Constraining Gender Assignment Rules

Anna M. Thornton
Università dell'Aquila
thornton@cc.univaq.it

Abstract

The paper deals with gender assignment, i.e., the process by which speakers are able to assign a gender feature to a lexical item not yet bearing such a feature. The need for gender assignment arises mainly in the case of headless neologisms and loanwords. The paper draws evidence mainly from loanwords into Italian, a language which has a two-gender system. The first part of the paper tests several hypotheses about the existence of dominance relations between two kinds of gender assignment criteria, formal and semantic ones, against Italian data. Italian data seem best compatible with theories that allow for the possibility that semantic rules dominate over formal rules in gender assignment. In the second part of the paper, a constraint on possible semantic gender assignment rules is proposed, the *Basic Level Hyperonym Constraint,* stating that to be able to assign gender to its hyponyms, a hyperonym must be a *basic level term.*

1. Introduction: What is gender assignment?

This paper deals with gender assignment. There are actually two views of what gender assignment is in the literature. According to view (1a), gender assignment is a process by which speakers classify the nouns of their language into gender classes; genders are conceptualized as containers, in which nouns can be stored. Another view (1b) considers gender assignment as a process by which speakers assign a gender feature to a given noun: in this view, genders are seen as features necessary for the nouns to function syntactically.

(1)   Two different views on gender assignment:

    a.   assign nouns to genders   =   Genders as containers

    b.   assign gender to nouns   =   Genders as features

Both views are expressed and normally go undistinguished – or the difference goes unnoticed – in the literature. In (2) I list a few quotations from the bible of gender studies, Corbett (1991), which show that the author switches between the two views within the same chapter:

(2)   The two views of gender assignment in Corbett (1991), chapter 2

    a.   native speakers allocate nouns to genders (3)
       native speakers assign nouns to genders (8)
       nouns are assigned to gender according to their meaning (8)
       loanwords were assigned […] to the same gender by different speakers (16)
       two different criteria may assign nouns to the same gender (32)

    b.   words borrowed from other languages acquire a gender (7)
       there is a mechanism for assigning […] gender (7)
       speakers give them [i.e., invented words] a gender (7)
       Not only can speakers assign gender to English words […] (23)
       the referent is sufficient to enable gender to be assigned (23)

Similar oscillations between the two different views of what gender assignment is are found in other important studies on the topic, such as Doleschal (2004) and Poplack, Pousada and Sankoff (1982).

    The first point of view arises out of interest in the cognitive classification of experience that gender systems reflect, while the second one arises out of interest in the way gender functions in grammar.

    In the present paper I will adopt view (1b), concentrating on the way a gender feature is assigned to a noun which must function as controller of gender agreement in a syntactic construction.

2.   Who assigns gender to what?

The first question I want to address, then, is the following: Who assigns gender to what? Several answers are possible. I will list the main ones in (3a-d):

(3)   *Who assigns gender?*   *To what?*

    a.   child learning L1   →   to all nouns in L1

    b.   speaker learning L2   →   to all nouns in L2

    c.   linguist writing a computational→   to all nouns in Lx
       grammar of Lx

    d.   adult speaker of L1   →   to nouns in L1 that control gender agreement on targets but do not (yet) have a gender feature in their lexical entry

The next question is: Are the assignment criteria / rules used the same in all the cases listed in (3)?

We don't have a clear answer yet, but I believe that possibly the answer is "no". I believe there is a fundamental difference between case (3c) and cases (3a, b, d). The rules used in the latter cases require a cognitive basis, a psychological reality, that rules used for case (3c) do not need. Problem (3c) can be solved with regard to criteria of pure economy, while solutions to the problems in (3a, b, d) are constrained by cognitive principles.

Unfortunately, the literature on gender assignment often fails to distinguish between the different cases in (3), and the rules that are proposed are meant to work for all these different purposes.[1]

In this paper, I will not be concerned with cases (3a-c), and I will concentrate on case (3d), drawing my data mostly from the Italian language. I believe that the proposals that I will put forward could be extended to case (3a) (very likely, with extra provisos taking care of constraints related to children's cognitive capacities), and maybe in part also to case (3b) (with extra provisos for the specificity of L2 learning), while they have virtually no bearing on case (3c), which I consider a completely different domain of research, within the scope of computational linguistics and not of cognitive linguistics. We can now move on to the next question: What sorts of entries do not already have a gender feature in the mental lexicon of adult speakers of a L1? A few answers are listed in (4):

(4)   a.   loanwords;

         b.   toponyms (e.g., names of cities);

         c.   certain kinds of neologisms, such as:
                 exocentric compounds;
                 compounds whose head is not a noun;
                 nouns converted from verbs (but <u>not</u> derived nouns headed by suffixes which have an inherent gender)

         d.   non-prototypical controllers (e.g., clauses, cfr. Corbett 1991: 204)

         e.   …

2.1.   *Case study: names of cities in Italian*

To illustrate the kind of problem I want to address, I will start with an example, that of names of cities (4b). Names of cities can go genderless in the mental lexicon of speakers of Italian for a long time. The most frequent contexts of occurrence of names of cities are the ones in (5), where the city name is governed by a preposition, and there is no gender agreement target in the context.

---

[1] For example, the paper by Fraser and Corbett (1995) on gender assignment in Russian adopts the point of view in (3c), with the consequence that the system of rules they propose does not account for the gender of some recent loanwords, which must be manually specified in the corresponding lexical entries (Fraser and Corbett 1995: 133): the system is thus inadequate for case (3d).

(5)   *sono di Roma, vengo da Roma, vado a Roma, A Roma…*
        "I am from Rome, I come from Rome, I am going to Rome, In Rome…"

But a minority of contexts in which names of cities do control gender agreement targets nevertheless exists: cfr. the data and examples in (6-8):

(6)   Percentage of names of cities occurring in contexts in which they control gender agreement targets in three corpora of Italian (data from Nitrola 1998)[2]

Decameron	= 2,4%
Promessi Sposi	= 3,4%
LIP	= 4,2%

(7)   Masculine gender in names of cities in nineteenth and early twentieth century written Italian (data collected by Nitrola 1998)

quel maledetto Casale	"that-m damned-m Casale"
quel povero Casale	"that-m poor-m Casale"
un Milano	"a-m Milan"
mezzo Milano	"half-m Milan"
in quel Milano	"in that-m Milan"

Milano si trova ormai in tale stato, da non vedere cosa giovasse guardarlo	"By now, Milan is in such a state that no one can understand the value of looking at it-m"

in questo Milano	"in this-m Milan"
com'è conciato Milano	"the state to which Milan is reduced-m" (Promessi Sposi)

Parigi sbastigliato	"un-bastilled-m Paris"	(Alfieri)
Urbino ventoso	"windy-m Urbino"	(Pascoli)
bel mi' Firenze	"beautiful-m my-m Florence" (Moretti)	

(8)   Feminine gender in names of cities in contemporary spoken Italian (*LIP* corpus)

una Napoli capitale	"a-f capital city Naples"
questa grande Napoli	"this-f big Naples"
una Napoli popolare	"a-f popular Naples"
la nostra bella Napoli	"the-f our-f beautiful-f Naples"
una Parigi abbastanza opaca	"a-f quite gloomy-f Paris"
Torino si è fermata	"Turin stopped-f"

---

[2] *Decameron* is a collection of short stories written by Giovanni Boccaccio in the 14th century; *Promessi Sposi* is a novel written by Alesssandro Manzoni in the first half of the 19th century; *LIP* is a 500.000-token corpus of spoken Italian collected in the years 1990-1992 (cfr. De Mauro, Mancini, Vedovelli and Voghera 1993).

