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A LACK OF ALIEN VERBS: COINAGE IN SCIENCE FICTION

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1. Introduction. Neologism is a particularly robust phenomenon in Modern English; lexicographers spend substantial amounts of time deciding which words among the plethora appearing each year should be included in new dictionary editions. For the most part, however, these neologisms are not completely new; they are formed from morphemes already extant in established English words. For example, although *internet* is a term of comparatively recent origin, its component parts are not. It is, in fact, rare to find 'pure' neologisms in mainstream English. This poses certain problems for those studying word-formation: standard English coinages do provide information on a speaker's implicit or explicit command of morphological devices, but it can be argued that the speaker's creativity is circumscribed because s/he is constrained by the number and structure of morphemes already in use. 'Pure' neologisms are thus of great interest, since they might provide insights about what happens when speakers creatively try to 'get outside their own language'.

One area in which such coinages occur with some frequency is that of science fiction writing. Authors in this genre commonly invent entire cultures (and species) in their works, and as these are intended to be perceived as new and strange, there is a natural benefit to creating new and strange words to go with them. If a futuristic and/or alien culture is to be seen as truly different from our own, there must be phenomena in it that are different from those we are familiar with, and words for those phenomena. Using more traditional methods of neologism—combining Greek and Latin roots and affixes—allows one to create novel *juxtapositions* of familiar semantic fields, but this is not always sufficient to establish the sense of strangeness/exoticism the author desires. The meaning of pure neologisms can be determined much more actively by the writer, making them a valuable device.

Previous analyses of the use of language in science fiction, such as Barnes (1974) and Meyer (1980), have focused on broad issues: the degree to which authors' linguistic theories seem to match those of linguists, the ways in which authors have their characters go about dealing with language learning in first-contact situations, or the extent to which authors elaborate their novel languages. For the most part, these researchers have been interested in science fiction works which *explicitly* deal with language, in the sense of being about

language in some way or involving extended discussions of it (e.g., Samuel R. Delaney's *Babel-17* or Jack Vance's *The Languages of Pao*, both of which address the Sapir-Whorf hypothesis to some extent). There has been little attention paid, however, to the structure of particular authors' *inventories* of neologisms; that is, previous work has been concerned with what authors do with their words, not the words themselves. Barnes and Meyer were doing ground-breaking work; little scholarly attention had been paid to the juxtaposition of science fiction and linguistics at all, and there was a compelling need for 'overview' works.

This paper will present the results of a pilot study in which neologism-inventories were collected from a number of works and then analyzed to determine if patterns existed which would suggest avenues for further study. Section 1 will describe the design of the study and the analytical problems that occurred during it. Section 2 will present the results of the study and point out some patterns within those results, while section 3 will attempt to provide explanations for some of those patterns. The most striking pattern in the results was the greater frequency of nouns over every other syntactic type.

1. DESIGN.

1.1 OVERVIEW. As this was a pilot study, the goal was simply to collect a set of reasonably representative data upon which to base some observations that might inform further work. A total of ten works were used for the primary data sample, with some authors being represented more than once, for comparison (Table 1, below; index codes are provided for the table of results in the appendix). Choice of works was not random; I selected a set which, based on prior experience, I knew contained at least some pure neologisms. In addition, I deliberately included authors whom I considered representative of a range of facility with the coinage process (e.g., it is apparent, even on a rapid reading, that Jo Clayton uses large numbers of neologisms while K. D. Wentworth does not). I selected works which dealt with interaction among a number of species/cultural groups and/or set in periods sufficiently remote from the present to render English an unlikely common tongue, as these elements are most likely to favor pure neologism. Nine of the works were novels; Vance's lengthy short story 'The Last Castle' was added because, based on a reference in Meyer (1980), I had reason to believe it would contain a variety of syntactic types of neologism. I avoided works which involved linguistics itself as a major theme.

