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Gender in English, German, and other languages: Problems with the old theory, opportunities for the new[1]

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Nominal gender-marking is a complex linguistic device, one aspect of which is the obligatory use of masculine, feminine, and neuter articles for modifying nouns in languages such as German. By way of illustration, German speakers must use the masculine *der* (and its variants) as the definite article for some nouns, e.g., 'moon' (*der Mond*), the feminine *die* for other nouns, e.g., 'sun' (*die Sonne*), and the neuter *das* for still other nouns, e.g., 'girl' (*das Mädchen*). What makes nominal gender especially interesting is its intimate relations to important syntactic devices such as anaphora. Indeed, pronoun use is arguably the strongest indicant that *der* is masculine, *die* is feminine, and *das* is neuter (Ibrahim 1973). Because speakers of German generally use 'he' to request a 'spoon' (*der Löffel*), 'she' to request a 'fork' (*die Gabel*), and 'it' to request a 'knife' (*das Messer*), *der* (and *Löffel*) must be masculine, *die* (and *Gabel*) must be feminine, and *das* (and *Messer)* must be neuter.

This paper addresses a more controversial aspect of nominal gender, namely its psychological functions and implications. These functions have puzzled theorists since the time of Freud and before because gender-marking for any given concept differs across languages, and because some languages such as English do not employ obligatory gender-marking. Nonetheless, three *a priori* factors suggest that obligatory gender-marking may be interesting and important from a psychological point of view. One is the effort required to learn the gender system in such languages, especially for non-native speakers (see e.g., Corbett 1991:7). A second factor is that historically, obligatory gender-marking is remarkably persistent in many languages and must be serving some important psychological functions. The third factor is the elevated frequency of use that obligatory gender-markers exhibit. A comparison with the pronoun *he* will serve to illustrate this elevated frequency: Although educated Americans over the course of their lifetime use *he* and its variants more than 10,000,000 times in reading alone by one estimate (MacKay 1980a), *der*, *die*, or *das* and their variants are used with virtually every German noun, and may occur in order of magnitude more frequently than *he* and its variants. One consequence of this overwhelming frequency is that processes underlying the perception and production of obligatory gender-marking become automatic and unconscious during childhood, an effect that lasts throughout life. Practice of such magnitude may also have other effects that are beyond the ken of present-day psychology, and until psychological research can determine such effects, the claim that obligatory gender-marking is a trivial phenomenon must be treated with skepticism.

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To help stimulate such research, the present paper develops a new theory in which effects of obligatory gender-marking are anything but trivial. On the positive side, the theory suggests that nominal gender enables comprehenders and learners to transfer habitual attitudes and emotional reactions from their interpersonal world to the world of ideas and things, and thereby relate in a familiar, personal, and culture-specific way to newly encountered concepts and objects. On the negative side, the theory suggests that traditional gender stereotypes underlie the gender-marking of nominal concepts, and that gender-marking transmits these stereotypes to children learning the language, and thereby serves to perpetuate these stereotypes in a subtle, unconscious and enduring manner.

To set the stage for this new theory, I first describe the more complex "structuralist" theory wherein nominal gender carries no semantic or psychological significance for speakers, listeners, or learners of a language. I next describe three broad classes of gender-related phenomena that are problematic for this "Two-Types" theory, despite its widespread acceptance in mainstream philosophy, linguistics, anthropology, and psychology over the past 40 years (see e.g., Bock 1982, Fodor 1959, Ibrahim 1973, Newmeyer 1998). Finally, I develop the new and simpler, "Unified" theory of nominal gender that explains these "problematic phenomena" and makes new predictions for future tests.

The Two-Types theory of nominal gender

Under the Two-Types theory, gendered languages exhibit two fundamentally different and conflicting patterns: natural gender vs. grammatical gender. Natural gender follows two rules in the theory: 1) Referential meaning (semantic features for male vs. female referents) determines gender in some languages, e.g., English; and 2) Sex-specific nouns in natural-gender languages take corresponding masculine or feminine gender, whereas inanimate referents take neuter gender. By contrast, grammatical gender follows two quite different rules in Two-Types theory: 1) Referential meaning does not determine gender; and 2) Nouns and their corresponding modifiers fall into two or three gender categories (masculine, feminine, and neuter) that are formal or arbitrary in nature and vary at random from one language to the next in the many Indo-European languages with grammatical gender. The main support for this "arbitrariness assumption" and Two-Types theory in general is that the same referent can take one gender-marker in one language and a different, and by inference, arbitrary gender-marker in some other language(s). For example, French marks 'knife' and 'child' as masculine and 'girl' as feminine, whereas German marks all three as neuter.