The data in (6) to (8) show that speakers of Italian must have in their competence a system allowing them to assign gender to names of cities, when the need arises. Moreover, a comparison between the data in (7) and those in (8) shows that the criterion for gender assignment to names of cities must have changed in diachrony, as (at least some) names of cities were masculine in nineteenth century Italian, while all names of cities are feminine in contemporary Italian. Apparently, the criterion by which gender is assigned to names of cities has shifted in the history of Italian: up to about a century ago it used to be a phonological criterion, by which names of cities ending in *-o* and *-i* (such as *Milano* "Milan" and *Parigi* "Paris") were assigned masculine gender, while nowadays it seems to be a semantic criterion, by which all names of cities are feminine, regardless of their final vowel, as the examples in (8) show.

3.   Criteria for gender assignment

The discussion about the gender of names of cities in Italian has served to illustrate the problem of gender assignment, and has introduced the concept of gender assignment criteria.

We will now concentrate on the main class of nouns that can for some time exist in the mental lexicon of an adult speaker without a gender feature, but must at some point acquire this gender feature in order to function syntactically, as controllers of gender agreement targets. These are neologisms and loanwords (or borrowings). To quote the universally acknowledged master of gender studies, Greville G. Corbett, «Borrowings of nouns into languages with gender systems […] are like a continuously running experiment, which allows us to verify the assignment system in the languages in question» (Corbett 1991: 71).

As Audring (2004) observes, investigating gender assignment to loanwords and neologisms ensures that we will uncover psychologically real and productive criteria that speakers exploit in "on-the-spot" gender assignment, rather than just "postfactum rationalizations", as Comrie (1999. 461) dubs some of the gender assignment criteria that have been proposed in the literature.

Corbett (1991) has provided us with a typology of gender assignment systems and rules. There are semantic rules, by which gender is assigned on the base of a noun's meaning, and formal rules, by which gender is assigned on the base of a noun's shape or of its forms. Formal rules are of two kinds: phonological and morphological. A typical phonological rule is a rule like "Nouns ending in *-a* are feminine", while a typical morphological rule is a rule like "Nouns of inflectional class 2 are feminine". The difference between phonological and morphological rules lies in the fact that phonological rules refer to a single form of the noun (typically, the citation form), while morphological rules refer to more than one form in a noun's paradigm (as many forms as are necessary to establish the inflectional class to which the noun belongs). When no specific semantic or formal rule applies to a noun, the default gender is assigned ("normal case default" in Fraser and Corbett 1997, Corbett and Fraser 1999).

Corbett's typology is not meant to account only for gender assignment in case (3d), but for all cases in (3), as well as for a further possible case: in my understanding at least, this is also a typology of redundancy rules that account for the gender of nouns which have been attested in the lexicon of a language for a long time, and to which no given speaker has ever needed to assign a gender feature "on the spot" (although

children must have acquired the gender feature together with the rest of the lexical information connected to each noun). That Corbett has in mind a typology that accounts for all instances of noun-gender pairings, and not just the ones that must be effected "on the spot" (i.e., when a speaker must produce gender agreement with a noun whose lexical entry was previously lacking a gender feature), is shown by the fact that most of Corbett's examples are regular nouns of the languages investigated, not just loanwords or other nouns of the kinds listed in (4) above.

As Corbett himself comments on his typology, «there will always be semantic assignment rules […] since no language has a purely formal assignment system» (Corbett and Fraser 2000: 297).

This brings us to the two main topics to be addressed in the present paper, presented in the form of questions in (9a-b):

(9)   a.   If a language has both semantic and formal gender assignment rules, is there a hierarchy between the two sorts of rules? i.e., if a noun falls within the scope of two rules which would assign different genders, namely, a semantic rule and a formal rule, how is the conflict resolved? what (kind of) rule prevails? And, if there is a principled order of application of different kinds of rules, is this order universal or language-specific?

        b.   Given that all languages have some semantic assignment rules, is it possible to find constraints on the kind of semantic rules that exist?

We will address both these questions in the rest of this paper. Section 4 will be devoted to discussing the questions in (9a), while section 5 will address the question in (9b).

4.   Is there a hierachy of dominance between semantic and formal gender assignment criteria?

Different authors have given different answers to the questions listed in (9a), which are currently a topic of heated debate in gender assignment studies (see above all Rice 2004, Rice 2005, but also Corbett 1991, Corbett and Fraser 2000, Doleschal 1999, Doleschal 2004, and a forthcoming special issue of *Lingua* edited by Enger, Nesset and Rice).

Corbett and Fraser (2000) maintain that, universally, semantic criteria dominate formal criteria:

(10)   *Universally, semantic >> formal*
        «As is universally the case, the formal gender assignment rules are dominated by the semantic gender assignment rules» (Corbett and Fraser 2000:321)

Rice (2004), on the contrary, building on previous work by Steinmetz (e.g., Steinmetz 1986), maintains that universally, gender assignment criteria and language-specific gender assignment rules or constraints are crucially non-ranked with respect to each other; only the genders are ranked in a markedness hierarchy in each language; the language-specific gender assignment criteria are all non-ranked with respect to each

other but form a block that, as a whole, is ranked above the language's gender markedness hierarchy; when a conflict arises, because there is a tie between specific criteria, the noun is assigned the least marked gender of the language:

(11)　　*Optimal Gender Assignment Theory (OGAT)*:
　　　　universally, «crucial non-ranking»
　　　　«in all languages, all constraints referring to gender-relevant features are equally ranked»
　　　　«conflicts between them are decided by ranked constraints implementing a markedness hierarchy: when two constraints are in conflict, the noun is assigned to the least marked of the conflicting categories» (Rice 2004)

Even authors who defend the idea that there is some ranking between different gender assignment rules are divided as to whether this ranking is universal or language-specific.

　　　　Nesset (2004) maintains that there is at least one universally dominating criterion, that he calls *The Core Semantic Override Principle (CSOP),* stated in (12):

(12)　　*The Core Semantic Override Principle (CSOP)*
　　　　«Rules referring to biological sex take precedence in gender assignment» (Nesset 2004)

　　　　Audring (2004), on the contrary, in a study framed in OT concerning the assignment of gender to English loanwords in several European languages, maintains that the ranking of different formal and semantic criteria can vary from language to language.

