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MEASURING NOMINAL DESCRIPTIVITY

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1. Introduction

The topic of this study is the descriptive content which inheres as a potential quantity in the internal structure of many lexical items. The theoretical notion which I am taking as basic is Seiler's principle of descriptivity, an organizing principle which takes naming and predication, the latter in the sense of explanations of names, as complementary processes (the term principle is a technical concept explained in Seiler 1975 and van den Boom 1976; in various studies Seiler and workers on the Cologne Universalienprojekt have investigated descriptivity from functional, structural and quantitative points of view). The association between nouns and predications is clearest in the case of lexical items which are morphologically complex, such as toothpick, blueberry, eyebrow and teacher (called descriptive terms), much less so in the case of monomorphemic lexemes such as scalpel, cherry, pupil and clerk (called labels). With a few exceptions it is the former case I will be treating. These descriptive lexical items utilize various linguistic processes (composition, compounding, derivation, etc.) in expressing propositions about the objects which they name. One given descriptive term may express a more or less literal, explicit or complex proposition than another, and it is thus that different lexical items show a differential utility with respect to aspects of language behavior such as the creation of new lexical items, the learning of lexical items and attempts to explain their meanings. It is in this sense that we can say that some lexical items are more descriptive than others.

Using Ulta's theory of descriptivity grading as a starting point, I will attempt to capture this differential utility in terms of these criteria of literalness, explicitness and syntactic complexity. I will first briefly present his system and investigate some generalizations which he has proposed on the basis of his study of body part terminologies in numerous languages. I will apply his theory to

nouns in this and four other semantic domains, in three North American Indian languages. I will test his generalizations and propose some new ones. I will then present an alternative system of descriptivity grading and compare the results of its application with those of Ultan's system. In the final section I will suggest another methodology for quantification. An appendix at the end of the paper lists all of the descriptive lexical items mentioned, graded according to both systems.

2. Descriptivity grading--Ultan's system

2.1. Summary of Ultan's metrics

In two studies Ultan has investigated the questions of the relative analyzability and predominance of descriptive lexical items, choosing the semantic domain of body part terms as the area of his comparative study of six languages (Finnish, French, German, Ewe, Maasai and Swahili). His resultant system enables one to characterize simultaneously the extent of descriptive naming in a language (and relatively between languages) and the degree of semantic transparency which these descriptive lexical items presents to the speaker; in short, to assign a value, within a given semantic domain or in the language as a whole, of degree of semantic motivation.

The full details of the system can be found in Ultan 1975 and 1976. I will summarize the basic notions and give examples from my data.

Ultan's value for lexical descriptivity (the descriptivity index) is derived as the sum of three metrics. The first measures the degree to which the meaning of a lexical item is derivable from the meaning of its constituent morphemes. Values from 1 to 5 are assigned, a higher value representing a lesser degree of semantic derivability: A value of 1 is assigned when the sum of the meaning of the parts equals, more or less (within a reasonable range

of semantic narrowing and widening), the meaning of the resultant lexical item. Some examples are: Southeastern Pomo. *sasmi* 'pubic hair' (*sa* 'penis' + *smi* 'fur, fuzz'); and Tunica. *-štósutakkiši* 'eyelid' (*-štósu* 'eye' + *takkiši* 'skin'). A value of 2 is assigned when the lexical item has multiple readings, for whatever historical reasons, and the sum of the parts is therefore ambiguously equal or not equal to the whole. My data contained no examples of this. Ultan's two examples are from Finnish (Ultan 1975, page 5). One is *nielu*, which is analyzable as a sequence of *niel-* 'to swallow' and *-u* 'means'. It means either 'throat, pharynx' or 'entrance', the last meaning being the one not equal to the whole.

A value of 3 is assigned when an apparently morphologically complex lexical item is only partially or questionably analyzable, and thus the meaning of the sum of the parts may or may not be equal to the whole. An example of this is Se Pomo. *xáit* 'mudhen' (*xá* 'water' + *ít* 'bird'(?)). Whether or not *ít* is analyzable as 'bird' is variable between speakers. It occurs in this form only in this compound, the normal form being *íta*, and both go back to the Proto-Pomo form **čihta*.

A value of 4 is assigned when the sum of the parts is not equal to the whole, as in Karok. *tikʔárup* 'palm of the hand' (*tí·k* 'finger, hand' + *ʔárup* 'navel'--"navel of the hand"). And a value of 5 is assigned when the term is an unanalyzable label.

The second metric treats paraphrase-term and term-paraphrase relations, measuring the degree of congruence between descriptive lexical items and maximally appropriate paraphrases of these terms which contain the elements some, all, or none. The values, from 1 to 5, can be summarized as follows, with ab representing the descriptive lexical item and a+b, the paraphrase (after Ultan 1975, page 8). Illustrative examples follow each schema:

1. all $a+b \in ab$ and all $ab \in a+b$ (Karak. $\text{?a}\check{\text{c}}\text{ipti}\cdot\text{k}$ 'middle finger' ($\text{?}\acute{\text{a}}\cdot\check{\text{c}}\text{ip}$ 'middle, center' + $\text{ti}\cdot\text{k}$ 'finger, hand'))
2. all $a+b \in ab$ and some $ab \in a+b$ (Tunica. $\text{k}\acute{\text{u}}\text{wat}\acute{\text{o}}\text{hku}$ 'bird (generic term)' (kuwa 'duck' + $\text{-t}\acute{\text{o}}\text{hku}$ 'diminutive'))
3. some $a+b \in ab$ and all $ab \in a+b$ (Karak. $\text{ik}\check{\text{s}}\text{upana}\check{\text{c}}$ 'index finger' ($\text{ik}\check{\text{s}}\text{up-}$ 'to point' + -ara 'instrument' + $\text{-i}\check{\text{c}}$ 'diminutive'))
4. some $a+b \in ab$ and some $ab \in a+b$ (Karak. $\text{akx}\acute{\text{a}}\cdot\text{pak}$ $\text{atat}\acute{\text{u}}\cdot\text{ra}\cdot\text{hitihan}$ 'morning glory (species of flower)' ($\acute{\text{a}}\text{kxa}\cdot\text{p}$ 'ripgut grass' + -ak 'in, on, at' + ?atat- 'to twist' + $\text{ura}\cdot$ 'uphillward' + -tih 'durative' + -han 'deverbative: that which ...' -- "that which is twisted up onto ripgut grass"))
5. no $a+b \in ab$ and no $ab \in a+b$ (Karak. $\text{tik}\text{?}\acute{\text{a}}\text{rup}$ as above)

The third metric assigns a value based on the presence or absence of all morphological constituents necessary for an unambiguous reading of a descriptive lexical item, assuming the possible implicit role of general, productive construction types such as attribute-head and possessor-possessed. A value of 1 is assigned if all necessary constituents are present, as in Hungarian. $\text{f}\acute{\text{u}}\text{r}\acute{\text{o}}\text{g}\acute{\text{e}}\text{p}$ 'drilling machine' ($\text{f}\acute{\text{u}}\text{r}\acute{\text{o}}$ 'to bore' + $\text{g}\acute{\text{e}}\text{p}$ 'machine'); 2, if one or more of the necessary elements is not present but is an implicit characteristic of an explicit element, as in Se Pomo xaxay 'fish gig, spear' (xa 'fish' + xay 'wood, stick'), where the object and the implement are explicit, but the action is implicit; and 3 is assigned in all other cases, such as Karok. $\text{sipnuk}\text{?}\acute{\text{a}}\text{timnam}$ 'type of basket used for carrying light loads' ($\text{s}\acute{\text{i}}\text{pnu}\cdot\text{k}$ 'storage basket' + $\text{?}\acute{\text{a}}\text{timnam}$ 'burden basket'), where a connective proposition like "basket having the functions of both these other types" can only be guessed at.

When these metrics have been determined for a given lexical item, their sum values will total from 1 to 75. These values are converted into a series of grades from 0 to 10, 0 being assigned to a lexical item which is definitely unanalyzable, or is not definitely analyzable, having

been assigned a value of 3 on the first metric (the symbol *0 is used to identify items of the latter sort). The higher the grade, the greater the degree of descriptivity. Additionally to the descriptivity grades Ultan specifies various other characteristics of the terms including a classification of the original semantic motivations of the terms, such as form, function and location ('pragmatic processes') and the syntactic types of the terms, such as compounds and derivations.

