so-called third person on the verb (recall (16)).

In the revised paradigm, NUMBER subclassifies third person forms, but plays no role in the classification of first or second person forms. This holds for subject pronominal prefixes as well as finite verb stems:

(20) Revised first and second person paradigm.

subjects	finite verbs	
je-	*suis*	[PERS 1s]
nous-	*sommes*	[PERS 1a]
tu-	*es*	[PERS 2s]
vous-	*êtes*	[PERS 2a]

(21) Revised third person paradigm (all are ¬PERS).

subjects		finite verbs	
il-, elle-, on- *Pierre, l'eau...*	[NUM sg]	*est*	NUM $=_c$ sg AGG $= -$
ils-, elles- *les gens, les ciseaux...*	[NUM pl]	*sont*	NUM $=_c$ pl $\vee$ AGG $= +$

Under this new paradigm the NUMBER AGREEMENT CONUNDRUM disappears. Finite verb agreement, first of all, is trivial. Each subject form is compatible only with the corresponding finite verb form shown in the cell to its right.

(22)   a.   je   suis
            [PERS 1s] [PERS 1s]
            'I am'

       b.   il   est
            [NUM sg] [NUM sg]
            'he is'

       c.   * tu   suis
            [PERS 2s] [PERS 1s]
            (inconsistent f-structure)

Turning now to predicate adjectives, consider first morphologically plural NP subjects. We predict that such subjects trigger plural on predicate adjectives, but this plural (on the adjective) has no semantic force. Semantic number for morphologically plural NPs depends only on the semantics of the NP itself: an ordinary plural like *soldats* 'soldiers' denotes an aggregate, while a pluralia tantum like *ciseaux* can denote an aggregate (more than one pair of scissors) or non-aggregate (a single pair):

(23)   a.   Les soldats sont   loyaux/*loyal .
            [NUM pl]   [NUM pl] [NUM $=_c$ pl]
            'The soldiers are loyal.'

       b.   Ces ciseaux sont   idéaux/*idéal.
            [NUM pl]   [NUM pl] [NUM $=_c$ pl]
            'These scissors are ideal.'

This follows from the disjunctive equation (recall (13) above): since the subject trigger is morphologically plural, the grammatical number disjunct becomes an option, so plural semantics is not forced by the adjective.

Unlike those NPs, the first and second person pronouns lack number features. Thus the plural predicate adjective's semantic number equation must be selected.

(24)   a.   Vous   êtes   loyal.
            [PERS 2a] [PERS 2a] [NUM sg]
            'You (one formal addressee) are loyal.'

       b.   Vous   êtes   loyaux.
            [PERS 2a] [PERS 2a] [AGG +]$_\sigma$
            'You (multiple addressees) are loyal.'

The first person singular pronoun *je* lacks a morphosyntactic NUMBER feature, hence an adjective must have semantic force. Since *je* refers to the speaker, which is always non-aggregate, the pronoun cannot serve as subject of a plural adjective. Examples like (25a) are ruled out on because the left disjunct is violated and the right disjunct produces an ill-formed semantic structure.

(25)   a.   * Je   suis loyaux.
            [AGG –]   [NUM $=_c$ pl] $\vee$ [AGG +]
            ('I am loyal.PL.')
            Violates constraining equation (no NUM feature); AGG values conflict

> b. On a été loyaux.
> [NUM sg] [NUM sg] been [AGG +]
> 'We have been loyal.'

The 'generic' pronoun *on*, however, has a broader range of meanings, as noted above (roughly 'we', 'someone', or 'people'; Koenig 1999, Koenig and Mauner 1999, inter alia). The form of the adjective depends on the desired interpretation: for an aggregate that includes the speaker, plural is used (25b). This is predicted since the subject's [NUMBER sg] feature violates the constraining equation, forcing the aggregate interpretation.