4.1.　　Case study: masculine nouns ending in -a *in Russian and in Italian*

Now that we have reviewed the different positions found in the literature on question (9a), we can proceed to look at how the different systems explain the gender assignment that occurs in a few specific cases. The most favoured example in the literature is the Russian word for "uncle", *djadja.* An overview of the relevant rules/constraints in Russian is given in (13).

(13)　　*Russian*

　　　　a.　　3 genders:　　　　　　　　masculine, feminine, neuter

　　　　b.　　Markedness hierarchy:　　　　*n >> *f >> *m
　　　　　　　(i.e., masculine is less marked than feminine, feminine is less marked than neuter)

　　　　c.　　Semantic rule/constraint:
　　　　　　　nouns denoting biological males are masculine
　　　　　　　= *[+ MALE] $\Rightarrow$ F, N

d. Formal rule/constraint:
nouns ending in +*a* are feminine
= *+A# $\Rightarrow$ M, N

Djadja should be feminine by formal criteria, because it ends in -*a* (and/or maybe because it belongs to declensional class II),[3] but should be masculine by semantic criteria, because it denotes a male. *Djadja* is indeed masculine, but the authors disagree on why it is masculine. For Corbett it is masculine because semantic rules (of any kind) prevail over formal rules universally; for Nesset, it is masculine because rules referring to biological sex prevail on other (both formal and semantic) rules, again universally; for Audring, it is masculine because in Russian (but not necessarily in other languages) the rule that assigns gender according to the sex of the referent dominates the rule that assigns gender according to the phonological shape of the signifier (SEX >> PHON, in her notation); for Rice, finally, *djadja* is masculine because masculine is the least marked gender in Russian.

We can see how Rice's system works by looking at the tableau in (14):

(14) Gender assignment to Russian *djadja* "uncle" in OGAT (Rice 2004, Rice 2005: Table 4)

djadja "uncle"	GENDER FEATURES *[+ MALE] $\Rightarrow$ F, N *+A# $\Rightarrow$ M, N		*N	*F	*M
☞ a. djadj+a, m.		*			*
b. djadj+a, f.	*			*!	
c. djadj+a, n.	*	*!	*		

Rice (2005) illustrates the situation depicted in (14) in the following way: «The first constraint is violated by candidates (b) and (c), since the noun denotes a male. The second constraint is violated by candidates (a) and (c). Since candidate (c) violates both of the equally ranked constraints while candidates (a) and (b) each violate just one, candidate (c) is ruled out at this point, as indicated by the exclamation point. Candidates (a) and (b) are distinguished by the markedness hierarchy. Specifically, candidate (b) is ruled out by the relatively highly ranked constraint *FEMININE, leaving candidate (a) as optimal».

As in Rice's system the semantic rule in (13c) and the phonological rule in (13d) (expressed as prohibitions rather that as positive rules, as usual in OT) are crucially unranked with respect to each other, the situation represents a "balanced conflict" between masculine and feminine gender (neuter is ruled out, as we have seen, because assigning neuter would violate both the semantic and the formal constraint). The conflict is resolved by the language-specific markedness hierarchy in (13b), by which masculine is the least marked gender in Russian.

It must be observed that *djadja* is not the kind of noun I am most interested in, since it is neither a neologism nor a recent loanword to which Russian speakers had to

---

[3] Rice's formulation is that "nouns ending in the segmentable morpheme" -*a* are feminine, and this formulation is claimed to be "a notational variant of the the claim that nouns of the 2nd declension are feminine" (Rice 2004, footnote 6). The precise formulation of this rule/constraint is irrelevant at the moment; what matters for present purposes is that this is a formal rather than a semantic gender assignment criterion.

assign gender on the spot. In any case, all the observations made above for *djadja* would extend to recent loanwords. In the literature, recent loanwords into Russian ending in -*a* and denoting males are not discussed much[4], but fortunately the Russian situation is entirely parallel to the Italian one, as shown in (15).

(15)   *Italian*

    a.   2 genders: masculine, feminine

    b.   Markedness hierarchy: *f >> *m
            (i.e., masculine is less marked than feminine)

    c.   Semantic rules/constraints:
            nouns denoting biological males are masculine;
            nouns denoting biological females are feminine

    d.   Phonological rules/constraints:
            nouns ending in -*a* are feminine;
            nouns ending in -*o* are masculine

All the observations made above about the treatment of *djadja* in the different models extend completely to the treatment of loanwords into Italian denoting males and ending in -*a,* like the ones in (16):

(16)   Nouns denoting males and ending in -*a* (loanwords into Italian)
      lama   "Tibetan monk",
      Dalai lama   "Id.",
      Sherpa   "Tibetan baggage carrier",
      Ulema   "Islamic doctor in theology and law",
      ustascia   "Croatian nationalist soldier",
      peshmerga "Kurdish partisan soldier"…

      The tableau in (17) shows how a balanced conflict arises in Italian for nouns denoting males and ending in -*a,* and how it is solved in Rice's system.

(17)   Gender assignment to Italian *sherpa* in OGAT

sherpa "Tibetan baggage carrier"	GENDER FEATURES *[+ MALE] ⇒ F *-*a*# ⇒ M		*F	*M
☞ a. sherpa m.		*		*
b. sherpa f.	*		*!	

Sherpa should be masculine because it denotes a male, but it should be feminine because it ends in -*a*; these two constraints, if unranked with respect to each other, yield

---

[4] A few words in this category, however, exist: one can cite at least *mulla* "mullah", *nindzja* "ninja warrior", *maharadža* "maharajah", *lama* "Tibetan monk" and *Neruda* "Id.". Thanks to Ursula Doleschal and Tore Nesset for pointing out these examples to me.

a balanced conflict; according to OGAT, the noun is then assigned masculine gender because this is the least marked gender in Italian.

Rice (2004) rightly observes that in order to assess whether there is a universal dominance of semantic criteria over formal ones, as Corbett maintains (recall (10) above), «we must find cases of balanced conflict with a mismatch between feature type (meaning or shape) and category markedness. Specifically, we must find cases in which the shape correlates with a less marked category while the meaning correlates with a more marked category».

In two of his papers, Rice (2004, 2005) looks for such cases in Russian, but concludes that this language does not offer appropriate examples. Italian, on the contrary, offers a very interesting case of the kind we are looking for, that I will illustrate in the next section.

4.2.   Case study: Italian feminine nouns ending in -o

Italian, besides having masculine nouns ending in *-a*, that should be feminine because of their phonology but are masculine because of their semantics, also has feminine nouns ending in *-o*, which should be masculine because of their phonology but should be feminine because of their semantics (cfr. (15c-d) above). This is a clear case where phonology would assign the least marked gender, while semantics would assign a more marked gender. Examples of Italian feminine nouns in *-o* are given in (18).