2.2. Application to further data

As a first step in my investigation I have extended the use of Ultan's metrics to three more languages and four more semantic domains (with some additional material from a fourth language, Hungarian). The three languages are all of North America: Karok, a linguistic isolate in the Hokan linguistic phylum, Southeastern Pomo, of the Pomoan family of languages, also within the Hokan phylum (both spoken in California) and Tunica, a language of the Macro-Algonkian phylum, formerly spoken in the Southeastern United States. The semantic domains treated are body parts, fauna, flora, implements and occupations.

I will first give a comparative overview of descriptivity grading in the three languages, and will follow this with the specific results of the analyses in the various domains, presented in the tabular form used by Ultan.

2.2.1. Overall descriptivity

Table 1 indicates the size of the corpus which was analyzed, as well as the number and percentage of descriptive terms, in each language.

It will be seen that Karok and Tunica, with 54.6% and 57.2% descriptive terms respectively, rate higher for overall descriptivity than Southeastern Pomo, with only

37.9%. Tunica, the language with the highest descriptivity, is also the language with the highest percentage of compounds, arguably the most descriptive of lexical construction processes (by 'compound' I mean any noun which, at its highest level of analyzability, consists of a sequence of two or more elements which are nouns and, optionally, adjectives; the elements themselves may be further analyzable as derived verbs, nouns, etc.).

The most frequent derivational structure in the two languages with less compounding, Karok and Se Pomo, is de-verbativization. This is largely a product of the lack of compounds in the domains of implements and occupations in these languages, with non-compounded instrumental and agentive deverbatives being dominant.

I have added an additional syntactic structural type to those utilized by Ultan, 'nominalized predication'. This type includes any structure not clearly classifiable as one of the others, and was found necessary especially in Karok, which has numerous such forms which are, in essence, nominalized full sentences (numerous examples are to be found in section 3).

TABLE 1

Descriptivity Grading in the Domains: Body Parts, Fauna, Flora, Implements and Occupations

Southeastern Pomo

Corpus: 520 terms

of Descriptive Terms: 197

% of Descriptive Terms: 37.9%

Formal Processes

	<u>#</u>	<u>%</u>
Compounds	136	69.0
Derivation:	61	31.0
Denom.	2	1.0
Deverb.	34	17.3
Redup.	13	6.6
Nominalized Predications	12	6.1

Karok

Corpus: 663 terms

of Descriptive Terms: 362

% of Descriptive Terms: 54.6%

Formal Processes

	<u>#</u>	<u>%</u>
Compounds:	165	45.6
Derivation:	197	54.4
Denom.	50	13.8
Deverb.	100	27.6
Redup.	8	2.2
Nom. Pred.	39	10.8

Tunica

Corpus: 654

of Descriptive Terms: 374

% of Descriptive Terms: 57.2

Formal Processes

	<u>#</u>	<u>%</u>
Compounds	304	81.3
Derivation:	70	18.7
Denom.	50	13.4
Deverb.	16	4.3
Nom. Pred.	4	1.1

2.2.2 Body part terms

In tables 2-4 can be seen the results of the descriptiv-ity analysis of body part terms correlated, as in Ultan, with formal, semantic and pragmatic processes. Generaliza-tions based on these correlations will be discussed in sec-tion 2.3. In this and the following three sections I will describe several semantic-syntactic constructions which are characteristic of the various domains in the languages under discussion.

More than half of the descriptive body part terms in Karok are compounds. These are all attribute+head construc-

tions where the attribute identifies a location or configuration, and the head identifies a body part or configuration. The location named as attribute is itself, in most cases, a body part. Some illustrative examples:

location + body part: ?áv?i.š 'cheek' (?á.v 'face' + ?i.š 'flesh')

location + configuration: atrax?ípan 'shoulder' (átra.x 'arm' + ?ípan 'end, top')

configuration + body part: tasvan?ípih 'shoulder blade' (tásva.n 'spatula' + ?ípih 'bone')

The deverbatives describe the body part by its function or by a characteristic activity which falls short of functional status (as in the second example below), utilizing the 'instrument deverbative' suffix -ara or the 'nomina actionis' suffix -a. Two examples are ikšúpanač 'index finger' (see section 2.1) and ?ífuniha 'hair of the head' (?if- 'to grow' + -unih 'downward' + -a -- "growing down").

The denominatives are augmentative and diminutive formations such as the above 'index finger' and the term for 'thumb', tikánka.m (tí.k 'finger' + -án- not identifiable + -ka.m 'augmentative').

The great majority (72%) of the descriptive Se Pomo body part terms are compounds. The attribute+head patterns are quite similar to those described for Karok:

location + body part: ?manyosmi 'armpit hair' (?manyo 'armpit' + smi 'fur, fuzz')

body part + configuration: blaykin 'vein, artery' (blay 'blood' + kin 'string')

There are also two examples of a noun+adjective, head+attribute construction: xalčma 'right hand, arm, or side' (xal 'arm' + čma 'good') and bučma 'index finger' (bu 'finger'). These are not form, function or locationally based terms, but derive from a cultural idea. I have set up a category 'cultural association' for such terms which make culture-

Pragmatic Processes

	<u>#</u>	<u>%</u>
Activity	1	4.8
Form	7	33.3
Function	6	28.6
Location	7	33.3

TABLE 3

Southeastern Pomo Body Part Terms

Corpus: 114 Terms Descriptive Terms: 39
 Overall Descriptivity: 34.2%

<u>Grade</u>	<u># of Terms</u>	<u>% of Total</u>
0	64	56.1
*0	11	9.6
1	4	3.5
2	2	1.8
6	8	7.0
7	2	1.8
8	2	1.8
9	1	0.9
10	20	17.5

	<u>Percentage</u>	<u>Semantic Processes</u>	<u>Grades</u>
<u>Cultural Association</u> (2 terms = 5.1% of overall descr.)			
Compounds	100	M (2T)	2 (2T)
<u>Form</u> (5 terms = 15.4% of overall descr.)			
Compounds	100	I (3T), M (3T)	1(3T), 10(3T)
<u>Function</u> (6 terms = 15.4% of overall descr.)			
Compounds	50	I(2T), M(1T)	1(1T), 8(1T), 10(1T)
Deverb.	50	I(2T), N(1T)	9(1T), 10(2T)
<u>Location</u> (25 terms = 64.1% of overall descr.)			
Compounds	68	I(13T), N(3T), W(1T)	6(2T), 7(2T), 10(13T)
Deverb.	4	N(1T)	6(1T)
Nom. Pred.	24	I(1T), N(5T)	6(5T), 10(1T)
Denom.	4	N(1T)	8(1T)

Formal Processes

	<u>#</u>	<u>%</u>
Compounds	28	72
Derived:	11	28
Deverb.	4	10
Nom. Pred.	6	15
Denom.	1	3

Pragmatic Processes

	<u>#</u>	<u>%</u>
Form	11	21.2
Location	41	78.8

specific references to symbolism, mythology, social structure, etc.

The Se Pomo deverbatives are mostly function-based, such as ?tan 'hand' (?- 'with the hand as instrument' + -ta- 'to touch' + -n 'absolutive deverbalizer' -- "touch with the hand"). The forms classified as 'nominalized predications' are of the structure postposition + body part noun (rather than the expected reverse order, with the single exception of -y, which is phonologically enclitic, as below). Two examples are yukinḡa 'foreleg of animal' (yukin 'ahead of, before' + ḡa 'lower leg'); and q?oy 'palm' (q?o 'inner surface of hand' + -y 'inside of').

Tunica body part compounds show a diversity of semantic types, including those cited for Karok and Pomo, but with the order head+attribute. There is a construction of the form body part as location + locative adjectival-adverbial, semantically parallel to the Pomo postposition + noun type above. Two examples are: -ālawéčahótuš 'earlobe' (-ālawéča 'ear' + hótuš(i) 'at the end (edge) of'); and -áškamáýisáhu 'fourth toe' (áška 'toe' + máýisáhu 'on the other side of').

2.2.3 Fauna and flora terms

Of the five domains investigated, these exhibit the widest range of syntactic and semantic structures in their descriptive terms. This is not unexpected, as these domains lack the functional semantic unity of implements and occupations, and form their descriptions on the basis of a most diverse set of concepts: size, shape, color, characteristic activity, characteristic location, resemblance to other species, derived product, and all sorts of cultural asso-

ciations. Tables 5-10 give the results of the analysis.