Three broad classes of problems with Two-Types theory

There are three broad classes of problems with the Two-Types theory. First there are unexplained classes of exceptions to natural-gender rules, the stereotype-congruent nature of exceptions to the natural-gender rule, and the unexplained exceptions to the arbitrariness assumption for grammatical-gender languages.

Unexplained classes of exceptions to natural-gender rules

There are four unexplained classes of exceptions to natural-gender rules. These include personification, reification, prototypic reference, and generic reference.

Speakers and writers of English generally use *he* and *she* rather than *it* when *personifying* inanimate concepts and objects such as time, ships, cars, the sun, and the moon. These uses are remarkably common (MacKay 1986), represent neither speech errors nor slips of the pen (see MacKay/Konishi 1980), and violate the natural-gender rule that inanimate referents take neuter gender requiring the use of *it*.

Reification refers to use of *it* in reference to humans of known sex, such as a baby, infant, child, corpse, or familiar adult toward whom the speaker feels antipathy, as in "Oh, no. Here it comes" (see MacKay/Konishi 1980). Such uses are deliberate, and violate the natural-gender assumption that only inanimate referents are neuter, whereas sex-specific referents are either masculine or feminine.

Prototypic reference includes use of *she* for sex-indefinite classes that are predominantly but not exclusively female, e.g., *model*, *secretary*, and *nurse*, and use of *he* for sex-indefinite that are predominantly but not exclusively male, e.g., *doctor*, *architect*, and *professor*. These uses are problematic for the natural-gender assumption that use of *he* is specific to male referents and *she* to female referents.

Generic reference refers to the fact that English partially resembles a grammatical-gender language rather than a strictly natural-gender language in the traditional (but currently changing) use of *he* to that are not predominantly male, e.g., *student*, *pedestrian*, and *person*, as in "A person over 65 should visit his doctor every year". Because females outnumber males in the class "person over 65", this use violates the natural-gender assumption that *he* only designates male or predominantly male referents.

The stereotype-congruent nature of exceptions to the natural-gender rule

Although proponents of Two-Types theory might suggest adding further rules to explain the prevoius points, the phenomena described next are difficult to explain in this way.

MacKay and Konishi (1980) and MacKay (1986) examined thousands of instances in large anthologies of English poetry and prose where writers used *he* or *she* to personify nonhuman antecedents, including objects, e.g., *the moon* and *the sun*, animals, e.g., *dogs*, *gorillas*, and *ladybugs*, and abstract entities and concepts, e.g., *old age* and *time*. These *he* vs. *she* personifications were remarkably consistent. For example, old age, cats, ships, countries, cars, nature, and the moon were always *she*-antecedents whereas time, dogs, death and the sun were always *he*-antecedents. Such consistency suggests that English exhibits implicit gender marking resembling German for *cats* (fem.) and *dogs* (masc.), and resembling French for *old age* and *moon* (fem.), and *time* and *sun* (masc.).

A second, even more remarkable aspect of personification in English literature was the stereotypic nature of *he-* vs. *she*-antecedents and their assigned traits. Animals consistently personified with *he* included, e.g., dogs, lions, gorillas, and wolves, and animals consistently personified with *she* included, e.g., cats, mice, ladybugs, and bees. To establish stereotype-consistency, MacKay and Konishi (1980) presented these *he-* and *she*-animals in random order to a large group of judges, who rated each animal on 12 semantic differential scales (after Osgood/May/Miron 1975).

Ratings on scales making up the potency dimension (i.e., weak vs. strong; tender vs. vigorous; light vs. heavy; small vs. big) were higher for *he-* vs. *she*-animals, and paralleled differences in potency ratings for *he*-humans (e.g., husband, father, uncle, brother) vs. *she*-humans (e.g., wife, aunt, mother, sister). Ratings on scales making up the activity dimension (i.e., calm vs. agitated; quiet vs. noisy; sedate vs. lively; slow vs. fast) were also significantly higher for *he-* than *she*-animals, and paralleled ratings for *he-* vs. *she*-humans. Such parallels suggest that stereotypes associated with *he-* vs. *she*-humans determined whether writers of English literature personified an animal as male vs. female.