(18)   Some Italian feminine nouns ending in *-o*
    biro   "ballpoint pen"*,*
    cabrio   "kind of car"*,*
    lampo   "zip",
    merino   "merino sheep",
    polo   "polo shirt"*,*
    sdraio   "deck chair",
    soprano   "id."*,*
    squillo   "call girl",
    torpedo   "kind of car"*,*
    virago   "id."

Three of these nouns denote women: *soprano, virago, squillo*. Each one of the three nouns presents some complications, but as these are the best examples I have been able to come up with so far of nouns that would get a less marked gender by formal criteria and a more marked gender by semantic criteria, I will exploit them as much as possible. Before testing OGAT on nouns of this type, however, I will give a little more information on the data.

Soprano actually has variable gender: a web search conducted by means of Google in August 2005 for the strings *la soprano / il soprano* "the-f soprano / the-m soprano" yielded a proportion of masculine to feminine of about 4:1 (16800 m vs. 4310 f). The contexts of usage are completely parallel for the two genders, as examples (19a-d vs. 19 e-h) show, with the well known awkward agreement facts that arise when the noun is considered masculine (masculine agreement within the NP, feminine agreement outside it, cfr. (19 g-h)).

(19)   *Soprano* in context (data from Google)

a. il regista Costa Gravas girerà un film sull'amore tra Onassis e la soprano.
    "Director Costa Gravas will shoot a film about the love story between Onassis and the-f soprano"

b. ... nella villa di Sirmione (dove la soprano era solita rilassarsi con lui).
    "in the villa in Sirmione (where the-f soprano used to relax with him)"

c. La soprano Barbara Frittoli durante l'esecuzione dell'aria "Signore ascolta" dalla Turandot di Puccini
    "The-f soprano Barbara Frittoli while singing "Signore ascolta" from Puccini's Turandot"

d. È morta la soprano Renata Tebaldi.
    "The-f soprano Renata Tebaldi died"

e. Il soprano Roberta Frameglia esegue *Frontiere Borders Fronteras ...*
    "The-m soprano Roberta Frameglia sings *Frontiere Borders Fronteras…*"

f. La "fantasia popolare" vede il soprano come una donna brutta, grassa, antipatica
    ..."Popular lore sees the-m soprano as an ugly, fat, disagreeable woman…"

g. Bravissimo anche il soprano Maria Grazia Schiavo, già ammirata in altre occasioni …
    "Also very good-m was the-m soprano Maria Grazia Schiavo, who had already been admired-f in other circumstances…"

h. La più interessante di questi è stata il soprano americano Michèle Crider
    "The-f most interesting of these-m was-f the-m American-m soprano Michèle Crider"

The reason why *soprano* (first attested in Italian in the fifteenth century) is used as a masculine noun even though it (nowadays) refers to women is well known: the word was originally an adjective, meaning "upper", and was used in the technical language of music in the phrase *registro soprano* "upper register", referring to the highest voice register, obtainable by women, children and castrated men. In old times, sopranos were in fact castrated men, so the masculine gender of the noun matched not only the phonology but also the semantic rule by which words referring to men are masculine; besides, the noun originated from an adjective getting its gender by agreement with the masculine head noun *registro,* through ellipsis.

   Squillo "call girl", on the other hand, is consistently used as a feminine noun, notwithstanding the fact that *squillo* in the meaning of "ring (of a telephone)" is a regular masculine noun. *Squillo* is a rendering of English "call girl" by the juxtaposition of the two words *ragazza* "girl" and *squillo* "ring (of a telephone)", later reduced to *squillo* by ellipsis of the head noun.

Virago, a cultivated loanword from Latin which was feminine already in Latin, has never shown any tendency to be used as masculine.

All these nouns are somewhat flawed as examples of nouns ending in *-o* (an ending which in Italian is typical of masculine nouns, cfr. (15d) above) but receiving feminine gender for semantic reasons. *Soprano*'s obvious flaw lies in the fact that most speakers use this word as a masculine rather than a feminine noun; *squillo* on the contrary is always used as a feminine noun, but one could maintain that its gender is inherited from a deleted head *ragazza* "girl", and not directly assigned to the noun. *Virago* is the least flawed example: even if it is a cultivated loanword, and therefore one could maintain that, as is common with cultivated loanwords, it keeps the gender the word had in the donor language, it can be compared with other cultivated loanwords from Latin ending in *-o* that did not retain their feminine gender, such as *prefazio* "preface (in Mass)" (< Lat. *praefatĭo*), *dazio* "custom tax" (< Lat. *datĭo*). These nouns had no semantic reason for being feminine, and therefore the phonological assignment criterion took over; *virago*, on the contrary, was not affected by the phonological assignment criterion; therefore we can suppose that *virago* remained feminine due to its semantics, thus representing an acceptable example of a noun which receives a more marked gender through semantic criteria even if it could receive a less marked gender by formal criteria.

Let's now see in (20) how the gender of *virago* would be assigned by Rice's OGAT:

(20)   Gender assignment to Italian *virago* in OGAT:

virago "id."	Gender Features *[+ FEMALE] ⇒ M *-*o*# ⇒ F		*F	*M
☞ a. virago m.	*			*
b. virago f.		*	*!	

Each of the two candidates violates one of the crucially unranked constraints: therefore, a balanced conflict arises, and it must be solved by the language-specific markedness hierarchy in favour of the least marked gender, which is masculine in Italian (cfr. Thornton 2003a). As the hand pointing to the left shows, OGAT predicts incorrect gender assignment – it predicts that Italian *virago* "id." will be masculine, while it is feminine –, at least if we accept that the constraints used in (20) are both real ones. Should we then abandon OGAT altogether?

Before doing so, let's see whether there is a way to reconcile OGAT's strong claims with the Italian data on feminine nouns in *-o*. As is often the case in OT, a lot can change if we change the formulation of the constraints, without changing the spirit of the proposal. It must be observed that Rice formulates the relevant constraints in a negative fashion: the fact that nouns denoting women are feminine is not expressed in the positive way of (21a), but in the "negative" way of (21c); the same is true in the case of the rule stating that nouns denoting males are masculine (21b vs. 21d).