After selecting the set of works to evaluate, I scanned them for pure neologisms, counting types but not tokens, and initially included a number of 'borderline' cases discussed below. In three cases (*Dune*, *Golden Witchbreed*, and *Invader*), the authors themselves provided glossaries. The inventories were

Author	Title	Index	Date
Cherryh, C. J.	*Pride of Chanur*	CH1	1981
	Invader	CH2	1995
Clayton, Jo	*Skeen's Leap*	CL1	1986
	Shadowspeer	CL2	1990
Gentle, Mary	*Golden Witchbreed*	GE1	1983
Herbert, Frank	*Dune*	HR1	1965
Vance, Jack	*Trullion*	VA1	1973
	'The Last Castle'	VA2	1966
Wentworth, K. D.	*Moonspeaker*	WE1	1994
	House of Moons	WE2	1995

Table 1. Authors, titles, index codes and dates of works cited

then 'weeded' and organized into a set of broad categories which are descriptively useful, although in need of more precise treatment in further study. Nouns were divided into terms for sophonts (species names), animals, plants, items, social identities or relationships, and abstract concepts.[1] Proper names of individuals and places were not counted. Adjectives, verbs, and interjections were separate categories (no neologistic adverbs or prepositions were found, unsurprisingly) but were not further subdivided. A cross-cutting category of Invective was added due to the number of both nouns and interjections used invectively or derogatorily.

1.2 PROBLEMS OF ANALYSIS. A number of analytical problems were encountered in this study. First, it was sometimes difficult to determine whether an unusual word constituted a pure neologism. Some science fiction authors are wont to mine the more remote recesses of the OED for little-known words; Jack Vance, for example, is one of the few English-speakers for whom *glaucous* and *fulvous* are basic color adjectives. Whether or not a word was really English could, of course, be checked via a dictionary, but there were a number of examples that suggested extant sources but were not identical to them. For example, Jo Clayton (*Skeen's Leap*) introduces a humanoid species, the Naggamar, who have certain reptilian characteristics. It is difficult to determine if this is a conscious allusion to the Naga, or snake-people, of Hindu mythology. Likewise, Frank Herbert directly borrowed a number of words from Arabic in *Dune*; some others of his terms may be 'altered' Arabic that, given my lack of skill in the language, I could not recognize.[2] Meyer (1980:6) cites an example of one of Herbert's later books containing a Sanskrit compound. If the connection between a neologism and an extant word seemed in-

direct, as with Clayton's Naggamar, I included it in the sample; I attempted to exclude all direct borrowings but may have failed in certain cases, particularly with *Dune*.

The second problem involved the issue of how to deal with groups of related words. Some of the authors, particularly Clayton and Cherryh, create their own micro-systems of affixational morphology. For example, in *Pride of Chanur*, a *mahe* is an individual member of a particular alien species; *mahen* acts as a aggregate or group plural, while *mahendo'sat* appears to denote the species as a social construct (e.g., person vs. people vs. Humanity). The question is whether one should count morphemes or words in such cases. On the one hand, in other cases I counted types, not tokens, and it can be argued that both *mahe* and *mahen* contain the same type. On the other hand, such micro-systems were rarely consistent on a more general level in the data examined; in the same work, one *kif* plus one *kif* equalled two *kif*, not two *kiffen*. For purposes of this study, I (rather arbitrarily) counted types in terms of words, not morphemes, so *mahe* and *mahen* are separate items.

The third problem was one of determining word function and meaning. In most cases, the authors provided sufficient information, either via direct glossing by a character or the narrator, or via sentential context, to establish an approximate word meaning. Clayton, for example, includes phrases such as 'I don't give a ghibb who you are!' (1990:78) in which the general syntactic category and meaning are identifiable—we may not know exactly what a *ghibb* is, but we know it is a noun and it is not pleasant. Still, in this example it is unclear whether to count *ghibb* as an animal, an item, etc. In such cases, the word was counted as a noun but not further categorized. Some examples, however, could simply not be analyzed within the primary categories used; these were counted in an 'other' category. Honorifics constituted another category problem, in that such words can frequently act as nouns or adjectives, with the base class difficult to establish. For purposes of this study, honorifics were counted as adjectives.