5   Eliminating number from the person paradigm

It has long been noted that the word 'plural', when part of the terms 'first person plural' and 'second person plural', is a misnomer (inter alia, Jespersen 1924, p. 192; Benveniste 1966; Lyons 1968; Harley and Ritter 2002; Cysouw 2003). A plural like English *chairs* refers to an aggregate of objects each of which falls under the predicate *chair*. The first person singular refers to the speaker, so a true 'first person plural' should refer to a group of speakers. But this is not the meaning of 'we' nor of similar forms in other languages. Instead, 'we' refers to a group that includes the speaker (see Cysouw 2003, p. 69ff for discussion). Cysouw (2003, p. 69) points out that what the most common meaning of 'we' resembles within the nominal domain is not the plural but rather ASSOCIATIVE case, such as Hungarian *-ék*, as in *János-ék* 'John and associates'. Benveniste (1966, p. 203) observed that '... *nous* is not a quantified or multiplied *je*; it is a *je* expanded beyond the strict limits of the person, enlarged and at the same time amorphous.' Similarly, the prototypical meaning for the so-called second person plural is associative rather than a true plural: it is not specifically a group of hearers but rather any group that includes the hearer.

Cysouw (2003) complements this theoretical argument with extensive, detailed empirical evidence from person paradigms in a large set of languages of diverse typology. The results of this study are striking: while these paradigms vary considerably across languages, true 'first person plurals' and 'second person plurals' do not exist in any language. Using the standard notation in which 1, 2, and 3 represent speaker, hearer, and other, respectively, pronouns and inflections can be described as refering to 1+2 (speaker and hearer; 'first person inclusive'), 1+3 (speaker and other; 'first person exclusive'), 2+3, 1+2+3, and so on. Of the seven logical possibilities for participant groups, all are attested in the world's languages *except* the 'true plurals' of first and second person:

(26)   Attested person complexes

Group	Common term	Description
1+2	minimal inclusive	'we', includes addressee, excludes other
1+3	exclusive	'we', includes other, excludes addressee
1+2+3	augmented inclusive	'we', complete
2+3		'you-all', addressee(s) and others
3+3		'they'

(27)   Unattested person complexes

Group	Description
1+1	'we', mass speaking (e.g. unison)
2+2	'you-all', only present audience

Strikingly, 'true plurals', meaning 1+1 or 2+2, are the only combinations that are not grammaticalized in *any* language.

This semantic evidence is further strengthened by morphological evidence. So-called 'plural' first and second person pronouns very rarely employ the plural morphology found with nominals, as noted already by Benveniste (1966, p. 233): 'Dans la grande majorité des langues, le pluriel pronominal ne coïncide pas avec le pluriel nominal.'[10] According to Cysouw (2003, p. 70), in the few rare cases where nominal and pronominal plural morphology do coincide, the pronominal plural is restricted to only part of the paradigm, functionally superfluous, or optional.

Based on this survey, Cysouw advocates

> 'a change in emphasis from NUMBER to KIND. In other words, a change will be proposed from a QUANTITATIVE to a QUALITATIVE criterion. ... The traditional notion highlights the number of participants: there are singular (one) and plural (more than one) pronouns. ... This traditional classification is not only semantically and morphologically awkward, as set out above; it also gets tangled up when it has to incorporate the difference between an inclusive and an exclusive first person plural.

> 'The perspective that will be taken here is a different one. In this view, there are groups of participants, as opposed to singular participants. ... The number is not important, only the kind of participants involved.' (Cysouw 2003, p. 70)

Returning now to French, the four proposed person values— *1s*, *1a*, *2s*, and *2a*— have the meanings shown in the following table.

(28)   Speech act related semantics of the PERS feature
        (S: speaker; H: hearer; $H_{intimate}$: intimate/informal hearer).