Compounds which are structurally similar to Western scientific zoological and botanical terms of the form 'genus + species' are to be found in all three languages. The normal order in Karok is generic term (head) + specific term (modifier), in Se Pomo it is specific + generic, and in Tunica it is generic + specific. On the basis of the descriptivity of the specific term and the generality of the generic term, one can group these compounds into four types:

1. Unique species + true generic - The species noun consists of a uniquely occurring morpheme, and the generic term is more general than the species term. Two examples are: Karok. *apsúnpu·Fve·na* 'gopher snake' (*ápsun* 'snake' + *-pu·F-* (species) + *-ve·na* 'agentive forming animal name nouns'); and Tunica. *šihparlétu* 'bush bean' (*šihpari* 'bean' + *létu* (species)).

2. Descriptive species + true generic - The species noun is not unique in its occurrence, and forms a descriptive narrowing (see section 3.1.1) of the generic term. Examples: Se Pomo. *?uyṭinayṭay* 'large species of sunflower' (*?uy* 'eye' + *ṭinay* 'large (plural)' + *ṭay* 'stick, wood, plant, slender tree' -- "large eyes plant"); and Karok. *astahvô·nanač* 'coot' (*asta·h* 'duck' + *vô·ř* 'to creep, crawl, move slowly' + *-ara* 'instrumental deverbative' + *-ič* 'diminutive' -- "little slow-moving duck").

3. Unique species + pseudo-generic - The generic term is also the name of another species, to which the species here identified is being compared as similar. Such a generic use of a species term is likely to be an intermediate stage in the process of a specific term becoming generic. In my opinion most such pseudo-generic terms are descriptively equivalent to true generics, and not to be considered metaphors. Two examples are Karok. *sáriθ* 'vine maple' (*sá·n* 'big leaf maple' + *-iθ* (species)); and Tunica. *yániši* 'bovine' (*yá* 'deer' + *-niši* (species)).

4. Descriptive species + pseudo-generic - Each part is as defined above. Examples are Karok. káFhi·č̣ 'alum root' (ká·F 'saxifrage' + -hi·č̣ 'imitation'); and Tunica. kéwista 'honeybee' (ké 'wasp' + wista 'sweet, tame, domesticated').

It should be noted that while these four structural types are found in greatest proliferation in the flora and fauna domains, they are more general in their occurrence, and play a role in semantic domains in many languages. The last-mentioned type can be seen, for example, in the Tunica implement term ?úšihtášihpu 'fork' (?úšihki 'spoon' + tá- 'agentive' + šihpu 'to stick into' (the last two elements forming a deverbative noun) -- "piercing spoon").

For the large number of flora and fauna terms which do not follow these patterns it is difficult to generalize. Of the domains investigated they are certainly the source of the most syntactically complex descriptive terms. The greatest complexity is to be found in Karok. A good example of this (typically metaphorical) is the term for 'California wood fern', ?assak va.txarakavrû.kvutihān. The term is paraphraseable, roughly, as "that which shouts down from over the edge of a rock". It consists of a postpositional phrase: ?asa 'rock, stone, earth' + -ak 'in, on, at', which is a locative adverbial modifying the verb complex: va.txarak 'to shout' + -Ovruk 'down over the edge of something' + -va 'plural action' + -Tih 'durative aspect'. This complete verb phrase is then nominalized by the deverbative suffix -han 'that which ...'. Examples of similarly complex terms will be found in section 3.

TABLE 5

Karok Fauna Terms

Corpus: 205 Terms Descriptive Terms: 102
 Overall Descriptivity: 49.8%

<u>Grade</u>	<u># of Terms</u>	<u>% of Total</u>
0	88	43.0
*0	15	7.3
1	25	12.2
2	4	2.0
3	1	.5
4	8	3.9
6	35	17.1
7	14	6.8
8	12	5.9
9	1	.5
10	2	1.0

	<u>Percentage</u>	<u>Semantic Processes</u>	<u>Grade</u>
<u>Activity</u> (30 terms = 29.4% of overall descr.)			
Compounds	66.7	N(20T)	6(19T), 7(1T)
Deverb.	13.3	I(1T), N(3T)	6(2T), 10(2T)
Nom. Pred.	20.0	N(6T)	6(4T), 8(2T)
<u>Cult. Assoc.</u> (14 terms = 13.7% of overall descr.)			
Compounds	64.3	M(7T), N(2T)	1(2T), 4(4T), 6(3T)
Denom.	21.4	M(3T)	1(3T)
Nom. Pred.	14.3	M(2T)	1(2T)
<u>Form</u> (44 terms = 43.1% of overall descr.)			
Compounds	50.0	M(5T), N(15T)	1(5T), 2(1T), 4(1T), 6(4T), 7(4T), 8(7T)
Denom.	22.8	I(4T), M(2T), N(3T), W(1T)	1(5T), 4(1T), 6(1T), 7(2T), 9(1T)
Deverb.	2.3	M(1T)	2(1T)
Nom. Pred.	9.1	M(1T), N(1T) W(2T)	1(6T), 2(1T), 4(2T), 6(1T)
Redup.	15.9	I(6T), W(1T)	1(6T), 2(1T)
<u>Function</u> (1 term = 1.0% of overall descr.)			
Compounds	100	M(6T)	4(1T)
<u>Location</u> (13 terms = 12.7% of overall descr.)			
Compounds	53.8	M(1T), N(6T)	1(1T), 7(5T), 8(1T)
Nom. Pred.	46.2	N(6T)	3(1T), 6(1T), 7(2T), 8(2T)

Formal Processes

	<u>#</u>	<u>%</u>
Compounds	59	57.8
Derived:	43	42.2
Denom.	13	12.7
Deverb.	5	4.9
Nom. Pred.	18	17.6
Redup.	7	6.9

Semantic Processes

	<u>#</u>	<u>%</u>
Isomorphic	11	10.8
Metaphor	24	23.5
Narrowing	62	60.8
Widening	5	4.9

Pragmatic Processes

	<u>#</u>	<u>%</u>
Activity	30	29.4
Cult. Assoc.	14	13.7
Form	44	43.1
Function	1	1.0
Location	13	12.7

TABLE 6

Karok Flora Terms

Corpus: 219 Terms

Descriptive Terms: 119

Overall Descriptivity: 54.3%

<u>Grade</u>	<u># of Terms</u>	<u>% of Total</u>
0	86	39.3
*0	14	6.4
1	26	11.9
2	4	1.8
4	14	6.4
5	2	.9
6	16	7.3
7	31	14.2
8	15	6.8
9	1	.5
10	10	4.6

	<u>Percentage</u>	<u>Semantic Processes</u>	<u>Grades</u>
<u>Cultural Assoc.</u> (13 terms = 16.0% of overall descr.)			
Compounds	73.7	M(10T), N(3T), W(1T)	1(3T), 2(1T), 4(7T), 6(2T), 9(1T)
Denom.	10.5	M(2T)	6(2T)
Deverb.	5.3	M(1T)	4(1T)
Nom. Pred.	10.5	M(2T)	1(2T)
<u>Form</u> (70 terms = 58.8% of overall descriptivity)			
Compounds	61.4	I(13T), M(17T), N(9T), W(4T)	1(10T), 2(1T), 4(6T), 5(1T), 6(1T), 8(3T), 10(8T)
Denom.	28.6	M(15T), N(5T)	1(2T), 2(1T), 6(7T), 7(4T), 8(5T), 10(1T)
Deverb.	5.7	I(1T), M(1T), N(1T)	1(1T), 6(2T)
Nom. Pred.	2.9	M(2T)	1(1T), 8(1T)
Redup.	1.4	W(1T)	1(1T)
<u>Function</u> (3 terms = 2.5% of overall descr.)			
Deverb.	66.7	I(1T), N(1T)	6(1T), 10(1T)
Nom. Pred.	33.3	N(1T)	7(1T)
<u>Location</u> (20 terms = 16.8% of overall descr.)			
Compounds	30.0	I(2T), N(4T)	1(1T), 7(3T), 8(1T)
Nom. Pred.	70.0	M(1T), N(13T)	1(1T), 5(1T), 7(11T), 8(1T)
<u>Product</u> (6 terms = 5.0% of overall descr.)			
Compounds	83.3	I(1T), N(3T), W(1T)	7(3T), 8(2T)
Deverb.	16.7	N(1T)	7(1T)
<u>Product/Location</u> (1 term = .8% of overall descr.)			
Nom. Pred.	100.0	N(1T)	6(1T)