Consider now the traits typically assigned to *he-* vs. *she*-animals, concepts, and objects in English literature. Traits commonly assigned to *he*-antecedents included brave, wise, clever, strong, active, savage, deceitful, mischievous, and angry, which received high ratings on potency and activity dimensions of the semantic differential test. However, traits commonly assigned to *she*-antecedents included pretty, sweet, nice, foolish, helpless, dependent, poor, and hysterical, which received significantly lower ratings for potency and activity dimensions on the semantic differential test. Moreover, traits for *he*-antecedents fell into the stereotypically male category of the Bem (1974) sex-role inventory significantly more often than traits for *she*-antecedents. Sexual stereotypes rather than the natural-gender rules of Two-Type theory apparently underlie all four sets of phenomena: the gender of personified antecedents, the traits assigned to *he* vs. *she*-antecedents, the sexual stereotyping of animal species, and the semantic differential ratings for *he-* vs. *she*-humans.

MacKay and Konishi (1994, 1995) also examined what pronoun speakers of English used "on-line" when completing sentence fragments containing human antecedents such as *corpse*, *fetus*, *baby*, *child*, *teenager*, and *adult*, and animal antecedents such as *dog* and *cat*. Each fragment came in several different versions for presentation to different subjects. For example, six different versions of the fragment, "If a corpse is taken care of in all ways", were created by replacing the word *corpse* with *fetus*, *baby*, *child*, *teenager*, or *adult*. As can be seen in Figure 1 (right ordinate), use of human pronouns in completing these six sentence fragments increased systematically from *corpse* and *fetus* (0%), to *baby*, *child*, *teenager*, and *adult* (89%). Next, a large group of judges independently rated the rationality and likeability of these referents on a 6 point scale, and their mean (combined) rationality and likeability ratings also increased systematically from *corpse*, to *fetus*, to *baby*, *child*, *teenager*, and *adult* (Figure 1, left ordinate), in the same way as use of human pronouns in the sentence completion task. These and other data indicated that speakers of English choose

pronouns on the basis of underlying attitudes (e.g., likeability) and beliefs (e.g., rationality) concerning their referents, and not just on the basis of features representing animacy and sex.

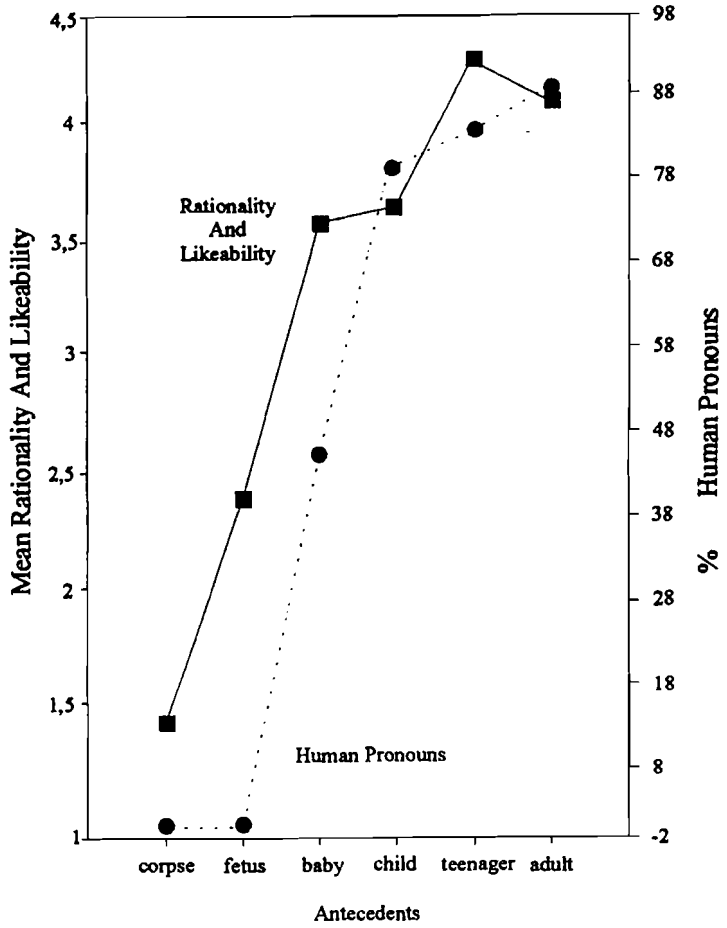

Figure 1: Human pronoun use (in %, solid line, left ordinate) in completing sentences for the antecedents *corpse*, *fetus*, *baby*, *child*, *teenager*, and *adult*, and mean ratings for rationality and likeability for these referents (0-5 scales, broken line, right ordinate).