PERSON	pronouns	speech act participants
1s	*je*	$= \{S\}$
1a	*nous*	$\supseteq \{S\}$
2s	*tu*	$= \{H_{intimate}\}$
2a	*vous*	$\supseteq \{H\}$
(none)	*il(s), elle(s), on*	$= \{...\}$

First person singular (*1s*; *je* 'I') refers to the singleton set including just the speaker, $\{S\}$. First person associative (1a; *nous* 'we') refers to a superset of $\{S\}$. It is assumed here that this superset is not necessarily a proper one, i.e. it can equal $\{S\}$ or include other elements as well. The *1s* and *1a* values form a Horn Scale (Horn 1989, ch. 4), so by scalar implicature the stronger 1s blocks the weaker *1a*. Hence *nous* is not used to refer to the speaker alone, as long as the more specific competitor *je* is available (more on this just below).

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[10]Quoted by Cysouw (2003, p. 70), who translates it thus: 'In the great majority of languages, the pronominal plural does not coincide with the nominal plural.'

Similarly, the special intimate second person singular form *tu* blocks the more general *vous*, which refers to any set that includes the hearer. As a result, *vous* has an 'elsewhere' distribution: it is used for a singular non-intimate addressee or for a plural group that contains the addressee (whether that addressee is intimate or not).

So-called third person is the lack of a PERSON feature. Assuming that the third person pronouns are in paradigmatic opposition to the other pronouns, then they will similarly be blocked by the other forms via scalar implicature, so that *il(s)/elle(s)* will not normally be used to refer to the speaker, hearer, or a group containing speaker or hearer (regarding *on*, see just below).

Apart from greatly simplifying the semantics, the assumption of blocking by scalar implicature may help to explain the special 'authorial *nous*' illustrated in example (7) above. Assuming a stylistic proscription against using the first person singular (*je*) in discursive prose, then *je* is removed from competition, leaving *nous* as the best candidate. Interestingly, this removal of the first person singular blocker is relative to register, suggesting the present pragmatic account. Similarly, as noted in footnote 7 above, weak subject *nous* is now primarily limited to written French and has all but disappeared from the spoken language. With *nous* removed as a blocker, the weaker third person *on* fills the role of refering to a first person group elsewhere in spoken French.[11]

One rather famous fact about most pronoun systems, including that of French, is not explained by the semantics given in (28). A group consisting of speaker and hearer (1+2) matches both the semantics given for *nous* ('set that includes the speaker') and for *vous* ('set that includes the hearer'). Neither semantic form entails the other, so we wrongly predict that there is no blocking and either pronoun can be used. In fact *nous* rather than *vous* is used.[12] One solution is to modify the semantics of *vous* so that it refers to a group containing any speech act participant (P), defined as either the speaker or hearer. Hence $\supseteq \{P\}$ would replace $\supseteq \{H\}$ in (28). Then the stronger *nous* ($\supseteq \{S\}$) blocks the weaker *vous* ($\supseteq \{P\}$).[13]

6 An ASSOCIATIVE feature?

Although we have proposed that *je/nous* are distinguished by person, as are *tu/vous*, an alternative is to replace Number with a new feature Associative to cross-classify the non-third person forms. On the alternative view, *je* and *tu* would be [ASSOCIATIVE –] while *nous* and *vous* would be [ASSOCIATIVE +]. But while this may be appropriate for some languages, French is not among them.

On the present account 1s and 1a form a 'natural class' with respect to semantics, as do 2s and 2a; indeed they are very similar semantically (see (28)). But with respect to morphosyntax they are atoms. There do not appear to be any phenomena from French morphosyntax that pick out these groups, except where there is an independent semantic explanation. Consider coordination, as in (29). When 1s coordinated with 3p, the resulting coordinate NP triggers 1a agreement; when 2s is coordinated with 3p, the result is 2a.

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[11]Not all such special uses of pronouns can be explained in this way, however. What Zwicky (1977, p. 716) calls the 'phoney inclusive' *we* in *Are we ready for dinner?* (said by a nurse to a patient), for example, may derive from a display of empathy.