Formal Processes

	<u>#</u>	<u>%</u>
Compounds	63	57.1
Derived:	51	42.9
Denom.	22	18.5
Deverb.	8	6.7
Nom. Pred.	20	16.8
Redup.	1	.8

Semantic Processes

	<u>#</u>	<u>%</u>
Isomorphic	18	15.1
Metaphor	52	43.7
Narrowing	43	36.1
Widening	6	5.0

Pragmatic Processes

	<u>#</u>	<u>%</u>
Cult. Assoc.	19	16.0
Form	70	58.8
Function	3	2.5
Location	20	16.8
Product	6	5.0
Prod./Loc.	1	.8

TABLE 7

Southeastern Pomo Fauna Terms

Corpus: 172 Terms Descriptive Terms: 48
Overall Descriptivity: 27.9%

<u>Grade</u>	<u># of Terms</u>	<u>% of Total</u>
0	114	66.3
*0	10	5.8
1	19	11.0
2	1	.6
3	1	.6
5	1	.6
6	2	1.2
7	7	4.1
8	10	5.8
9	1	.6
10	6	3.5

	<u>Percentage</u>	<u>Semantic Processes</u>	<u>Grade</u>
<u>Activity</u> (6 terms = 12.5% of overall descr.)			
Compounds	33.3	N(2T)	7(2T)
Nom. Pred.	66.7	N(4T)	3(1T), 7(1T), 8(2T)
<u>Cult. Assoc.</u> (3 terms = 6.3% of overall descr.)			
Compounds	100	M(2T), N(1T)	1(2T), 6(1T)
<u>Form</u> (34 terms = 70.8% of overall descr.)			
Compounds	55.9	I(9T), M(4T), N(5T), W(1T)	1(6T), 5(1T), 7(1T), 8(4T), 9(1T), 10(6T)

<u>Form</u>	<u>Percentage</u>	<u>Semantic Processes</u>	<u>Grade</u>
Deverb.	2.9	N(1T)	1(1T)
Nom. Pred.	5.9	N(1T), W(1T)	2(1T), 8(1T)
Redup.	35.3	I(10T), W(2T)	1(10T), 2(1T), 8(1T)
<u>Location</u> (5 terms = 10.4% of overall descr.)			
Compounds	100	I(2T), N(3T)	6(1T), 7(3T), 8(1T)

Formal Processes

	<u>#</u>	<u>%</u>
Compounds	29	60.4
Derived:	19	39.6
Deverb.	6	12.5
Nom. Pred.	1	2.1
Redup.	12	25.0

Semantic Processes

	<u>#</u>	<u>%</u>
Isomorphic	21	43.8
Metaphor	6	12.5
Narrowing	17	35.4
Widening	4	8.3

Pragmatic Processes

	<u>#</u>	<u>%</u>
Activity	6	12.5
Cult. Assoc.	3	6.3
Form	34	70.8
Location	5	10.4

TABLE 8

Southeastern Pomo Flora Terms

Corpus: 91 Terms

Descriptive Terms: 37

Overall Descriptivity: 40.7%

<u>Grade</u>	<u># of Terms</u>	<u>% of Total</u>
0	53	58.2
*0	1	1.1
1	1	1.1
4	3	3.3
5	4	4.4
7	1	1.1
8	10	11.0
10	18	19.8

	<u>Percentage</u>	<u>Semantic Processes</u>	<u>Grade</u>
<u>Cult. Assoc.</u> (1 term = 2.7% of overall descr.)			
Compounds	100	I(1T)	8(1T)
<u>Form</u> (23 terms = 62.2% of overall descr.)			
Compounds	95.7	I(13T), H(4T), B(3T), W(2T)	1(1T), 4(2T), 5(3T), 7(1T), 8(3T), 10(12T)
Redup.	4.3	I(1T)	5(1T)
<u>Function</u> (5 terms = 13.5% of overall descr.)			
Compounds	100	I(3T), N(2T)	8(2T), 10(3T)
<u>Location</u> (2 terms = 5.4% of overall descrip.)			
Compounds	100	I(2T)	8(2T)
<u>Product</u> (6 terms = 16.2% of overall descr.)			
Compounds	100	I(4T), N(1T), W(1T)	4(1T), 8(2T), 10(3T)

Formal Processes

	<u>#</u>	<u>%</u>
Compounds	36	97.3
Redup.	1	2.7

Semantic Processes

	<u>#</u>	<u>%</u>
Isomorphic	24	64.9
Metaphor	4	10.8
Narrowing	6	16.2
Widening	3	8.1

Pragmatic Processes

	<u>#</u>	<u>%</u>
Cult. Assoc.	1	2.7
Form	23	62.2
Function	5	13.5
Location	2	5.4
Product	6	16.2

TABLE 9

Tunica Fauna Terms

Corpus: 254 Terms

Descriptive Terms: 129

Overall Descriptivity: 50.8%

<u>Grade</u>	<u># of Terms</u>	<u>% of Total</u>
0	90	35.4
*0	35	13.8
1	8	3.2
2	4	1.6
3	1	.4
4	3	1.2
6	13	5.1
7	13	5.1
8	75	29.5
9	1	.4
10	11	4.3

	<u>Percentage</u>	<u>Semantic Processes</u>	<u>Grade</u>
<u>Activity</u> (7 terms = 5.4% of overall descr.)			
Compounds	85.7	M(1T), N(5T)	1(1T), 6(2T), 8(3T)
Nom. Pred.	14.3	N(1T)	8(1T)
<u>Cult. Assoc.</u> (16 terms = 12.4% of overall descr.)			
Compounds	93.8	M(8T), N(7T)	1(6T), 3(1T), 4(1T), 7(1T), 8(6T)
Nom. Pred.	6.2	N(1T)	8(1T)
<u>Form</u> (87 terms = 67.4% of overall descr.)			
Compounds	77.0	I(10T), M(5T), N(52T)	1(1T), 4(2T), 6(4T), 7(2T), 8(45T), 9(1T), 10(10T)
Denom.	20.7	I(1T), N(16T), W(1T)	6(1T), 8(16T), 10(1T)
Nom. Pred.	2.3	N(2T)	2(2T)
<u>Location</u> (18 terms = 14.0% of overall descr.)			
Compounds	100	N(18T)	6(5T), 7(10T), 8(3T)
<u>Loc. Activity</u> (1 term = .8% of overall descr.)			
Nom. Pred.	100	N(1T)	6(1T)

	<u>Percentage</u>	<u>Semantic Processes</u>	<u>Grade</u>
<u>Form</u>			
Denom.	5.3	N(4T)	8(4T)
<u>Location</u> (3 terms = 3.2% of overall descr.)			
Compounds	100	N(3T)	6(1T), 7(2T)
<u>Product</u> (5 terms = 5.4% of overall aescr.)			
Compounds	100	M(1T), N(3T), I(1T)	4(1T), 6(2T) 8(2T)

Formal Processes

	<u>#</u>	<u>%</u>
Compounds	89	95.7
Derived:	4	4.3
Denom.	4	4.3

Semantic Processes

	<u>#</u>	<u>%</u>
Isomorphic	12	12.9
Metaphor	13	14.0
Narrowing	67	72.0
Widening	1	1.0

Pragmatic Processes

	<u>#</u>	<u>%</u>
Cult. Assoc.	10	10.8
Form	75	80.6
Location	3	3.2
Product	5	5.4

2.2.4. Implement terms

Tables 11-13 give the results of my analysis of implement terms in the three languages. Additional data from Hungarian has been cited, but the domain has not been analyzed as a whole, so results have not been tabulated (for an analysis of Hungarian implement terms; and another descriptivity scale, see Katz 1975).

As would be expected from the notion of 'implement', the great majority of terms in all four languages are func-

tion-oriented deverbatives, some in compounds, some not. Some examples of non-compound forms are: Hungarian. *reszelő* 'file' (*reszel-* 'to file' + *-ő* 'deverbative'); Karok. *ikti·nara* 'cane' (*ikti·na* 'to walk with a cane' + *-ara* 'instrumental deverbative' + *-a* 'nomina actionis'); Se Pomo. *xkətɁkətən* 'guitar' (*xkət-* 'to strum' + reduplication 'iterative aspect' + *-ən* 'instrument or location of action of deverbative'); and Tunica. *táməhtu* 'broom' (*ta-* 'agentive' + *məhtu* 'to sweep').