Finally, there is the issue of what to do with blends—combinations of a neologistic morpheme with a nonneologistic one. Clayton (1990), for example describes *stinrats* and *zasrats* in terms that make it clear that they are verminous animals; it is logical to suspect that the *-rat* portion of each word is the familiar English term. Again, if one were counting morpheme types this would not be a problem, but I counted word types. Somewhat arbitrarily, again, I counted blends as full neologisms.

2. RESULTS. Appendix 1 presents the overall count of items per category per work. Since some authors were represented by more than one work, and the works varied in length, the raw counts can be misleading. The two Wentworth works, for example, are closely related, both in plot and time of

publication, so that the inventories of the two overlap a great deal. One of the Vance works is a short story; it would be unsurprising to discover that fewer neologisms occur in a short work than a long one. For comparison, some kind of 'normalized' count is needed. I used the total number of items in each category for each author, divided by the total number of pages for that author, multiplied by 1000; results are presented in Table 2 below. Obviously, dividing by number of words would have been preferable, but counting pages was the only feasible option. The resulting values are a rough approximate of number of neologisms in each category per 1000 pages, but since the combined page totals for each author were all under 600 pages, the values should not be regarded as statistically rigorous.

As the normalized counts show, by far the strongest pattern in the results is the prevalence of nouns over other syntactic types: 89% of the total inventory of neologisms comprised nouns. Adjectives were the second most common type, but most of the items counted as adjectives were, in fact, honorifics, which could be used nominally as well. Of the few nonhonorifics, most were derogatory to a greater or lesser degree. It thus appears that neologistic adjectives in science fiction tend to be tied to social valuations, either positive or negative. Verbs were quite rare and in several examples are introduced as invective; Clayton's use of *jogga* in *Shadowspeer* is precisely analogous to *fuck* (the derivative epithetic noun *mommajogga* is used as well). Jack Vance's *Last Castle* included two noninvective verbs (a verb of motion and a verb of cognition) and C. J. Cherryh's *Invader* included a verb of mental condition that might also be analyzed as an adjective ('refusing to be shaken'). Within the general noun category, there was wide variation; from the sample, it cannot be claimed that terms for animals are generally more numerous than terms for plants, etc.

As might be expected, a large amount of variation was observed among the authors. Both Clayton's *Skeen's Leap* and Cherryh's *Pride of Chanur* involve settings in which a number of species regularly interact, so that, all things being equal, one would expect a roughly equal number of neologisms, but such is not the case. Clayton uses far more neologisms than does Cherryh; in fact, Cherryh uses a greater number of neologisms in *Invader*, which involves fewer intelligent species. Some authors did, however, evince certain distinctive neologistic strategies. Clayton creates a profusion of social terms, most of which are political or occupational titles; each culture has a different name for the ruler(s) and often specific names for that culture's variant of a recognizable job category. In *Skeen's Leap*, for example, a group of hired guards of the Chalarosh species that also keep the protagonist under surveillance for the government is known as an 'inlal of klazits', so that there is a specialized group term (*inlal*) as well as an occupation title (*klazit*). Jack Vance creates

	Clayton	Cherryh	Gentle	Herbert	Vance	Went.
N/?	27	0	0	0	8	0
N/Sophont	45	15	0	0	35	7
N/Animal	42	7	33	2	24	30
N/Plant	11	1	21	4	31	10
N/Item	50	6	21	33	35	16
N/Social	101	15	21	22	28	5
N/Abs	20	16	4	35	20	0
Adjectives	17	13	2	2	8	0
Verbs	3	1	0	0	8	0
Interject.	15	1	0	0	0	0
Other	8	3	4	8	0	2
Invective	45	0	0	0	8	3
NounTot.	296	60	100	96	181	68
~NounTot.	42	19	6	10	16	2

Table 2. Normalized results of study.

terms for emotional states or nuances (e.g., *forlostwenna*, approx. 'an urgent desire to travel' < *Trullion*), a category almost absent in other author's works.