[12]This pattern, where inclusive (1+2) is morphologically grouped with first person groups, is by far the most common cross-linguistically. Purported exceptions where inclusive is expressed by second person forms include some Algonquian languages and a few others (Zwicky 1977). More recently, Cysouw (to appear) has called into question even those rare cases.

[13]However, I am unaware of independent evidence favoring this particular solution.

(29)   a.   [Moi   et   mes amis]   sommes   / *sont   loyaux.
            me   and my friends be.1P   / *be.3.PL   loyal.PL
            {S,...}   1p = {S,...}   3: blocked
            'My friends and I are loyal.'

       b.   [Toi   et   tes   amis]   êtes   / *sont   loyaux.
            you   and your friends be.2P   / *be.3.PL   loyal.PL
            {H_{intimate},...}   2p = {H,...}   3: blocked
            'You and your friends are loyal.'

An 'augmented' 1s triggers 1a and an 'augmented' 2s triggers 2a. If, as we have posited, 1s and 1a do not share a morphosyntactic feature that distinguishes them from the rest of the paradigm, then facts such as these are difficult to explain in terms of a computation operating on morphosyntactic features (such as the system proposed by Dalrymple and Kaplan (2000)). But there is no reason to think such a system is in fact operating. The facts shown follow straightforwardly from the semantics of the different person values. A system for morphosyntactic resolution in coordinate structures is superfluous.

Moreover, when morphological and semantic resolution diverge, it is the semantic resolution that is operative. Although this has not been tested for person resolution, we know that gender resolution is semantic rather than grammatical, wherever possible (see Wechsler (to appear) and Wechsler and Zlatić (2003), Ch. 8 for evidence from French, Serbian/Croatian, Icelandic, Luganda, and Rumanian). When a masculine and feminine are conjoined in French, as in example (30a), the result is masculine plural agreement. But is it the morphological or semantic gender relevant? We can test this with nouns such as *sentinelle* 'sentry', which is morphologically feminine but can refer to a male or female. In (30b) pragmatics dictates that the sentry be male (since he has a wife).

(30)   a.   Suzanne et   Pierre ont été   pris   / *prises   en otage.
            Suzanne and Pierre have been taken.M / *taken.F.PL hostage.
            'Suzanne and Pierre were taken hostage.'

       b.   La sentinelle et   sa femme ont été   pris   / *prises   en otage.
            the sentry   and his wife   have been taken.M / *taken.F.PL hostage
            'The sentry and his wife were taken hostage.'

The coordinate NP *la sentinelle et sa femme* contains two grammatically feminine conjuncts, but denotes a mixed-sex pair. As shown, masculine plural agreement is preferred, suggesting semantic rather than morphosyntactic resolution.

In conclusion, the coordination resolution facts do not support a morphosyntactic feature to pick out sets such as {1s, 1a}, {1s, 2s}, {2s, 2a}, or {1a, 2a}. Rather, a semantic account is both necessary and sufficient to explain these facts.

Moreover, French morphology supports the proposed new paradigm (20) over the traditional one (6). No French first or second (traditional) person morphemes, whether on agreement triggers or targets, are neutral with respect to number; nor is there an associative morpheme marking both 1a and 2a. Thus there appears to be no morphological justification for the first and second person rows in the traditional paradigm table (6). This is true regardless of whether the vertical dimension is the category plural or associative.

In addition, note that any ASSOCIATIVE feature would be applicable only to first and second person, begging the question of why it does not exist in the third person (as it does in Hungarian; see Section 5 above). This applies not only to the pronouns but throughout the grammar, in all agreement

targets. The distinction between *tu* and *vous* is marked *only* on person agreement targets (basically finite forms and anaphoric pronouns). Compare the following two sentences:

(31) a. Tu   es   loyal.
          you.2SG be.2SG loyal.SG
          'You (one intimate addressee) are loyal.'

      b. Vous   êtes   loyal.
          you.2PL be.2PL loyal.SG
          'You (one formal addressee) are loyal.'