The languages vary in the semantic explicitness of the deverbative element used in these constructions. In Hungarian the element *-o ~ -ő* is both a gerundive and a general deverbaler, having an agentive meaning in occupation nouns (*tonit+o* 'teacher'), an instrumental meaning in implement nouns (as above), the meaning 'location of action' (*ebédlő* 'dining room' from *ebedel-* 'to eat dinner'), and that of 'nomina actionis' (*találkozó* 'a meeting' from *találkoz* 'to meet, encounter'). The Southeastern Pomo suffix *-m* has a definite instrumental meaning, but can also indicate the location of an action, as in *xokaletabackickim* 'train depot' (*xo* 'fire' + *kaleta* 'wagon' = 'train' + *ba* 'topic' + *cki* 'to stop' + reduplication 'iterative' + *-m* -- "place where trains stop repeatedly").

The compounds can be classified according to the degree to which the action associated with the implement is described:

1. Non-functional - Such compounds describe form, cultural associations, etc. Examples are Karok. *?ararásə·k* 'arrowhead' (*?ára·ra* 'Indian, human being' + *sə·k* 'flint, arrowhead, bullet' -- "Indian bullet") and Se Pomo. *xayko* 'pipe for smoking' (*xay* 'wood, stick' + *ko* 'egg' -- "stick with an egg").

2. Functional non-deverbative - These are compounds lacking a deverbative noun, but where the head noun is implicitly associable with an action or process. Examples are Karok. *?išaha?əsip* 'bucket' (*?išahə* 'water' + *?əsip* 'bowl, basket, vessel'); Tunica. *rīhkušikuri* 'sword' (*rīhku*

'wood' + šikuri 'knife' - here the normal Tunica order of head+attribute is apparently reversed); and Hungarian. kertészolló 'pruning shears' (kert 'garden' + -ész 'denominative' = 'gardener' + olló 'shears').

3. Object + deverbative - with the first noun specifying the object of the action specified by the second. Examples include: Karok. išpukasuprávara 'scales for weighing gold' (išpuka 'gold' + suprař 'to measure (weight/volume)' + -ara 'instrumental' + -a 'nom. actionis'); Se Pomo xaỵadudkum 'drill' (xaỵ 'wood, stick' + ba 'topic' + dudku- 'to drill' + -m 'instr. or location deverb.');

and Tunica. púnatárahpani 'racquet, ball stick' (púna 'ball' + tá- 'agentive' + ráhpa 'to strike, to play ball with a racquet' + -ni 'causative thematic suffix').

4. Deverbative + implement - In this construction the deverbative further delimits the action of the implement. It does not seem to occur in Se Pomo or Karok. Some examples are: Hungarian. egyengető kalapács 'planing hammer' (egyenget 'to plane' + -ő 'deverb.' + kalapács 'hammer') and Tunica. tášihputásaku 'fork' (tá- 'agentive' + šihpu 'to stick into' = 'fork' + tá- + saku 'to eat' -- "eating fork": here again, the implement term precedes, being the head of the construction).

TABLE 11

Karok Implement Terms

Corpus: 131 Terms

Descriptive Terms: 99

Overall Descriptivity: 75.6%

<u>Grade</u>	<u># of Terms</u>	<u>% of Total</u>
0	24	18.3
*0	8	6.1
1	2	1.5
6	22	16.8
7	9	6.9
8	62	47.3
10	4	3.1

	<u>Percentage</u>	<u>Semantic Processes</u>	<u>Grade</u>
<u>Activity</u> (1 term = 1.0% of overall descr.)			
Deverb.	100	N(1T)	6(1T)
<u>Cult. Assoc.</u> (2 terms = 2.0% of overall descr.)			
Compounds	100	N(2T)	10(2T)
<u>Form</u> (14 terms = 14.1% of overall descr.)			
Compounds	21.4	I(1T), N(2T)	1(1T), 8(2T)
Denom.	64.3	N(9T)	6(1T), 7(8T)
Deverb.	14.3	N(2T)	6(2T)
<u>Function</u> (82 terms = 82.8% of overall descrip.)			
Compounds	20.7	I(1T), N(16T)	6(1T), 7(1T), 8(13T), 10(2T)
Denom.	1.2	N(1T)	1(1T)
Deverb.	78.0	N(64T)	6(17) , 8(47T)

Formal Processes

	<u>#</u>	<u>%</u>
Compounds	22	22.2
Derived:	77	77.8
Denom.	10	10.1
Deverb.	67	67.7

Semantic Processes

	<u>#</u>	<u>%</u>
Isomorphic	2	2.0
Narrowing	97	98.0

Pragmatic Processes

	<u>#</u>	<u>%</u>
Activity	1	1.0
Cult. Assoc.	2	2.0
Form	14	14.1
Function	82	82.8

Pragmatic Processes

	<u>#</u>	<u>%</u>
Form	11	21.6
Function	38	74.5
Location	2	3.9

TABLE 13

Tunica Implement Terms

Corpus: 106 Terms

Descriptive Terms: 84

Overall Descriptivity: 79.2%

<u>Grade</u>	<u># of Terms</u>	<u>% of Total</u>
0	18	17.0
*0	4	3.8
1	1	.9
6	2	1.9
8	72	67.9
10	9	8.5

	<u>Percentage</u>	<u>Semantic Processes</u>	<u>Grade</u>
<u>Form</u> (20 terms = 23.8% of overall descr.)			
Compounds	95.0	I(8T), N(10T), W(1T)	1(1T), 8(10T), 10(8T)
Verbn.	5.0	I(1T)	10(1T)
<u>Function</u> (64 terms = 76.2% of overall descr.)			
Compounds	79.7	N(51T)	6(2T), 8(49T)
Deverb.	20.3	N(13T)	8(13T)

Formal Processes

	<u>#</u>	<u>%</u>
Compounds	70	83.3
Derived:	14	16.7
Denom.	1	1.2
Deverb.	13	15.5

Semantic Processes

	<u>#</u>	<u>%</u>
Isomorphic	9	10.7
Narrowing	74	88.1
Widening	1	1.2

<u>Pragmatic Processes</u>		
	<u>#</u>	<u>%</u>
Form	20	23.8
Function	64	76.2

2.2.5. Occupation terms

Tables 14-16 give the descriptivity grading for this domain, one which includes less terms than the other four, a function of the relative lack of specialized occupations in the traditional societies where these languages were spoken. Many of these terms name ritual and religious figures.

As in the case of implements, this is a strongly function-oriented domain, with descriptive terms consisting almost entirely of deverbative nouns and compounds, the head of which is usually a deverbative. To form these deverbatives Tunica utilizes the same prefix as for implements, *ta-*, but Karok and Se Pomo have specific agentive affixes: *-a·n* in Karok, and in Se Pomo either the prefix *?a-*, the suffix *-al*, or *-wi*, which is the 'human singular' gender-number suffix. Some examples of deverbatives follow: Karok. *ipnipá·va·n* 'priest(ess) of world renewal ceremony' (*?i·p* 'to return' + *ríPa·* 'to out of water or fire' + *-va* 'plural action' + *-a·n* 'agentive' -- "one who has returned from out of water or fire"); Se Pomo. *?abko* 'dreamer shaman' (*?a-* 'agent' + *bko-* 'to speak'); and Tunica. *táhara* 'singer' (*tá-* 'agent' + *hára* 'to sing').