(21)   a.   [+ FEMALE] ⇒ F

          b.   [+ MALE] ⇒ M

c.   *[+ FEMALE] ⇒ M

d.   *[+ MALE] ⇒ F

The reasons for choosing negative rather than positive formulations are completely theory-internal to OT, and we cannot go into them now. But let us assume, contrary to Rice, that the right formulation of the constraints or rules is (21a-b) rather than (21c-d). In this spirit, even the phonological rules could be formulated differently, as (22a-b), rather than as (22c-d):

(22) a.   *-a# ⇒ F*

b.   *-o# ⇒ M*

c.   **-a# ⇒ M*

d.   **-o# ⇒ F*

If the relevant rules / constraints are the "positive" ones in (21a-b) and (22a-b), a further observation can be made: these positive formulas include rules, such as (21b) and (22b), that, on the basis of a given semantic or phonological feature, assign masculine gender, i.e., the unmarked gender of the language. It could be contended that such rules are redundant, and shouldn't exist, as the unmarked gender of a language would eventually be assigned to nouns anyway, even though no rule existed to assign it, because the nouns would be assigned that gender by default (in Corbett's terms) or by the markedness hierarchy (in Rice's terms).[5]

What would happen in OGAT if the rules were the "positive" ones we have just discussed, and specific rules assigning masculine didn't exist at all, leaving the markedness hierarchy to do the job of assigning masculine gender? (23) shows how *virago* would be treated in this case, and (24) shows the treatment of *sherpa* (to be compared with (17) above).

(23)   Gender assignment to Italian *virago* in OGAT: version II

virago	GENDER FEATURES [+ FEMALE] ⇒ F	*F	*M
a. virago m.	*!		*
☞ b. virago f.		*	

(24)   Gender assignment to Italian *sherpa* in OGAT: version II

sherpa	GENDER FEATURES *-a# ⇒ F*	*F	*M
a. sherpa m.	*!		*
☞ b. sherpa f.		*	

---

[5] See Thornton (2003a, 2003b) for further speculation on this topic.

If we remove the rules that would assign the unmarked gender, we get correct results for *virago*: only the semantic rule based on sex (21a) applies to it, and feminine gender is correctly assigned; but, by the same reasoning, this time we get wrong assignment for *sherpa*: if only the phonological rule (22a) applies to it, feminine gender is incorrectly assigned.

4.3.   Provisional conclusion

The paradox illustrated in the preceding section seems to show that the conclusions stated in (25) should be drawn:

(25)   a.   even language-specific rules assigning the unmarked gender of the language are necessary – otherwise, we cannot assign masculine gender to *sherpa* (cfr. (24));

b.   semantic rules assigning gender on the base of the sex of the referent dominate over phonological rules – otherwise, we cannot assign feminine gender to *virago*, cfr. (20).

At this point, we are in a position to reject Rice's OGAT in its current formulation; but we still don't know which of the claims about the dominance of semantic rules over phonological ones is right: so far, we haven't tested semantic rules other than those based on sex, so it could be that Corbett's claim (cfr. (10) above) that all semantic rules dominate formal rules is too strong, and perhaps all we need is Nesset's *Core Semantic Override Principle* (cfr. (12) above).

Therefore, we must test what we have developed so far with nouns that could receive gender by semantic rules of a different kind than the ones based on the sex of the referent.

4.4.   Case study: names of cars in Italian

A semantic gender assignment rule not based on sex that has been shown to be quite robust for Italian (cfr. Thornton 2003a, 2003b) is the rule in (26), assigning feminine gender to nouns denoting cars. Some relevant data are given in (27):

(26)   CAR $\Rightarrow$ F (Thornton 2003a)

(27)   Some data on feminine nouns denoting cars in Italian

a.   una Fiat, una Ford, una Mercedes, una Ferrari, una Maserati, una Lamborghini
"a-f Fiat, etc."

b.   la Cinquecento, la Mondeo, la Clio
"the-f Cinquecento, etc."

c.   la Uno, la Tipo, la Ritmo, la Panda, la Bravo, la Tango "the-f Uno, etc."
vs. *uno* m art/adj "one", *il tipo* m "the-m type", *il ritmo* m "the-m
rhythm", *il panda* m "the-m panda.", *bravo* m adj "good-m", *il tango* m
"the-m tango."

d.   jeep, roadster, spider, torpedo, cabrio, citycar, station wagon

(27a) shows that names of cars are feminine even though they end in a C or in /i/, two
phonological shapes which would assign masculine gender (cfr. Thornton 2003a); (27b)
shows that names of cars are feminine even when they end in /o/, the typical masculine
ending; (27c) shows that names of cars ending in /o/ are feminine even when they are
homophonous with nouns that have other meanings in which they are regularly
masculine, or with masculine forms of articles and adjectives; (27d) lists loanwords
from English denoting cars, which are feminine even though they end in a C or in /o/
(cfr. Thornton 2003b). All the data in (27) establish that Italian has a semantic rule like
(26).

Let's see now how gender would be assigned to the loanword *torpedo* by
OGAT. The tableau is given in (28). Incidentally, how to formulate the constraints,
whether in a positive or a negative fashion, is now irrelevant. I will reinstate the
negative formulations (although I find them quite counter-intuitive) to remain faithful to
Rice's original proposals.

(28)   Gender assignment to Italian *torpedo* in OGAT

torpedo	GENDER FEATURES $*CAR \Rightarrow M$ $*\text{-}o\# \Rightarrow F$	*F	*M
☞a. torpedo m.	*		*
b. torpedo f.	*	*!	

As we can see from the tableau in (28), we get the wrong predictions in this case too.
The semantic rule by which nouns denoting cars are feminine and the formal rule by
which nouns ending in *-o* are masculine tie. If the conflict were resolved by the gender
markedness hierarchy, we would predict assignment of the masculine gender, contrary
to the attested facts. *Torpedo* is feminine, according to the semantic rule that assigns
feminine gender to nouns denoting cars.

The case of Italian feminine nouns ending in *-o*, therefore, seems to constitute
evidence in favour of theories such as Corbett's, that maintain that semantic rules
dominate over formal rules in gender assignment, or at least of theories such as
Audring's, that maintain that ranking is not universal but language-specific (and in this
case Italian would rank semantic constraints over formal ones), and against OGAT. The
correct tableau for *torpedo* should look like the one in (29):

(29)   Gender assignment to Italian *torpedo* in OT, with semantic constraints ranked
above formal ones

torpedo	$*CAR \Rightarrow M$	$*\text{-}o\# \Rightarrow F$	*F	*M
a. torpedo m.	*!			*
☞ b. torpedo f.			*	

4.5.   Conclusion on dominance hierarchies between assignment criteria

There is still an alternative to save OGAT at this point: one could contend that only semantic rules assigning the unmarked gender of a language are permitted, while formal ones are not. This is the move that Rice himself would make (p.c., email of September 6, 2005, to the author). He observes that OGAT would yield the correct results in Tableaux (20) and (28) if the rule that prohibits assignment of feminine gender to nouns ending in *-o*, and therefore assigns them masculine gender, didn't exist. Then the semantic rules assigning feminine gender to nouns denoting females or cars would be the only rules ranked above the markedness hierarchy, ensuring assignment of feminine gender to *virago* and *torpedo*.

But I don't see a compelling reason for ruling out only formal rules that would assign the unmarked gender, while allowing semantic rules that do so, unless, of course, one is ready to admit that in some sense semantic rules are more important than formal rules, i.e., they dominate over them, which is exactly what OGAT denies.