There was also a good deal of variation in authors' inclusion of specifically grammatical and/or metalinguistic terminology or operators. Several of the authors provide plurals of terms, although only Cherryh's *Invader* goes so far as to explicitly discuss plurals (in an appendix which presents the Ateva language as being eerily similar to Latin, to the extent of having an ablative case suffix). Gentle's glossary includes a gloss for a diminutive suffix; several authors, including Cherryh and Clayton, created some honorifics as suffixes. Clayton's *Shadowspeer* included one fully metalinguistic term, *shidduah*, referring to a ritual greeting.

3. DISCUSSION. The most striking patterns in the results are (1) the predominance of nouns, (2) the social-valuation characteristics of the adjectives, (3) the frequency of invective usages in some of the authors' works, and (4) the types of variation among authors. I will discuss each of these below, proposing some explanations which should be viewed as quite tentative given the small set of data.

3.1 NOUN PREDOMINANCE. The striking imbalance in syntactic types represented in the data would probably manifest in a wider data sample as well; one reason I conducted this pilot study was that an informal reading of a wide range of science fiction novels had yielded very few non-nominal neologisms. The most famous exception is probably *grok*, from Robert Heinlein's *Stranger in a Strange Land* (1961). As Meyers (1980:31–32) has pointed out, Heinlein's *Stranger* was selected as part of the Brown Corpus, and hence *grok* appeared in dictionaries that used this corpus. Had the Brown Corpus included *Dune* instead, we would have no 'official' alien verbs (but would have a much greater number of official alien drugs and poisons!). Heinlein's *Stranger* is unique in a number of ways and in fact devotes a great deal of prose to defining *grok*; in some ways, the book's major theme can be seen as an extended definition of the term. Most other works do not focus on specific alien terms, let alone verbal ones. Why are there so many nouns and so few non-nouns?

One explanation is that science-fiction authors, consciously or unconsciously, are recapitulating a 'contact borrowing' paradigm. Most obviously borrowed terms in English are nominals, and it would not be surprising if authors reflected this. This explanation, however, seems to avoid the fundamental question, since we could then ask why so many borrowed words are nominals. Why don't speakers borrow more verbs? In addition, one does expect borrowings in cases where one's language has a perfectly usable equivalent; why would Clayton not use 'a group of guards', stipulating that they also spy for the government, rather than 'an inlal of klazits'?

As a second explanation we could argue that it is easier to create novel nominals than novel verbs; that is, less cognitive effort is required on the part of the author to make up nouns. There is some support for this idea from other areas of linguistics. It has long been noted, for example, that nouns enjoy an early advantage in child language development (cf. review in Gentner 1982) and one study demonstrated that children found object-denoting words (which are also nouns) to be easier to pronounce than action-denoting ones (Camarata & Leonard 1986). This has led Spelke and others (Spelke 1985; Spelke, Kestenbaum & von Hofstein 1989) to argue that the discrimination of objects from the environment and the formation of object concepts is 'hard-wired' in infants. Adults, as well, appear to have an easier time learning novel object-denoting words than action-denoting ones (Spinney & Haynes 1989). If ease of learning is related to ease of creation, this would help explain the large number of nominal neologisms.

A third explanation involves the reader, rather than the author. Novel nouns may be less disruptive to the reading process than novel verbs. Works with large numbers of neologisms require more effort of their readers, and authors, one would assume, probably take that into account. James Joyce's *Finnegan's Wake*, with its plethora of neologisms, may have won critical acclaim

but is the object of much wailing and gnashing of teeth among English graduate students. Science fiction is a 'popular' genre, where critical acclaim is less important than sales volume; one would have a difficult time continuing to publish if one's only readers were English graduate students (wailing ones at that). However, this explanation can be reduced to the previous one. Why would novel nouns be less disruptive than novel verbs? If the answer is that the nouns require less cognitive 'work', this explanation is the same for both reader and author.