In some compounds the attributive noun specifies the agent of the occupation, as in Tunica *?ónitánira* 'thief' (*?óni* 'person' + *tá-* 'agent' + *níra* 'to steal'), but most specify the object of the action of the deverbative head noun: Karok. *?ux?asiye·śríhva·n* 'bartender' (*?úx?a·s* 'liquor' + *iyé·śri·hva* 'to sell' + *-a·n* 'agent'); Se Pomo. *papel ?yiqkal* 'teacher' (*papel* 'paper' + *?yi* + *q-* 'causative' = 'to show, teach' + *-k-* 'inchoative aspect' + *-al*

TABLE 15

Southeastern Pomo Occupation Terms

Corpus: 31 Terms

Descriptive Terms: 22

Overall Descriptivity: 71%

<u>Grade</u>	<u># of Terms</u>	<u>% of Total</u>
0	7	22.6
*0	2	6.5
7	5	16.1
8	12	38.7
9	1	3.2
10	4	12.9

	<u>Percentage</u>	<u>Semantic Processes</u>	<u>Grades</u>
<u>Form</u> (1 term = 4.6% of overall descr.)			
Compounds	100	I(1T)	9(1T)
<u>Function</u> (21 terms = 95.4% of overall descr.)			
Compounds	47.6	I(3T), N(6T), W(1T)	7(3T), 8(4T), 10(3T)
Denom.	4.8	I(1T)	10(1T)
Deverb.	47.6	N(10T)	7(2T), 8(8T)

Formal Processes

	<u>#</u>	<u>%</u>
Compounds	11	50.0
Derived:	11	50.0
Denom.	1	4.5
Deverb.	10	45.5

Semantic Processes

	<u>#</u>	<u>%</u>
Isonomorphic	5	22.7
Narrowing	16	72.7
Widening	1	4.6

Fragmatic Processes

	<u>#</u>	<u>%</u>
Form	1	4.6
Function	21	95.5

TABLE 16

Tunica Occupation Terms

Corpus: 17 Terms

Descriptive Terms: 13

Overall Descriptivity: 76.5%

<u>Grade</u>	<u># of Terms</u>	<u>% of Total</u>
0	4	23.5
1	1	5.9
6	1	5.9
8	10	58.8
10	1	5.9

	<u>Percentage</u>	<u>Semantic Processes</u>	<u>Grades</u>
<u>Cult. Assoc.</u> (2 terms = 15.4% of overall descr.)			
Denom.	100	M(1T), N(1T)	1(1T), 8(1T)
<u>Form</u> (1 term = 7.7% of overall descr.)			
Compounds	100	N(1T)	6(1T)
<u>Function</u> (10 terms = 76.9% of overall descr.)			
Compounds	70.0	I(1T), N(6T)	8(6T), 10(1T)
Deverb.	30.0	N(3T)	8(3T)

Formal Processes

	<u>#</u>	<u>%</u>
Compounds	8	61.5
Derived:	5	38.5
Denom.	2	15.4
Deverb.	3	23.1

Semantic Processes

	<u>#</u>	<u>%</u>
Isomorphic	1	7.7
Metaphor	1	7.7
Narrowing	11	23.1

Pragmatic Processes

	<u>#</u>	<u>%</u>
Cult. Assoc.	2	15.4
Form	1	7.7
Function	10	76.9

2.3. Generalizations

2.3.1 Further tests of Ultan's generalizations

Ultan makes a number of general statements correlating various aspects of descriptivity grading. Some of these are specific to body part terms, others can be applied more widely. In this section I will test these generalizations against the further data which I have collected and analyzed.

In Ultan (1975: page 14) four groupings of Finnish body part terms are set up, partially on the basis of average descriptivity. I have looked at the group consisting of the most highly descriptive body parts, comprised of the eyes, fingers, reproductive systems and skeletal system, and at the group of least descriptive body parts, including the torso (other than butt), the circulatory system, the face (other than eyes), the hands (other than fingers), and the nose, in order to see if the Finnish pattern is found in other languages, as a result of the most descriptive terms being, in Ultan's words, "particularly essential and physiologically specialized" and "visually well-defined forming clear-cut complexes".

The average descriptivity grade for each of these body areas is tabulated below:

TABLE 17

	<u>Karok</u>	<u>Se Pomo</u>	<u>Tunica</u>
eye	0	5.3	5.6
finger	5.9	0.4	7.5
reprod.	1.5	1.4	3.3
skeletal	2.9	5.8	0
torso	1.1	1.5	2.2
circul.	4.3	2.5	0
face	1.6	1.0	2.2
nose	0	0	5.0
hand	0.2	4.0	5.0

As can be seen, the terms with the highest descriptivity in Karok are the fingers, circulatory system and skeletal system, in Se Pomo, the eye, skeletal system, hand and circulatory system, and in Tunica, the fingers, eye, nose, and hand. Thus, approximately one-third of the cases do not verify Ultan's observation. However, if the grades for the highest group and for the lowest group are averaged, respectively, the high group shows a significantly higher average than the low group in all three languages: In Karok 2.6 to 1.4, in Se Pomo 3.2 to 1.8 and in Tunica 4.1 to 2.9. There is, thus, a weak correlation.

Further, Ultan found that in his sample of body part terms in six languages, "Form-motivated terms are more in evidence than either function- or location-motivated terms." (1976, page 14), with French exceptionally having slightly more location-motivated terms. This exception is the rule in my sample of body part terms: Karok has as many location terms as form terms, 33% of the domain in both cases. Se Pomo has 64% location-, and only 15% form-motivation, and Tunica, 79% location and 21% form. From this combined sample of nine languages it would thus seem that description by location is about as likely for body part terms as description by form.

With respect to the general predominance of formal processes, Ultan states that "Nonderivational constructions (compounds and noun phrases) account for the greatest number of descriptive terms." (1976:11). As can be seen in table 1, this holds true for my corpus as a whole, and is violated only by Karok.

Finally, Ultan proposes a direct link between pragmatic processes and degree of descriptivity (1976: 16f.). He classifies the various pragmatic processes on the basis of a 'static-dynamic dimension' and states that "ceteris paribus, terms denoting static concepts will be more descriptive than those used to designate dynamic concepts."

Considering form, location and cultural association to be static, and function and activity to be dynamic I have arrived at the following figures, giving first the number and then the average descriptivity of static and dynamic descriptivity terms in a domain in a given language:

TABLE 18

		static #	static ave.	dynam. #	dynam. ave.
Body parts	Karok	14	7.6	7	5.6
	Se Pomo	31	7.8	6	8.0
	Tunica	55	8.6	0	--
Fauna	Karok	57	3.5	31	6.4
	Se Pomo	39	4.7	6	6.7
	Tunica	105	6.1	7	6.4
Flora	Karok	90	4.7	3	7.7
	Se Pomo	25	7.8	5	9.2
	Tunica	78	7.5	0	---
Implements	Karok	14	6.5	83	7.5
	Se Pomo	13	5.6	38	8.3
	Tunica	20	8.6	64	7.9
Occupations	Karok	0	--	20	6.3
	Se Pomo	1	9.0	21	8.1
	Tunica	1	6.0	10	8.2

Disallowing those corpora lacking either static or dynamic terms (Tunica body parts and flora and Karok occupations) as well as those cases with too small a sample of one or the other (Karok flora, Se Pomo and Tunica occupations), there are nine test cases left. The closest to a clear pattern favoring Ultan's thesis is that for body parts: the static terms are more descriptive in Karok, and approximately equal to dynamic in Se Pomo. Likewise, the average descriptivity for static terms in Tunica is of a very high order. Thus the generalization holds rather well for the body part domain, the only one it was, after all, originally based on.

The relative descriptivity of static and dynamic terms is clearly a function of the semantic domain in question. Static terms are highly descriptive in body parts because of a predominance of literal form and location descriptions. Static terms are far less descriptive in flora and fauna

due to a large number of metaphors. Conversely, dynamic terms are more descriptive than static terms in the implement domain because of the highly descriptive instrumental deverbatives found there. Such generalizations will most likely be seen, with further research, to be relative to particular semantic domains and to the syntactic mechanisms which the language uses to create descriptions within those domains.

2.3.2. Some further generalizations

A number of general statements can be made on the basis of an analysis of my data using Ultan's system. Most striking is the close correspondence between languages with respect to the relative descriptivity of the five domains:

TABLE 19

Descriptivity by Domain

Karok	Se Pomo	Tunica
Occ.: 84%	Occ.: 71%	Impl.: 79.2%
Impl.: 75.6%	Impl.: 45.5%	Occ.: 76.5%
Flora: 54.3%	Flora: 40.7%	Flora: 57.4%
Fauna: 49.8%	Body: 34.2%	Fauna: 50.8%
Body: 25.3%	Fauna: 27.9%	Body: 47.8%

The pattern, from greatest to smallest percentage of descriptive terms is, then, occupations, implements, flora, fauna, and body parts. The two exceptions, the interchange in relative positions of fauna and body parts in Se Pomo, and between occupations and implements in Tunica is not very significant: the figures in these cases are very close (34-28 and 79-77). The basis of this pattern would seem to lie in properties particular to each domain: implement and occupation terms form descriptions primarily of the characteristic function or activity they effect, using highly specific and descriptive syntactic mechanisms. Flora and fauna are at the other extreme with respect to unity of semantic motivation, with the widest variety of pragmatic and metaphorical foundations. That these domains are nonetheless quite descriptive may be due to the fact

that the mechanism of descriptive lexical creation is necessary a fortiori in domains containing a multiplicity of similar types, often with little functional differentiation. Body parts being the least descriptive of these domains is not a result I would have predicted. It could be related to the relatively conservative retention of such core lexical items, and the normal lessening of segmentability and analyzability caused by phonological change and the loss of many of the constituent morphemes, in what were more descriptive terms at an earlier time.