If we keep singular reference constant and move from informal to formal, the finite verb form changes but the adjective form remains the same. If *tu* and *vous* were distinguished by some other feature such as +/−ASSOCIATIVE, then there would be no reason necessarily to expect this feature to be limited to person agreement targets. We might expect to find it showing up elsewhere.

7   The formality (T/V) distinction

In the sociolinguistic literature (e.g. Brown and Gilman (1960)) the formal/informal second person distinction is sometimes called the *T/V* distinction, after *tu/vous* and their cognates across many Indo-European languages (most of which begin with *t-/v-*). The analysis above differs from the most common account of the T/V phenomenon in some respects. The more common story holds that plural number has been coopted to signify politeness, power, or related social constructs. In a classic sociolinguistic study, Brown and Gilman (1960) argue that 'plurality is a very old and ubiquitous metaphor for power'. Corbett (2000, ch. 7 'Other uses of number') expands and refines the 'plural equals power' metaphor, noting a broader range of uses for the plural among the world's languages. Plural can mark respect or politeness (as in the languages of Europe); ritual avoidance (Mparntwe Arrernte; Pama-Nyungan, Australia); or modesty (the Greek and Latin 'plural of modesty'; the 19th century Russian of Chekhov).

On the present account of French, *tu* and *vous* are distinguished by PERSON alone, not NUMBER. In a sense this is consistent with the 'plural means formal' (or power, etc.) story— although following Cysouw we might better say 'associative means formal.' The present claim is that this association between associative and formal is not grammaticalized in the morphosyntactic NUMBER system, but rather in the semantics of the personal pronouns: *tu* is specialized for a single informal addressee, hence implicitly grouping together 'singular' and 'informal'.

The present account does differ from the 'plural means formal' story with respect to markedness. For us, *tu* rather than *vous* is taken as the semantically marked form. We analyzed the feature [PERSON 2s] (*tu* and agreeing forms) as specialized for a singular informal addressee, with *vous* the more general form occurring when *tu* is not appropriate (see (28)).

The present claims apply to French. But some of the purported cases of plural as metaphor for power, politeness, etc. in other languages should probably be reexamined to determine the direction of markedness. Take for example the case of avoidance behavior in Mparntwe Arrernte (described by Wilkins 1989, pp. 46-7 and 123, as cited in Corbett 2000, p. 220). After a boy has been through initiation, he and his younger sisters are to avoid certain types of direct contact, such as passing objects directly to each other. In addressing one another they avoid the second person singular form, using the plural instead. If we assume that the singular is the semantically marked alternant that normally blocks the plural, then this special usage of the plural would follow automatically: the singular blocker

is removed in certain pragmatic contexts due to the taboo against direct address.[14] More research is needed to settle this issue, and the answer will likely differ across languages.[15]

As observed in the previous section, the claim that PERSON rather than NUMBER distinguishes formal from informal second person leads to a prediction: formality should be distinguished only on PERSON agreement targets, not on NUMBER agreement targets. This prediction appears to be validated for French, but how does it fare in other languages?

The Slavic languages are split with respect to this issue (Corbett 1983). Predicate adjectives show agreement in number, gender, and case, but not person. Some Slavic languages, including Bulgarian, are roughly like French, in that the predicate adjective form (roughly) reflects meaning rather than form, leading to apparent agreement mismatches. Recall Bulgarian example (2) above, repeated here:

(32)   Bulgarian

    a.   Vie ste   učtiv   i   vnimatelen.
           you be.2PL polite.SG and attentive.SG
           'You (one formal addressee) are polite and attentive.'

    b.   Vie ste   učtivi   i   vnimatelni.
           you be.2PL polite.PL and attentive.PL
           'You (multiple addressees) are polite and attentive.'