Choice of pronouns for designating animals and things reflected many other attitudes and beliefs: Like writers of English literature, ordinary speakers of English were more likely to use human pronouns rather than *it* for named rather than un-

named referents, for personally involving and familiar referents rather than uninvolving and unfamiliar referents, for pets rather than non-pets, and for the same referent engaging in typically human rather than nonhuman activities or participating in evaluatively positive vs. negative contexts, e.g., "taking a nap" vs. "seeing an enemy". Also like writers of English literature, participants completing the sentences usually used *he* for stereotypically masculine antecedents, e.g., dogs and wolves, but *she* for stereotypically feminine antecedents, e.g., cats and meadowlarks (MacKay 1980b). MacKay and Konishi (1994) also found that pronoun use varied as a function of time (1980 vs. 1981), sex of the participants, and statistical beliefs: Participants completed sentences such as "If a student practices basketball instead of studying" with *he* because of a statistical belief that males are more likely to practice basketball instead of studying, and completed sentences such as "If a student practices ballet instead of studying", because of a statistical belief that females are more likely to practice ballet instead of studying. However, subjects consciously denied holding such stereotypic beliefs, so that these uses of *he* vs. *she* reflected "contra-conscious" beliefs and attitudes, i.e., unconscious and consciously-denied sexual stereotypes.

Such findings are problematic for the semantic feature assumption of Two-Types theory because inherent features that distinguish, e.g., pets from non-pets are difficult to specify. Specifying how contextual and situation-dependent factors such as a proper name, an evaluatively positive or negative context, and a subordinate phrase (practicing ballet instead of studying) can change the inherent features of an antecedent is also difficult, and specifying how time and speaker sex can alter inherent features seems out of the question. Factors such as personal involvement, familiarity, and likeability of a referent also depend on the point of view of the speaker, and therefore are perceiver-dependent rather than inherent to the world.

Pronoun switching refers to the inconsistent use of pronouns in reference to one and the same object or class of antecedents (MacKay/Konishi 1980). By way of illustration from English literature, a captain who was familiar with and emotionally attached to a ship invariably referred to the ship as *she*, but referred to other ships with no apparent emotional ties as *it*. Another example concerns reference to a wood tick: "Where'd you get *him*? What you'll take for *him*?" (Speaker 1). "I don't know. I don't want to sell *him*." (Speaker 2). "All right. *It's* a mighty small tick anyway." (Speaker 1). Such examples suggest that pronoun use varies with attitudes and emotions, e.g., positive vs. negative evaluation and emotional involvement vs. non-involvement, such that a tick is referred to as *he* when the protagonist wants it but is downgraded to *it* when deemed unattainable.

On-line sentence completion studies have extended this pronoun switching phenomenon to ordinary speakers: Participants in MacKay and Konishi (1980, 1994) often used a different pronoun in their completion than the one given in the fragment, e.g., "*After a dog wakes up from her afternoon nap*, he goes out to play" (original fragment italicized). These on-line pronoun switches were nonrandom: As in the example, all of the *she*-to-*he* switches occurred in fragments containing stereotypically masculine antecedents such as *dog*.

Unexplained exceptions to the arbitrariness assumption for grammatical-gender languages

Six general phenomena contradict the assumption of the Two-Types theory that gender is completely arbitrary and random either within or between grammatical-gender languages. One is the *strong correlation between gender and biological sex* in humans and animals: Within grammatical-gender languages such as German and Spanish, most nouns referring to sex-specific females, e.g., 'wife', 'cow', are feminine gender and most nouns referring to sex-specific males, e.g., 'husband', 'bull', are masculine gender. Moreover, no language exhibits bizarre gender combinations for sex-specific animals as might be expected if gender were arbitrary and random, e.g., masculine 'he' for biologically female animals, or neuter 'it' for male animals but 'she' for female animals. Nor is gender for inanimate objects and animals completely random across languages. For example, no language with male and female pronouns for sex-specific humans uses only the female pronoun or only the male pronoun to refer to animals and inanimate objects. A third non-random characteristic is that semantic "opposites", e.g., sun-moon, earth-heaven, night-day tend to have "opposite" masculine vs. feminine gender in grammatical-gender languages (see Zubin/Köpcke 1981).