Additionally, the five domains can be formed into the same three groups (occupations and implements, flora and fauna, body parts) on the basis of literalness, syntactic form and pragmatic processes. With respect to literalness, fauna, flora and body parts show the largest proportion of metaphors, while implements and occupations are described in terms of a characteristic narrowing from an activity to an object or person which is described with reference to that activity. With respect to syntactic form, body parts, fauna and flora show the largest number of compounds, and implements and occupations, the largest number of deverbative formations. And the pattern for pragmatic processes shows description by form being dominant in flora and fauna, by function being dominant in implements and occupations, and by location and form being dominant in body parts.

2.4. Criticism of Ultan's metrics

Ultan's system is, by and large, well formulated and revelatory in assigning descriptivity grades to lexical items. However, each metric has certain problems, in my view, which become apparent when one applies them to semantically more diverse data. In this section I will note these problems.

The first metric deals most generally with the difference between the meaning of a descriptive term and the

meaning expressed by its internal constituent structure. Value 1 is assigned when there is a relation of approximate equivalence, with no ambiguity: " $a+b = (a+b)$ ". Three degrees removed from this is value 4, which is assigned when " $a+b \neq (a+b)$ " meaning that "the sum of the parts is not equal to the whole" (Ullian 1975: 4ff.). This value is assigned to metaphorical expressions. The spread of numerical values between 1 and 4 on a scale of 5 is well reflective of the meaning difference between literal descriptions and metaphors, but the intermediate values do not seem to be motivated along the same continuum. Value 2 is assigned to ambiguous expressions, a phenomenon better handled within the general framework of contextual disambiguation. Value 3 is assigned when the term is incompletely analyzable, and it is then disallowed from further grading. The effect which the presence of one or more unanalyzable elements has on the descriptivity of a term is dependent on several factors, such as the identifiability of a structural meaning such as genus + species, and the descriptive coherence of the analyzable parts of the term. It would thus seem unwise to assign such a term an automatic zero-grade, even if qualified (*0). Whether a partially-analyzable term is to be considered descriptive and thus gradeable is best handled as a decision to be made prior to its submission to metrics. This is presupposed in the system which I propose below, and in this system I treat the presence of unanalyzable elements as an aspect of morphosyntactic explicitness.

The second metric measures the effect of semantic narrowing (value 3), semantic widening (value 2), and the lack thereof. It thus serves as the needed subdivider of the first metric's value 1. I found value 4, which seems to measure a further degree of narrowing, difficult to apply. Whether to give a term a value of 3 or 4 is a decision which may be too complexly dependent on real-world knowledge (consider ice-box and teacher, for example: whether or not "all teachers are people who teach" or "all ice-boxes are boxes with ice in them" depends on one's point of view).

The final metric is concerned with the difficult but important question of semantic explicitness: whether or not a term explicitly contains "all components necessary for an unambiguous reading" (Ulltan 1975: 9). The assignment of the pivotal value 2, where "some of the necessary components are implicit as inherent features" is very difficult to determine, however.

The most general criticism of Ulltan's metrics is the fact that they do not include syntactic complexity as a quantified factor. When one considers only semantic criteria in grading, two terms which evidence the same semantic relationships will necessarily have the same descriptive grade, even if one is syntactically more complex. For example, the Karok terms for 'salmon', ?á·mA (aĩ- 'to eat' + -va 'plural action (here serving as a deverbative)' -- "eater") and 'woodworm', ?ahup?ámva·n (?áħup 'stick, wood' + aĩ- + -va + a·n -- "wood-eater") would receive the same grades, 1-3-1, with an overall grade of 8, even though the latter term constitutes a fuller, potentially more discriminatory description: not only is an action described and delimited to an agent, but the characteristic object of that action is also made explicit.

3. Another proposal for descriptivity grading

I would now like to propose another system to measure descriptivity, in which I will attempt to remedy what I have described as shortcomings in Ulltan's system. I propose three metrics, the first wholly semantic, the third wholly syntactic, and the second partly semantic and partly syntactic, dealing with the intermediate phenomenon of semantic clarity in relation to morphological structure. I will first present the system in outline form, and will then discuss the metrics in detail (the parenthesized numbers indicate the numerical value to be assigned to a given grade).

TABLE 20

Descriptivity Metrics

- I. Figurative Degree
 - 1. Maximally literal meaning (100)
 - 2. Narrowing (75)
 - 3. Metonymy (50)
 - 4. Pragmatic metaphor (25)
 - 5. Symbolic metaphor (1)

- II. Explicitness
 - 1. There is maximally (and in relation to the non-applicability of conditions 2 and 3) a single syntactic and semantic reading assignable to each morpheme and to the construction as a whole. (100)
 - 2. The internal structure shows potential grammatical or lexical ambiguity or a potentially wide range of interpretation of the relations holding between the constituents. (67)
 - 3. One or more stems or affixes are found uniquely, only in the term in question. (33)
 - 4. The internal structure of the term, and hence its relation to a proposition, is minimally clear. (1)

- III. Syntactic Complexity
 - A. Stem Complexity (N, V, Adj)
 - 1. There are more than 2 stems, at least one of which is a verb. (100)
 - 2. There are 2 stems, at least one of which is a verb. (67)
 - 3. There are 2 or more stems, nouns and adjectives only. (33)
 - 4. There is only 1 stem. (1)

 - B. Derivational Complexity
 - 1. There are 3 or more derivational elements. (100)
 - 2. There are 2 derivational elements. (67)
 - 3. There is only 1 derivational element. (33)
 - 4. There is no derivational element. (1)

(A and B are to be averaged to give a composite syntactic complexity value, which is then weighted equally with each of the other 2 metrics.)

Determination of Figurative Degree: The following four statements are to be judged true or false with respect to a descriptive TERM and a sentential PARAPHRASE of the description expressed by the internal morphosyntactic components of that term. This paraphrase should include the stem morphemes, implicit or explicit inflectional elements, and as little other material as is possible (i.e., pro-elements, relational elements, etc.):

- A. Every PARAPHRASE is a TERM.
- E. Every TERM is a PARAPHRASE.
- C. PARAPHRASE is not a TERM, but an attribute of a TERM.
- D. PARAPHRASE is not a TERM or an attribute of a TERM, but is similar either to a TERM or an attribute of a TERM.

If A and B are true, the term shows Literal Meaning.
If A is false and B is true, the term shows Narrowing.
If C is true, the term shows Metonymy.
If D is true, the term shows Pragmatic Metaphor.
If A-D are false, the term shows Symbolic Metaphor.

My current view of descriptivity, as relating to linguistic-behavioral processes, is derived from Seiler's (as stated in Seiler 1976). By characterizing a given lexical item as 'highly descriptive' one is claiming that its internal syntactic-semantic structure is highly 'motivated' or 'non-arbitrary' and that, as a result, it has a high potential for semantic significance or clarity with respect to three activities of the language user: (1) Lexical Innovation - The speaker(s) involved in the coining of the term have utilized the possible grammatical mechanisms which the language offers for word formation to a high degree; (2) Acquisition of Lexicon - In a given linguistic situational context, the more descriptive a term is, the more information the learner has to identify potential referents, as well as taxonomic and symbolic relationships of the term; and (3) Explanation of Lexicon - The more descriptive a term, the more complete and explicit is the proposition potentially derivable from the term by a speaker. This proposition (or set of similar propositions) is then a clear option for the speaker to use, in whole or part, in his explanation of the meaning of the term.

As a descriptivity grade is here conceived of as a maximum potential, subject to speaker and situational variability, it is thought to be methodologically sounder in assigning descriptivity values, to err in the direction of too high a value rather than too low. The conditions of the metrics are stipulated and are to be utilized with this principle in mind.