Obviously, the 'cognitive work' explanation is a simplistic one—'work', for example, should be defined in some way, and it is quite possible that different types of 'work', however defined, are involved in what the author does and what the reader does. Its value is that it connects a seemingly isolated observation about neologisms in a literary genre to general cognitive constraints and is, therefore, worthy of further consideration.

3.2 SOCIAL ADJECTIVES AND INVECTIVE. As noted in section 2, most of the adjectives in the sample were honorifics. Given that honorifics are a relatively minuscule proportion of the total number of words in any language, it is curious that so many should be represented here. The reason may lie in the fact that honorifics are among those words whose denotations are less important than the social consequences of their use. In other words, it is not really necessary to *know* what an honorific means, in the formal-semantic sense; it is, instead, important to know when one should use it; its illocutionary force is of primary value. Therefore, while an 'alien honorific' may not have a denotation that an English-speaker is familiar with, it is *functionally* synonymous to words that an English-speaker is familiar with. It is, in effect, simply a different phonological form to associate with an existing conceptual structure, rather than a new conceptual structure.

The same explanation can hold for those adjectives and nouns used as invective: they are functionally identical to invective usages familiar to the readers. Swearing is swearing; one can use some foreign epithets correctly without knowing what they actually mean, and in some cases actually thinking about the meaning of an invective term renders it inappropriate for use. Thus, honorifics and invectives can be considered 'phonetic neologisms' in that the only 'new' aspect of them is their sound.[3]

Some coinages which were neither honorific nor invective appeared to function as phonetic neologisms, in that they were presented in contexts where their denotation seemed subsumed in their formulaic use. Clayton, for example, uses several phrases such as 'soft as the down on a hakkug's belly' (1990:255), in which the actual meaning of the novel term does not have to be recognized, only that it is functioning in a familiar, formulaic comparison structure.

3.3 Variation. In a sense, it would be more surprising to find that authors create similar coinages than to find that wide variation exists. What is interesting about the sample studied is the extent of variation between works by the same author. The standard rationale for using neologisms in science fiction is 'verisimilitude'; e.g., aliens would believably have alien words and concepts. We would thus expect *all* science fiction in which aliens appear to make use of extensive neologism (or risk seeming 'unrealistic' within the terms of the suspension-of-disbelief contract). I expected that the number neologisms would be in some way related to the number of interacting alien species (more groups, more neologisms), but as noted, Cherryh's work demonstrates the opposite. The most influential factor may instead be one of intended viewpoint or tone, e.g., the extent to which an author intends the reader to consciously view the presented setting as 'exotic'. In *Pride of Chanur*, Cherryh adopts an unusual device: the sole human in the story is the 'alien' among several species who have been dealing with each other for quite some time. It is told from the aliens' point of view. The lack of neologisms in *Pride* may be related to the fact that to the major protagonists, their own context is not an exotic one; it is everyday life. What neologisms do occur usually pertain to known species other than the protagonists' own.

In the second Cherryh book, *Invader*, on the other hand, the major protagonist is a human who is trying to understand an alien species that is fundamentally different in certain respects, so that the 'exotic' character of the aliens' culture is highlighted. A number of concepts represented by neologisms are given a good deal of textual development, in order to aid the reader in simultaneously understanding the culture but recognizing that it is alien. We can thus identify one type of neologism-use which correlates with what I will term an 'Establishment of Otherness' strategy on the part of the author.