Translation switching refers to effects of gender on the translation of nouns from one grammatical-gender language to another (see e.g., Jacobson 1966). For example, Vygotsky (1962) cites a translation where the French noun for 'grasshopper' (feminine) was rendered in Russian as *dragonfly* (feminine) so as to avoid a gender conflict (*grasshopper* is feminine in French but masculine in Russian), and a stereotype conflict (the grasshopper-dragonfly's stereotypically feminine traits were unchanged in translation). Such phenomena suggest that, contrary to Two-Types theory, gender is not an arbitrary or irrelevant phenomenon when translating between grammatical-gender languages. Translation switching suggests that writers choose nouns, their (stereotypic) traits, and their gender in grammatical-gender languages in the same way that writers of natural-gender languages choose personified nouns, their (stereotypic) traits, and their gender.

The *nature of actual and proposed gender changes* contradicts the assumption that nominal gender becomes adopted in an arbitrary and meaning-free manner. For example, gender in grammatical-gender languages tends to become consistent across lexical classes, e.g., days of the week, months of the year, and foreign words, as when Old German *Mittwoche* (feminine) became *Mittwoch* (masculine) to eliminate the gender conflict with remaining weekdays. Proposed gender changes likewise violate the assumption that gender is arbitrary and meaning-free. For example, Rilke's proposal (Konishi 1991) that *die Sonne* and *der Mond* should switch genders to comport with their semantic properties implies that meaning is a criterion for assigning grammatical gender, contrary to Two-Types theory.

A fourth phenomenon contradicting the arbitrariness assumption concerns *on-line choice of proper names for inanimate objects*. Mills (1986) had German speakers choose proper names for a variety of toy animals, and found that they assigned male

names to referents with masculine gender, e.g., *der Hund*, and female names to referents with feminine gender, e.g., *die Lerche*. This finding suggests that contrary to Two-Types theory, nominal gender is not independent of semantics, in this case the semantics of proper names.

Connotative stereotypes linked to male- vs. female-gender nouns are the fifth phenomenon contradicting the arbitrarinessassumption. Several methodologically sophisticated studies (Hoffstätter 1963, Konishi 1993, Mills 1986, Zubin/Köpke 1984 and 1986) have demonstrated differences in connotative or evaluative semantics between highly familiar masculine- vs. feminine-gender nouns (for a review Konishi 1991). Illustrative results from Konishi (1993) involved a large number of German nouns for inanimate objects and concepts rated by native German speakers tested in Germany using German semantic differential scales and an equally large number of Spanish translation equivalents rated by native Spanish speakers tested in Mexico using Spanish scales. Mean potency ratings were significantly higher for masculine gender nouns than for feminine gender nouns in both languages.

Konishi's results for 54 pairs of high-frequency opposite-gender translation equivalents were even more spectacular. Half of these noun pairs, designated Type I words, took feminine gender in German but masculine gender in Spanish, e.g., *Luft* vs. *Aire* ('air'); *Uhr* vs. *Reloj* ('clock'); *Gabel* vs. *Tenedor* ('fork'); *Schulter* vs. *Hombro* ('shoulder'); *Welt* vs. *Mundo* ('world'). The other half, designated Type II words, took masculine gender in German but feminine gender in Spanish, e.g., *Apfel* vs. *Manzana* ('apple'); *Strand* vs. *Playa* ('beach'); *Berg* vs. *Montaña* ('mountain'); *Stein* vs. *Piedra* ('rock'); *Löffel* vs. *Cuchara* ('spoon'). German speakers judged the Type II nouns (masculine in German) significantly higher in potency than Type I nouns (feminine in German; Fig. 2 next page), whereas Spanish speakers judged the Type I nouns (masculine in Spanish) significantly higher in potency than the Type II nouns (feminine in Spanish; Fig. 2). These results indicate that connotations of potency for precisely the same referents differ depending on nominal gender in grammatical-gender languages, and these differences comport with sexual stereotypes discussed earlier. Similar effects for "nonsense nouns" linked to masculine vs. feminine gender-markers (see Konishi 1991, 1994, Ervin 1962) likewise contradict the Two-Types theory.

Relations between real-world bias and grammatical gender are a sixth phenomenon contradicting the arbitrariness assumption. Munroe and Munroe (1969) observed a relation between language and behavior that strongly contradicts the assumption that gender in grammatical-gender languages is arbitrary and formal in nature. The proportion of masculine gender nouns in a variety of languages correlated positively and reliably with the independently judged degree of masculine sex bias in the corresponding cultures. Although the exact mechanism underlying this relation between gender frequency and sex bias is currently unknown, this relation is clearly problematic for Two-Types theory.