In others, including Serbian/Croatian, predicate adjectives pattern together with the finite verb. Thus primary predicate adjectives distinguish formality:

(33)   Serbian/Croatian

    a.   Ti si   duhovit   / duhovit-a.
           you AUX.2SG funny.M.SG / funny-F.SG
           'You (one informal male/female addressee) are funny.'

    b.   Vi ste   duhovit-i.
           you AUX.2PL funny-M.PL
           'You (one formal addressee or multiple addressees) are funny.'

(See Corbett 1983 for a detailed survey of this issue across the Slavic languages.) Serbian/Croatian primary non-finite predicates, including verb participles and predicate adjectives, pattern with finite predicates. On all of these primary predicate agreement targets, the singular informal second person pronoun *ti* triggers singular agreement while the plural/formal pronoun *vi* triggers plural. The adjective lacks person agreement morphology, and its number covaries with *ti* (sg.) / *vi* (pl.), as shown. It is hard to avoid the conclusion that the traditional person/number paradigm is correct for this language: *ti/vi* are distinguished by morphological number.[16]

However, even in the Serbian/Croatian person paradigm, number has a very restricted role. Number apparently marks only those personal pronouns *in nominative case*. Three different types of agreement will establish this generalization.

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[14]Similarly, English plural pronouns are often used with singular reference to avoid specifying gender when it is unknown, as in *Someone(sg.) left their(pl.) coat*. Contrast the decidedly worse *??Some girl left their coat*, blocked by *Some girl left her coat*; and **Some book is missing their cover*, blocked by *Some book is missing its cover.*

[15]Corbett (2000) himself does not explicitly state that the plural/honorific form is the marked one, but he implies as much by commenting, e.g., that 'plural forms are often used of a single addressee to indicate respect.' (Corbett 2000, p. 219)

[16]Of course, direction of markedness is an independent issue: *ti* may still be the semantically marked member of the opposition, as claimed above for French *tu*.

First, predicate adjectives that are predicated of non-nominatives, as in (34), use number to indicate cardinality, much as French predicate adjectives do. All the examples below mean 'I consider you funny', but differ regarding the addressee(s) as indicated:

(34) a.   Ja te   smatram duhovit-om   /-im.
           I you.INFORMAL.ACC consider funny-INST.F.SG /-M.SG
           'I consider you (one informal female/male addressee) funny.'

      b.   Ja vas   smatram duhovit-om   /-im.
           I you.PL.ACC consider funny-INST.F.SG /-M.SG
           'I consider you (one formal female/unmarked addressee) funny.'

      c.   Ja vas   smatram duhovit-im(a).
           I you.PL.ACC consider funny-INST.PL
           'I consider y'all funny.'

Sentence (34b), for example, has a (so-called) plural pronoun but singular agreement on the adjective. Much like the French examples above, this is interpreted as a single, formal addressee.

The second example is from reflexive binding. Serbian/Croatian reflexives must be bound by either the nominative subject, or a non-nominative 'logical subject' such as a dative experiencer (Zlatić 1996, 1997a, 1997b). Interestingly, a reflexive can only show 'semantic agreement' with a non-nominative antecedent, while 'grammatical' (masculine plural) or semantic agreement is possible with nominative *vi*. Taking nominative first, the following sentence could be uttered to one female addressee, for example:

(35) Vi   ste   voleli   sami/samu   sebe.
      you.NOM.PL AUX2.PL liked.M.PL own.NOM.M.PL/own.ACC.F.SG self.ACC
      'You liked yourself.' you = one female addressee

When *vi* is a Nominative binder, thereflexive can show either masculine plural, reflecting the grammatical features of *vi*, or feminine singular for one female addressee.