5.   Constraints on semantic gender assignment rules

Once we have established the relevance of semantic rules for correctly assigning gender to recent loanwords into Italian, the question arises whether it is possible to constrain the kinds of semantic gender assignment rules that we employ. We must at all cost avoid positing uncontrolled ad-hoc semantic rules just to counterbalance an unwelcome gender assignment.

No one has ever questioned the validity of semantic rules that assign gender on the basis of the sex of the referent. They come up over and over in the literature about any language which has a masculine and a feminine gender.

But what about other semantic rules? For instance, what about rule (26), which assigns feminine gender to nouns of cars in Italian? Is it grounded on any principle, or is it just my personal escape gate to account for the gender of the words in (27)?

I believe any answer to this question must be framed in a general outline of the kinds of semantic principles one is ready to allow as valid criteria for gender assignment. Existing literature on gender assignment to loanwords (too extensive to be listed) suggests that at least the three kinds of principles stated in (30) must be recognized to have effect in gender assignment to loanwords.

(30)   Three criteria for gender assignment to loanwords

      a.   ASSOCIATE: the loanword copies the gender of a specific L1 noun to which it is associated (examples in Thornton 2003a)

      b.   EQUIVALENT: the loanword copies the gender of a specific L1 noun which is its translation equivalent (examples in Thornton 2003b)

      c.   HYPERONYM: the loanword inherits the gender of a specific L1 noun which is its hyperonym.

Effects of the ASSOCIATE criterion are often quoted in the literature. I will refer only to an example quoted by Corbett (1991):

(31)   ASSOCIATE
        «English *mud* has become Polish *mada* 'mud, silt' (feminine). There is no obvious reason why it should not have been *mad* (masculine); indeed, 88 per cent of the 681 loans investigated became masculine. Fisiak […] claims that the form *mada* is due to Polish *gleba* 'soil'.» (Corbett 1991: 76)

Effects of the EQUIVALENT criterion have also been observed: the classical study by Poplack, Pousada and Sankoff (1982) reports the examples in (32) in the Spanish spoken by Puertoricans in New York:

(32)   EQUIVALENT
        la butterfly "the-m butterfly" ←   *la mariposa* "the butterfly f"
        el building "the-m building" ←   *el edificio* "the building m"
        (Poplack, Pousada and Sankoff 1982: 11)

Hereafter, I will concentrate on some aspects of the assignment criterion called HYPERONYM in (30c).

5.1.   *The Basic Level Hyperonym Constraint*

There is a strict test for the Hyponymy/Hyperonymy relation, stated in (33):

(33)   X is a hyponym of Y iff 'all Xs are Ys' and not 'all Ys are Xs'
        (Berruto 1976: 63)

According to (33), *car* is a hyponym of *vehicle*: all cars are vehicles, and not all vehicles are cars. But a Hyponymy/Hyperonymy relation isn't always exploited in gender assignment, as the Italian data in (34) show:

(34)   a.   *veicolo* m. "vehicle"/ *mezzo di trasporto* m. "transportation means"

        b.   *bicicletta* f. "bicycle", *macchina* f. "car", *motocicletta* f. "motorbike", *camion* m. "truck", …

The Italian masculine nouns in (34a), meaning "vehicle", are hyperonyms of the ones in (34b), but these do not inherit the gender of their hyperonym.
        On the other hand, the nouns in (35) meaning "car" are hyperonyms of the nouns in (27) above, and these do inherit their hyperonym's gender:

(35)   *macchina* f "car" / *automobile* f "car"

I think that the contrast between the lack of hyperonym effect in (34a-b) and the strong hyperonym effect in (35)-(27) can be explained if we entertain the hypothesis stated in (36), which I will call the *Basic Level Hyperonym Constraint*:

(36)   *The Basic Level Hyperonym Constraint*
        To be able to assign gender to its hyponyms, a hyperonym must be a *basic level term*

The concept of basic level term has been developed in cognitive psychology, in research on universal principles of categorization, notably in the work of Eleanor Rosch and colleagues (Rosch *et al.* 1976, Rosch 1978). A question asked in this kind of research was "How shall a thing be called?". This was the title of a seminal paper by Roger Brown, published in 1958 in the *Psychological Review* (quoted in Tversky 1986: 63). Barbara Tversky (1986:63) gives the following answer:
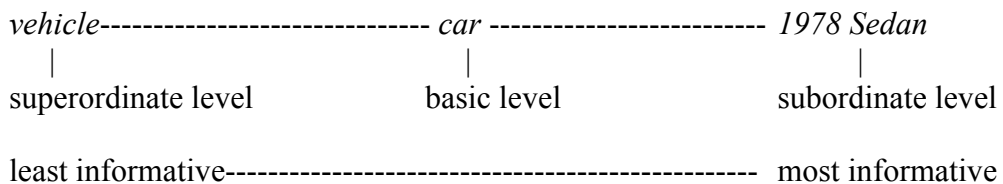
> «Most things have many names. This is a *table*, a *conference table*, a *brown wooden table*, a *piece of furniture*, and so on. Yet, when in the serious business of labelling the world to teach children how to talk, we all agree, and the child, too, that *table* is the proper name.» (Tversky 1986:63)

That means that there is a preferred level at which objects are called and recognized and classified; this level is considered the most useful level at which objects can be cognitively manipulated.

According to Rosch, «The task of category systems is to provide maximum information with the least cognitive effort» (Rosch 1978: 28), and it has been experimentally proved that «There is a trade-off between the informativeness of a category, and the number of categories or distinctions that we have to deal with» (Tversky 1986: 64).

Take the universe of vehicles as an example: the same object can be categorized at least in the three ways shown in (37): it can be seen as a *vehicle* at the superordinate level, as a *car* at the basic level, and as a *1978 Sedan* at a subordinate level.

(37)   Three levels of categorization

vehicle------------------------------ *car* -------------------------- *1978 Sedan*
        | | |
        superordinate level   basic level   subordinate level

        least informative--- most informative

Tversky observes that «Categorizing […] vehicles […] by make, model, and year certainly provides much more information than merely categorizing by *car, truck, motorcycle*, and so on, and that provides more information than categorizing simply as *vehicle* […]. This information, however, comes at the cost of the cognitive burden of remembering and distinguishing many different categories», and she wonders whether we can identifiy «a level in taxonomies where the benefits of information balance the costs of number of categories» (Tversky 1986: 64).

The studies by Rosch and colleagues have shown that «increasing specificity from the superordinate to the basic level leads to a large gain in informativeness, but further increases in specificity do not increase informativeness, but do increase the

mental burden of categories and distinctions» (Tversky 1986: 65). Therefore, objects are first seen or recognized as members of their basic category (Rosch 1978: 34-5). The basic level is the cognitively optimal level for categorizing new items, such as recent borrowings and neologisms. Tversky concludes that the answer to Roger Brown's question is the following:

> «Things are called at a level that is informative without imposing a burden of too many distinctions [i.e., the Basic Level]. Moreover, that level of categorization is preferred not just for naming, but in an impressive variety of tasks reflecting many aspects of human cognition» (Tversky 1986: 66).[6]

I propose that one of the tasks for which basic level categories are preferred is that of gender assignment.