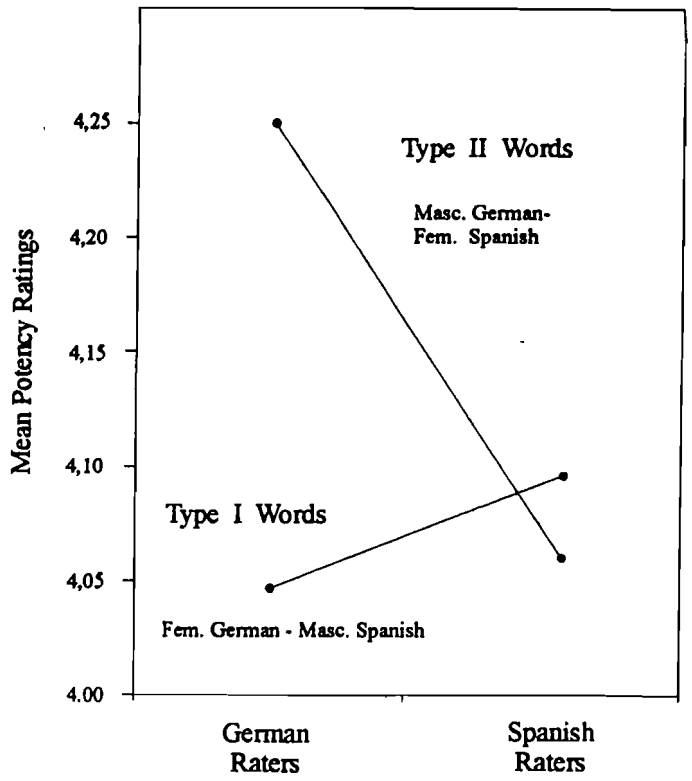

Figure 2: Mean potency ratings for Type I nouns (with feminine gender in German but masculine gender in Spanish), and Type II nouns (with masculine gender in German but feminine gender in Spanish) (Konishi 1993)

Unified theory of nominal gender

The Unified theory (see MacKay 1986, MacKay/Konishi 1994) is simpler than Two-Types theory (see the overview comparison of these theories in Table 1): Two-Types theory postulates one set of rules for some languages, and another, fundamentally different and conflicting set of rules for other languages, with no account of why some languages evolve one way and other languages evolve the other way. However, Unified theory postulates two types of concordant or nonconflicting rules that apply across all languages: *prototypic vs. metaphoric inference rules*. Both types of inference rules operate on internal theories about objects, concepts, animals and people rather than on inherent features with fixed and discrete values such as + or –. That is, words are not chosen on the basis of a matching process involving features inherent either to words or to the world under Unified theory. Rather, meaning is meaning to a person and lexical choice depends on inferences from the internal theory (proposi-

tional beliefs and attitudes regarding, e.g., concepts, objects, animals and people) that a speaker adopts at a particular time or in a particular context of use. These propositional beliefs and attitudes making up the internal theories for everyday words are flexible and readily changed as new propositions become linked or unlinked with a concept, or as the context or communicative situation changes.

	Two-Types theory		Unified theory
	natural-gender languages	grammatical-gender languages	
Rules	two (conflicting) natural-gender rules	two (conflicting) grammatical-gender rules	two (concordant) rules (prototypic and metaphoric inference rules)
Supporting Data	many major classes of unexplained exceptions	many major classes of unexplained exceptions	no established unexplained exceptions
Evolutionary Processes	unknown	unknown	internal theories (stereotypes)
Example Languages	English, etc.	German, Spanish, etc.	English, German, Spanish, etc.

Table 1: Overview comparison of the Two-Types Theory and Unified Theory of nominal gender

Prototypic inference rules explain the same phenomena as natural-gender rules, plus some of the exceptions. However, prototypic rules are statistical in nature and much more flexible than natural-gender rules, as required to explain gender inferences in on-line comprehension, e.g., that the noun phrase "a student who practices basketball rather than studying" probably refers to a male by inference from the internal theory that American males (statistically) have more interest in sports than in studying. What holds for inner theories involving behavioral characteristics such as interest in sports also holds for inner theories involving physical characteristics. In American culture, for example, physical characteristics such as hair length and clothing style provide statistically valid cues to the deeper, essence-determining genetic characteristics that define the categories male vs. female in scientific theories (Barsalou 1992:380). Unlike such essence-determining genetic characteristics, however, "inferential cues" such as hair length and clothing style can vary in validity across sociocultural contexts and over time within a culture rather than being inherent and inflexible in nature (see MacKay/Konishi 1994, for further comparisons between scientific vs. everyday internal theories).