However, when the binder is a non-nominative form, only feminine singular agreement is possible (again, assume the addressee is one female). Examples (36a) and (36b) illustrate dative and accusative binders, respectively:

(36) *Context: One female addressee*

      a.   Vama   je   bilo   žao   same/   *samih/ *samog   sebe.
           you.DAT AUX3.SG be.NT.SG sorry own.GEN.F.SG/ GEN.PL/ GEN.NT.SG self.GEN
           'You felt pity for yourself.'

      b.   Vas   nije   bilo   briga za samu/*same   sebe.
           you.ACC NOT+AUX was.NT.SG care for own.ACC.F.SG/*own.ACC.M.PL self.ACC
           'You (one female addressee) didn't care about yourself.'

Third, attributive modifiers show grammatical agreement with nominative *vi* (37) but semantic agreement with non-nominatives.

(37) a.   Jadni   Vi
           poor.M.PL you
           'poor you' (formal; male or female, one or more than one)

    b.   * Jadna   Vi
         poor.F.SG you

         'poor you' (unacceptable even for one female addressee)

(38)   a.   Vas   jadnu   (niko   ne   postuje).
         you.ACC poor.ACC.F.SG nobody NEG respect

         '(Nobody respects) poor you.' (one female addressee)

    b.   Vas   jadnog   (niko   ne   postuje).
         you.ACC poor.ACC.M.SG nobody NEG respect

         'Nobody respects poor you.' (one male addresee)

    c.   Vas   jadne   (niko   ne   postuje).
         you.ACC poor.ACC.PL nobody NEG respect

         'Nobody respects poor you.' (multiple addressees)

Summarizing, nominative *vi* triggers grammatical number agreement with its inherent features, namely masculine second person plural; but targets agreeing with non-nominative forms lack grammatical number agreement and instead are semantically interpreted.[17]

Within the present framework of assumptions these facts indicate, with respect to number, that nominative personal pronouns are marked for NUMBER, while non-nominatives are not. This assumes the traditional person/number paradigm in which *ti* is [PERSON 2, NUMBER sg] and *vi* is [PERSON 2, NUMBER pl]— but only for nominatives. Other case forms like accusative *vas* are unmarked for number, so that the default semantic number applies instead.[18]

The notion that *tu/vous* are distinguished from one another by PERSON rather than NUMBER is an appealing one. After all, PERSON classifies forms of address, the more natural home for the formality distinction. But the present analysis does not invalidate the Brown and Gilman (1960) type insight that plurality is a common metaphor for power, politeness, and related social relations. We may wish to modify the metaphor, referring to 'associative' rather than than 'plural' in many cases; or perhaps, as implied by our analysis, the operative connection is really between singularity and intimacy/informality/etc., with the plural form filling in elsewhere. In any case, this metaphor can be grammaticalized in different ways, with the French system representing only one way.[19] In Serbian/Croatian, by contrast, NUMBER has apparently been coopted to express formality within the nominative pronoun paradigm.

8   Conclusion

The most extensive typological studies of person paradigms have led to a rather surprising conclusion: notwithstanding the ubiquity of the traditional person/number tables in grammatical descriptions, the grammatical category of NUMBER actually has little or no place in the person paradigms of the world's languages (Cysouw 2003; see also Harley and Ritter 2002 specifically on pronoun systems). The implications of this conclusion for the study of agreement have not yet been fully appreciated. When it is applied to French, the resulting reorganization of the person paradigm effectively dissolves certain

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[17]In addition, even nominative *vi* alternatively triggers semantic agreement on reflexive pronouns; see (35).

[18]See Wechsler and Zlatić 2003, ch. 9 for discussion.

[19]Plurality may indeed be the right notion for some cases, as suggested by the use of plural for honorification in third person in some languages.

apparent agreement mismatches. At the same time, the facts of Serbian/Croatian in the previous section show that agreement systems can evince distinctions that are not reflected in the morphological paradigms themselves. More research is needed in order to exploit the insights into morphological paradigms and bring them to bear on problems of agreement systems.

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