The taxonomical hierarchies of physical objects investigated by Rosch and colleagues are the ones listed in (38):[7]

(38)   Hierarchies of physical objects investigated by Rosch *et alii* (1976)

Superordinate Level	Basic Level	Subordinate Level
MUSICAL INSTRUMENT	guitar, piano, drum…	classical guitar, upright piano…
TOOL	hammer, saw, screwdriver…	claw hammer, cross-cutting hand saw…
CLOTHING	pants, socks, shirt…	Levis, knee socks…
FURNITURE	table, lamp, chair ….	kitchen table, desk lamp…
VEHICLE	car, bus, truck…	sports car, city bus…

The hierarchies comprise three levels: a Superordinate Level such as VEHICLE, a Basic Level such as *car, bicycle…* and a Subordinate Level which comprises subsets of the entities denoted by the Basic Level Terms.

It is interesting to observe that most of the Italian feminine nouns ending in *-o* listed in (18) denote subordinate entities, many from within the very same taxonomies investigated by Rosch and colleagues, and their feminine gender can be explained by appealing to inheritance of the gender of the noun denoting the respective basic level category. Some examples are given in (39):

---

[6] «Basic objects [have been] shown to be the most inclusive category for which a concrete image of the category as a whole can be formed, to be the first categorizations made during perception of the environment, to be the earliest categories sorted and earliest named by children, and to be the categories most codable, most coded, and most necessary in language» (Rosch *et al.* 1976: 382).
[7] I leave aside here the biological taxonomies, which raise problems that deserve a separate study in connection with gender assignment.

(39)   Italian feminine nouns in *-o* and their Basic Level Hyperonyms

Basic Level Category	Italian Basic Level noun with gender	Subordinate feminine nouns (gender assignees)
car	*macchina* f	*cabrio* "kind of car", *torpedo* "kind of car"
shirt	*maglietta* f / *camicia* f	*polo* "polo shirt"
chair	*sedia* f	*sdraio* "deck chair"

I assume that *biro* "ballpoint pen" can be explained in a similar way, as in (40b), by appeal to the taxonomy in (40a):

(40)   a.   Taxonomy for writing instruments

Superordinate	Basic Level Term	Subordinate
WRITING INSTRUMENT	pen, pencil, crayon…	ballpoint pen, fountain pen …

        b.   Gender assignment for Italian *biro* "ballpoint pen"

Basic Level Category	Italian Basic Level noun with gender	Subordinate nouns (gender assignees)
pen	*penna* f	*biro* "ballpoint pen"

A similar explanation is available for *merino* "merino sheep", which very likely gets its feminine gender from the hyperonym *pecora* f "sheep".[8] For *lampo*, the remaining Italian feminine noun in *-o* from the list in (18), I believe that the most economical explanation is to assume inheritance of the gender of a deleted head noun. *Chiusura lampo* "zipper" is a N+N compound with the structure in (41):

(41)   [[chiusura]_N [lampo]_N]_N
        "zipper", lit. [[fastener]_N [flash]_N]_N

The compound regularly inherits the feminine gender of its head, *chiusura* "fastener"; when the head is deleted through ellipsis, the modifier *lampo* "flash" takes up the meaning of the whole compound and its gender.

        Basic level term effects in gender assignment in the taxonomy of vehicles had already been reported in the literature, even though they had not been interpreted in the same way I am proposing. Corbett (1991: 76-77) reports data from Gouffé's (1971) study of French borrowings into Hausa. Hausa's relevant facts are summarized in (42).

---

[8] I will not discuss this case further because it involves discussion of the problems raised by biological taxonomies.

(42)   Hausa

    a.   2 genders: masculine, feminine

    b.   Semantic rules: nouns denoting males are masculine,
                                                  nouns denoting females are feminine

    c.   Phonological rules: nouns ending in *-aa* are feminine;
                                                  nouns with other endings are masculine

Hausa has two genders, masculine and feminine, and the usual sex-based semantic rules; besides, it has a phonological rule by which nouns ending in *-aa* are feminine. But some borrowings are assigned feminine gender, even though they do not end in *-aa*. An examples is the one in (43):

(43)	**Basic Level Category**	**Basic Level noun with gender**	**Subordinate noun (gender assignee)**
	car	*mootàa* f "car" (< English *motor*) [feminine by phonological rule]	*tàkàsìi* "taxi" (< *taxi*) f

As we can see from the data in (43), the phonological rule that would assign masculine gender is dominated by a semantic rule that assigns feminine gender to the borrowing meaning "taxi" by inheritance of the gender of its basic level hyperonym meaning "car". Particularly interesting for us is the minimal pair in (44):

(44)   Hausa *pèežoò* < French *Peugeot*

    pèežoò f "Peugeot car"   vs.   *pèežoò* m "Peugeot bicycle"
    (data from Corbett 1991: 77)

When *pèežoò* is used to denote a car, it is feminine; when the same word is used to denote a bicycle, it is masculine, because in this case it doesn't fall within the scope of the semantic rule assigning feminine gender to nouns denoting cars.
I hope to have shown that inheritance of the gender from a hyperonym that is a Basic Level Term is a real process at work in gender assignment (at least in regard to borrowings).

      A further observation I can make is that, while Basic Level Terms function as gender assigners to their hyponyms, Superordinate terms do not function as gender assigners to their basic level hyponyms. Robust evidence for this has been collected by Zubin and Köpcke (1986) for German (even though they did not limit their investigation to borrowings or neologisms), as we can see in (45), and the same happens in Italian, as we can see in (46).

(45)   Superordinates do not assign gender to Basic Level terms in German (Zubin and Köpcke 1986)

Superordinate	German Superordinate with Gender (shown by article)	German Basic Level Terms with Gender (shown by article)
MUSICAL INSTRUMENT	*das Musikinstrument*	*die Harfe, das Klavier...*
TOOL	*das Werkzeug*	*der Hammer, die Hacke, das Skalpell...*
CLOTHING	*das Kleid / das Kleidungsstück*	*der Mantel, die Hose, das Hemd...*
FURNITURE	*das Möbel / das Möbelstück*	*der Tisch, die Lampe*
VEHICLE	*das Fahrzeug*	*der Wagen, der Bus...*

(46)   Superordinates do not assign gender to Basic Level terms in Italian

Superordinate	Italian Superordinate with Gender	Italian Basic Level Terms
MUSICAL INSTRUMENT	*strumento* m	*chitarra* f "guitar", *pianoforte* m "piano"... *balalaika* f (from Russian)
TOOL	*strumento* m / *attrezzo* m	*martello* m "hammer", *sega* f "saw"…
CLOTHING	*capo d'abbigliamento* m	*camicia* f "shirt", *pantaloni* m "pants"…
FURNITURE	*mobile* m	*tavolo* m "table", *sedia* f "chair"… *consolle* f (from French)
VEHICLE	*veicolo* m / *mezzo di trasporto* m	*macchina* f "car", *autobus* m "bus"…

For Italian, where possible I have tried to exemplify the categories in (46) with data concerning borrowings; I did not find many suitable examples, very likely because Basic Level Terms are more commonly traditional nouns belonging to the native vocabulary, and very few recent borrowings gain Basic Level Term status, at least in a relatively stable language such as Italian. Most borrowed nouns denote very specific and peculiar entities, which have rather subordinate status: it makes sense to have a gender assignment constraint that makes them inherit gender from their Basic Level Hyperonym.