Prototypic rules are also more general than natural-gender rules, as required to explain the "prototypic reference exception", e.g., use of ***he*** for *doctor* vs. ***she*** for *secretary*. Speakers use ***he*** to reference the prototypic doctor by inference from an internal theory wherein most doctors are male. Similarly, speakers use ***she*** to reference the prototypic secretary by inference from an internal theory wherein most secretaries are female. Moreover, similar prototypic inference rules determine pronoun choice for most sex-specific, living referents in all gendered languages under Unified theory: For example, in languages with masculine, feminine and neuter pronouns, prototypic rules ensure that most sex-specific nouns take the corresponding masculine or feminine pronoun. In short, the prototypic reference exception simply reflects a more general rule, namely generation of prototypic inferences from internal theories.

How do prototypic inferences relate to stereotypes? Stereotypes are simply conventional internal theories about a category of persons that are so imprecise or inaccurate as to make prototypic inferences inappropriate. Examples are the prototypic inference that *all* dogs have stereotypically male traits, *all* cats have stereotypically female traits, and that *any* male student is more likely than *any* female student to prefer basketball to studying. Another example is the unconscious, stereotype-linked inference that fame and achievement are more likely bases for familiarity with a pictured male than a pictured female (Banaji/Greenwald 1994).

Other routine but unjustified stereotypic inferences concern culture-specific traits such as helpfulness and honesty that people spontaneously assign when comprehending texts (Bargh 1989) and social events *in vivo* (Brewer 1988). Like on-line prototypic inferences concerning personal involvement, likeability, uniqueness, familiarity, and rationality (MacKay/Konishi 1994), such inaccurate social inferences are so habitual as to be produced unintentionally and perceived unconsciously and perhaps also contraconsciously.

Metaphoric rules, the second type of inference rule, explain the initial creation of grammatical gender and remaining exceptions to natural-gender rules. Consider first the "metaphoric inferences" from stereotypes (inaccurate internal theories) that create personification in English. When personifying objects, concepts, and animals, speakers and writers of English must use either *he* or *she*, the only available human pronouns; and under Unified theory, choice of *he* vs. *she* involves unconscious metaphoric inferences from male vs. female stereotypes. By way of illustration, if the speaker-writer views *time* as a powerful force that controls occurrence of *death*, unconscious metaphoric inferences from the male stereotype that associates maleness with power and control will cause selection of *he* rather than *she* in personifying *time*. Similarly, if the speaker-writer views *the moon* as depending on the sun for light which it reflects weakly and passively and without power of its own, metaphoric inferences from the female stereotype that associates femaleness with passiveness, dependence, and lack of power will cause selection of *she* rather than *he* in referring to *the moon*.

Reification resembles personification except that metaphoric inferences derive from a "thing stereotype" that includes traits such as non-rationality and reactiveness. If a speaker-writer considers a person non-rational, reactive and object-like, metaphoric inferences from this thing stereotype can therefore trigger selection of *it* as in "Oh no! Here it comes". Although this example of reification, like many instances of personification in English literature, reflect unusual and creative uses of language that are deliberate and conscious, Unified theory also comports with the habitual inferences from internal theories of maleness, femaleness, and thingness that ordinary speakers of English generate in a rapid, habitual, unconscious, and sometimes contraconscious manner (MacKay/Konishi 1994). The fact that these unstated speaker beliefs and attitudes are graded, complex, multidimensional, and socially or experientially constructed, and can therefore vary from time to time, culture to culture, speaker to speaker, and context to context, rather than being inherent to particular concepts, is also consistent with the Unified theory.

Now let us consider nominal gender-marking. Under Unified theory, the original inventor(s) of the gender for a noun such as *le temps* in French exhibited creativity not unlike the unknown writer, poet, or speaker who first personified *time* as male in English. The listeners who initially accepted and adopted this gender invention probably appreciated and accepted this creativity. However, details of the metaphoric processes underlying creation of gender in grammatical-gender languages are for the most part unrecorded and unrecoverable from historical records. I therefore limit present discussion to "frozen" nominal gender metaphors, which, due to their obligatory status and elevated frequency of use have been so highly practiced that effects on adults are now unconscious and perhaps contraconscious, and their origins in childhood have been forgotten.