A different type of strategy may be involved in other kinds of neologistic usages, however. As noted, neologistic invective isn't really very 'new'; in particular, it doesn't establish the 'alien' character of the setting. Shouting invective after hitting one's thumb with a hammer isn't exotic at all, even if it was one's fifth thumb that was hit. It does add a certain type of verisimilitude, though. Anyone who has travelled is familiar with settings in which one does not find the surroundings particularly incomprehensible, but in which some of the words are unfamiliar. Adding neologisms to a character's speech in a science fiction novel can serve as part of a 'local color' strategy. This is particularly obvious in Clayton's works; she frequently uses urban settings and characters with underworld connections, and the neologisms in their speech function to indicate street slang. If the reader understood it completely (i.e., if the neologisms were not used), it would not be detectable as slang (unless one wants to have all aliens sound as if they are from Brooklyn, or Los Angeles, etc.).[4] This is a variant, of course, of the general strategy of verisimilitude, but it

seems to be one that favors a much greater use of certain *types* of neologism, particularly in the social and animal categories (used invectively).

3.4 DIRECTIONS FOR FURTHER INQUIRY. Obviously, given the small size of the data sample, the most pressing need is for expansion of the research base. There may be quite interesting differences in the use of neologism in science fiction works from different periods, or between works by male vs. female authors, that will be detectable only with a much wider sample set. In addition, patterns within the results will only reach statistical significance if more data are considered. The results so far do indicate that syntactic category of neologism, semantic category of verb and adjective neologisms, and overall frequency of neologism across authors should be considered as potentially important variables. In addition, examination of a work's inventory of neologisms may provide valuable insights into its literary structure and the strategies being used by the author.

[1] The category 'social' included honorific and occupational titles, kinship terms, and words denoting social groups. 'Abstract' included a rather wide variety of items, including terms for emotions (a Vance speciatly), units of measurement, etc.

[2] I checked items in Herbert's glossary against a standard Arabic dictionary and a dictionary of Islamic theology (many of the potential Arabic words represented theological concepts). Matches were removed from the set of neologisms, even if some semantic change was evident. For example, in Arabic law, *fai* referred to booty collected from countries that did not resist occupation, while *ghanima* referred to booty from countries that did. In *Dune*, *fai* refers to a water tax levied on the inhabitants, and *ghanima* refers to a combat momento. The connection seemed close enough to warrant treating both items as borrowings. Some cases, however, were not so clear. Herbert uses *taqwa* to refer to 'something of great value'; whether this is from the Arabic *tawwaq* 'yearning' is open to question.

[3] One could easily envision exceptions, of course; a science-fiction novel could use an intricate *system* of honorifics, quite unlike the English one, to reveal a different type of social structure, devoting some discussion to the topic of how each honorific functions. This was not the case in the works examined, however.

[4] A major problem with using *real* slang to establish verisimilitude in a science-fiction novel is that slang is inevitably tied to a locational and social context. One cannot use modern street-gang terms from New York without the reader viewing the action as taking place in modern New York. Thus, something is needed that is recognizably nonstandard, but not tied to an actual place or time. Exceptions, of course, occur in works with time-travel plots or which are set in alternate presents; in such cases reals slang establishes verisimiltude directly.

APPENDIX: RAW DATA

	CL1	CL2	CH1	CH2	GE1	HR1	VA1	VA2	WE1	WE2
N/Sophont	4	14	0	0	0	0	1	1	0	0
N/Animal	15	15	9	1	0	0	7	2	1	3
N/Plant	1	6	1	0	10	2	8	0	1	5
N/Item	9	24	1	3	10	17	9	0	6	3
N/Social	31	36	2	8	10	11	7	0	2	1
N/Abstract	7	6	0	11	2	18	5	0	0	0
Adjective	6	5	3	6	1	1	1	1	0	0
Verb	0	2	0	1	0	0	1	2	0	0
Interjection	1	9	1	0	0	0	0	0	0	0
Other	0	5	1	1	2	4	0	0	0	1
Invective	5	25	0	0	0	0	2	0	1	1
Noun Total	85	111	14	27	48	49	43	3	18	21
~Noun Tot.	7	21	5	8	3	5	2	3	0	1
Total	92	132	19	35	51	54	45	6	18	22
Pages	320	342	223	458	478	510	192	62	281	295

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