A proposed constraint on the format of possible semantic gender assignment rules is therefore the one in (47):

(47)   A proposed constraint on the format of possible semantic gender assignment rules

Nouns denoting Subordinates may inherit gender from their Basic Level Hyperonym, but Basic Level Terms do not inherit gender from their Superordinate Hyperonym.

6.   Conclusion

In this paper, I have investigated whether there is a dominance hierarchy between formal and semantic gender assignment rules / constraints, on the basis of Italian data. Gender assignment to loanwords and neologisms in contemporary Italian shows that when a conflict between a semantic gender assignment rule and a formal one arises, semantic rules prevail, contrary to what would be predicted according to the Optimal Gender Assignment Theory of Rice (2004, 2005). The paper has then proceeded to investigate what kinds of semantic rules exist, besides the well-known rule assigning masculine and feminine gender to nouns denoting male and female humans respectively. On the basis of Italian data, I have proposed that a constraint on semantic gender assignment rules is the "Basic Level Hyperonym Constraint", stating that rules that assign gender to a noun through inheritance of the gender of one of its hyperonyms exist only between Basic Level Hyperonyms and Subordinate nouns (and not, for example, between Superordinate nouns and Basic Level nouns, as evidence collected for German by Zubin and Köpcke 1986 had already shown).

References

Audring, Jenny, 2004, *Constraint Competition in Gender Assignment to Loanwords*, ms, Vrije Universiteit Amsterdam.

Berruto, Gaetano, 1976, *La semantica*, Bologna, Zanichelli.

Comrie, Bernard, 1999, "Grammatical Gender Systems: A Linguist's Assessment", *Journal of Psycholinguistic research* 28, 457-466.

Corbett , Greville, 1991, *Gender*, Cambridge, Cambridge University Press.

Corbett, Greville G. and Norman M. Fraser, 1999, "Default genders" in Barbara Unterbeck, Matti Rissanen (eds), *Gender in Grammar and Cognition: I. Approaches to Gender, II. Manifestations of Gender* (Trends in Linguistics. Studies and Monographs), Berlin-New York: Mouton de Gruyter, 55- 97.

Corbett, Greville G. and Norman M. Fraser, 2000, "Gender assignment: a typology and a model", in Gunter Senft (ed.), *Systems of nominal classification*, Cambridge, Cambridge University Press, 293-325.

De Mauro, Tullio, Mancini, Federico, Vedovelli, Massimo, and Voghera, Miriam, 1993*, Lessico di frequenza dell'italiano parlato* (LIP), Milano, Etaslibri.

Doleschal, Ursula, 1999, "Gender Assignment Revisited", in Barbara Unterbeck, Matti Rissanen (eds), *Gender in Grammar and Cognition: I. Approaches to Gender, II. Manifestations of Gender* (Trends in Linguistics. Studies and Monographs), Berlin-New York: Mouton de Gruyter, 117-165.

Doleschal, Ursula, 2004, *Genus als grammatische und textlinguistische Kategorie,* Muenchen, Lincom Europa.

Enger, Hans-Olav, Nesset, Tore and Rice, Curt (eds.), in press, *Lingua* special issue: Proceedings of the Oslo Workshop on Gender.

Fraser, Norman M. and Corbett, Greville G., 1995, "Gender, Animacy and Declensional Class Assignment: A Unified Account for Russian", *Yearbook of Morphology 1994*, 123-150.

Fraser, Norman M. and Corbett, Greville G., 1997, "Defaults in Arapesh", *Lingua* 103, 25-57.

LIP = De Mauro *et al.* 1993

Nesset, Tore, 2004, "Gender meets the Usage-Based Model: Four Principles of Rule Interaction in Gender Assignment", ms, CASTL-University of Tromsø (in press in Enger *et al.* (eds.))

Nitrola, Cristina, 1998, *Morfologia dei toponimi italiani*, tesi di laurea, Università dell'Aquila.

Poplack, Shana, Alicia Pousada and David Sankoff, 1982, "Competing influences on gender assignment: variable processes, stable outcome", *Lingua* 57, 1-28.

Rice, Curt, 2004, "Optimizing gender", ms, University of Tromsø (in press in Enger *et al.* (eds.))

Rice, Curt, 2005, "Optimizing Russian Gender: A Preliminary Analysis", in *Formal Approaches to Slavic Linguistics 13: The South Carolina Meeting*, ed. by Steven Franks, Frank Y. Gladnev and Mila Tasseva-Kurktchieva, Ann Arbor MI, Michigan Slavic Publications, 265-275.

Rosch, Eleanor, Mervis Carolyn B., Gray Wayne D., Johnson David M., Boyes-Braem Penny, 1976, "Basic objects in natural categories", *Cognitive Psychology* 8, 382-439.

Rosch, Eleanor, 1978, "Principles of Categorization", in *Cognition and Categorization*, ed. by Eleanor Rosch and Barbara B. Lloyd, Hillsdale NJ, Erlbaum, 27-48.

Steinmetz, Donald, 1986, "Two principles and some rules for gender in German: Inanimate nouns", *Word* 37, 189-217.

Thornton, Anna M., 2003a, "L'assegnazione del genere in italiano", in *Actas del XXIII Congreso Internacional de Lingüística y Filología Románica*, ed. by Fernando Sánchez Miret, vol. I, Tübingen, Niemeyer, 467-481.

Thornton, Anna M., 2003b, "L'assegnazione del genere ai prestiti inglesi in italiano" in *Italiano e inglese a confronto*, ed. by Anna-Vera Sullam Calimani, Firenze, Cesati, 57-86.

Tversky, Barbara, 1986, "Components and categorization", in *Noun classes and categorization*, ed. by Colette Craig, Amsterdam / Philadelphia, Benjamins, 63-75.

Zubin, David A. and Klaus-Michael Köpcke, 1986, "Gender and folk taxonomy: the indexical relation between grammatical and lexical categorization", in *Noun classes and categorization*, ed. by Colette Craig, Amsterdam / Philadelphia, Benjamins, 139-180.