Under Unified theory, speakers of grammatical-gender languages such as German unconsciously use three types of frozen metaphoric gender rules every time they learn, comprehend, and produce the masculine, feminine, or neuter gender-markers for a specific noun, including its pronouns and gender-specific articles and other modifiers. Masculine gender-markers signal that the referent is like the stereotypic human male in some way, feminine gender-markers signal that the referent is like the stereotypic human female in some way, and neuter gender-markers signal that the referent is like the stereotypic thing in some way.[2]

2 Two possible caveats require discussion at this point. Under one caveat, Unified theory is not a novel alternative to Two-Types theory because modern linguists have already taken note of pragmatic factors explained within Unified theory (see Corbett 1991:12). Contrary to this caveat, however, Corbett treats these pragmatic counterexamples as minor inconsistencies or "leaks" in Two-Types theory rather than as grounds for a new theory. For example, following a review of English counterexamples, Corbett (13) incorrectly concludes that "it is sufficient to know the meaning of a noun in order to determine its gender" in English. Corbett further supports TwoTypes theory rather than a new alternative when he concludes (32) that in grammatical gender languages, semantic and pragmatic criteria "fail to account for the gender of a high proportion of the nouns, and formal criteria must be sought". Under the second caveat, Unified theory is not new because the pre-structuralist approach of Grimm, Frazer, Adelung and Herder anticipated the relation between personification and grammatical gender in Unified theory. Despite being on the right track, this earlier semantic approach to gender was soon eclipsed by the structuralist alternative, i.e., Two-Types theory, and is now all but forgotten within mainstream linguistics and psycholinguistics (see e.g., Corbett 1991, Newmeyer 1998). Moreover, the Grimm-Frazer approach overlooked relations between nominal gender and stereotypes, as well as the real-world implications of these complex chicken-and-egg relations: Stereotypes can cause initial gender attribution, and gender attribution, once adopted, can lead to further stereotyping within a culture. Finally, this early approach failed to develop a detailed psychological theory of how people create, perceive, produce and learn or adopt gender, my fundamental goal for Unified theory.

By way of hypothetical illustration, masculine gender-markers indicate to the child learning French that 'time' (*le temps*) resembles the stereotypic male in some way, say in power and activity, whereas 'old age' (*la viellese*) resembles the stereotypic female in some way, say in weakness and passivity, because *old age* is weak and passive relative to *time*, which holds power or control over *aging* (like stereotypic males relative to stereotypic females). Similarly, masculine gender-markers indicate to the child learning French that 'the sun' (*le soleil*) resembles the stereotypic male in some way, say in power, because both the sun and the stereotypic male are powerful. Similarly, feminine gender-markers indicate to the child learning French that 'the moon' (*la lune*) resembles the stereotypic female in some way, say in weakness, passivity, and dependence because the light of the moon is weak, a mere reflection of the active and more powerful force of the sun, like the stereotypic woman who reflects or derives power from men.

The assumption that metaphoric rules can override prototypic inference rules in all languages readily explains cases where biological gender and gender conflict, e.g., *das Mädchen* in German and reification of known-sex infants and corpses in English. The complex, multi-dimensional nature of human stereotypes and internal theories of nominal concepts in Unified theory explain the remaining aspects of grammatical gender, including cross-language differences in gender-markers for the same nominal concepts. For example, unlike French, Spanish, and (optionally) English, German obligatorily marks (personifies) 'the sun' as female and 'the moon' as male. Consequently, the feminine gender-marker indicates to the child learning German that *the sun* resembles the stereotypical female in some way, say in warmth and nourishing or life-giving qualities, whereas *the moon* carries less positive connotations, like the stereotypic male.

Conclusions and implications

The Unified theory promises a means of explaining why different languages such as German and Spanish have developed the gender categories that they have, and integrated with other theories, may explain why people in different cultures have developed the conceptual categories that they have (see Barsalou 1992). However, the culture-specific internal theories of Unified theory need to be specified in detail for a wide variety of nominal concepts in grammatical-gender languages, and then *tested empirically* for a wide variety of speakers of those languages.

If Unified theory withstands these future tests, a more general issue will arise, namely, language change and the process of introducing more appropriate internal theories for influencing social consciousness via everyday word use in conversation, wri-

ting, and reading (see also MacKay 1980a). Although such change may seem remote or unlikely, it is nonetheless possible under Unified theory in the same way that the new internal theory of social interactions underlying the American revolution triggered changes in second person English pronouns (see MacKay/Konishi 1994).

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