All three metrics bear on the above behavioral phenomena, with Metrics I and III reflecting most directly the constraints on lexical innovation, I and II being the primary determinants of ease of acquisition, and III being

the primary differentiator of complexity of propositional content, and thus relating most closely to potential lexical explanation.

3.1. Figurative degree

The first metric, which I have called 'figurative degree', is concerned not with the possibilities of figurative uses of the term (in metaphors, etc.) but with the extent and nature of the semantic figuration expressed by the creator of the term, with respect to the encased proposition's relationship to descriptive characteristics of the object-type named. The figuration is classified according to general types found in all languages investigated.

I have isolated four degrees of figurative extension from maximum literalness: narrowing, metonymy, pragmatic metaphor and symbolic metaphor. It has been argued (van den Boon 1975) that every descriptive noun shows at least narrowing, in the sense of being necessarily further delimited than its corresponding proposition, by a constant logical operator which effects the mapping of a predicate onto an argument. While this would seem to rule out a figurative degree greater than narrowing, I suggest that there are two clearly describable, if not clearly definable, degrees of literalness, in at least some semantic domains. The lesser of the two degrees, which is what my metric classifies as 'narrowing', is that captured by the third value of Ultan's second metric: 'some $a+b \in ab$; all $ab \in a+b$ '. In the case of agentive deverbative constructions this degree of narrowing indicates that the described action or process is not simply predicated as an ability of the named agent, but is a recognized status, such as a professional occupation (teacher, dentist) or sometimes a status assumed with respect to a specific ritual (such as Karok $i\check{s}riva\cdot n$ 'archer in world-renewal ceremony', from $i\check{s}ri\check{v}$ 'to shoot at targets' + $-a\cdot n$ 'agent').

This is to be distinguished from the sort of agentive deverbative term which shows the lesser degree of narrowing, whose meaning is roughly paraphraseable as either 'one who has the ability to VERB' or 'one who has VERBed' (or possibly 'one who VERBs habitually'). Terms such as 'swimmer', 'murderer' and 'driver' are potentially ambiguous with respect to these two degrees of narrowing, while some terms such as 'consumer', 'liar' and 'winner' show the minimal degree of narrowing unambiguously.

In both cases one is describing potential rather than actual behavior: a driver (whether he is a chauffeur or not) is describable as such either when he is behind the wheel, sitting in his living room, or standing in traffic court (in the last instance the appropriate paraphrase of 'driver' with respect to a judge's question "who was the driver?" is 'One who was driving at a specified time' not 'One who has the ability to drive'). But it is only in the case of what I am calling 'narrowing' that one may have the ability to VERB without being necessarily describable as a VERBER: one can say 'He can teach but he is not a teacher' or conversely, 'He is a teacher but he can't teach' or 'He is a teacher but he has never taught', but one cannot substitute 'consumer', 'liar' or 'winner' with its associated verb expression in these sentences.

The situation is analogous with implement terms. The term shows 'narrowing' in the more restricted sense if it describes an implement specifically designed for a task, but for which another object can conceivably be used. One can say of any such implement, such as 'toothpick' or 'nutcracker', that 'one can use on OBJECT as an IMPLEMENT' where the object is not the specifically designed implement ('one can use a fountain pen as a toothpick'). Those implement terms which can be described as 'maximally literal' are those for which an object not specifically designed for the task could not be conceivably used, such as the Hungarian term for a coin-minter, pénzverögép (péncz 'coin, money' + ver 'to strike' + -ög 'deverbative' + gép

describes such relations as:

part/whole: Karok. iθvayFúrax 'species of salamander' (iθvay 'chest' + Fúrax 'red'); Karok. axnatsínihič 'snow-berry plant' (axnat 'thorn' + sínih 'shiny' + -ič 'diminutive'); and Tunica. rihkukóra 'cart, wagon' (rihku 'wood' + kóra 'disc-shaped' -- i.e., "wheel")

specific/generic: Se Pomo. sasmi 'pubic hair' and Tunica. kúwathóku 'bird (generic term)' (see section 2.1.)

plant/product made from plant: Karok. kutʔánav 'snow-plant' (kut- 'to have an itch' + ʔánav 'medicine' -- "itch-medicine")

and animal/its call: Se Pomo. qatqat 'crane' -- the onomatopoeic representation of its call is said to be like this, with a double mora vowel and falling tone on both first and reduplicated morphs.

In his description of his first metric (Utan 1975: 6) Utan cites the possibility of a semantic phenomenon parallel but opposite to narrowing, called 'widening'. The one example cited in his Finnish data was comparable to Se Pomo sasmi, above: Finnish hápakarva 'pubic hair' (hápy 'vulva' + karva 'hair'). I found over twenty such examples in my data, which fell into patterns such as I have just listed. All such examples would seem to be special cases of metonymy which, rather than being parallel to narrowing, and having the same descriptive value, represent a step further down a continuum leading to metaphorical expressions, expressing a description that some attribute of an object is the object itself.

If statement C also is false, statement D is applied. If D is true, the term is said to express a 'pragmatic metaphor', by which I mean that the descriptive content of the metaphor is understandable with knowledge only of 'objective' attributes of the named entity, and none of culture-specific symbolism. Examples include: Karok. tasvanʔípih 'shoulder blade' (tásva·n 'spatula' + ʔípih 'bone' -- "spatula-shaped bone"); Se Pomo. fqaclulu 'liz-

ard' (fǫač 'frog' + lulu 'flute' -- "flute-shaped frog"); and Tunica. yáruhkʔósini 'hammer' (yáruhki 'axe' + ʔósini 'head' -- "axe with a head").

If statements A through D are all false, the term is classified as a 'symbolic metaphor': an understanding of this sort of metaphor requires specific cultural knowledge. Examples include: Se Pomo. xalčma 'right hand, arm, side' (see sec. 2.2.2.); Karok. pihne·Fpišta·xva 'type of winged ant' (pihnê·F- 'coyote' + pištá·xva 'to pull back one's foreskin' + -a 'nomina actionis' -- "coyote's pulling his foreskin back"); and Tunica. tíšlinašihpari 'coral bean' (tíšlina 'Stone Witch' + šihpari 'bean').

3.2. Explicitness

The second metric, which I have called the 'Explicitness' metric, is an attempt to measure the degree to which the internal morphological structure of the term forms an explicit propositional description, and uses the notions of structural meaning, structural ambiguity, range of interpretation, and uniquely occurring morpheme.

Similarly to 'Figurative Degree' this metric determines relative degrees of explicitness. There is no theoretical 'maximum' or 'minimum' degree (excepting non-descriptive labels) but rather conditions which are met or not by a particular term. The four-part explicitness scale is given in table 20.

A value of 100 is assigned to those terms clearly relatable to a proposition, with a single reading for each morpheme and for the construction. Such a situation is a result of a lack of lexical ambiguity, semantic-pragmatic assumptions (next paragraph) and an assignable structural meaning, such as English adjective(modifier)+noun(head) (as in redcoat, yellowjacket and little finger) and the Se Pomo exocentric construction noun(head)+verb(modifier)

as in two names for bird species: $\acute{p}almxa\acute{t}$ 'grey nuthatch' ($\acute{p}al$ 'cheek' + $mxat\acute{-}$ 'to be scorched' -- "its cheek is scorched") and $xnucuc$ 'titmouse' (xnu 'forehead' + $cuc-$ 'to point upwards').

It is, moreover, clear that certain potential ambiguities are not actualized in the understanding and use of terms because of their incompatibility with real-world assumptions. 'Breadknife' is not really subject to the multiple readings corresponding to 'soup spoon' and 'breadstick', while the last-named term certainly is.

A value of 67 is assigned to a descriptive term which can have multiple readings because of one or more of three phenomena: (1) There is structural ambiguity in the sense of more than one possible morphological analysis. For instance, the Karok term for 'redwood tree' is analyzable in two ways. It is $\text{?u}\theta kanp\acute{a}hi\cdot p$, and consists of $\text{?u}\cdot\theta$ 'towards the center of a body of water' + $-ak$ 'in, on, at', and either $p\acute{a}\cdot h$ 'boat' + $i\cdot p$ 'tree' or $pahi\cdot p$ 'pepperwood tree'. It is thus analyzable either as 'ocean-boat tree' or 'ocean pepperwood', and both analyses are plausible in terms of Karok word-formation. (2) At least one of the constituent morphemes is polysemic, or homophonic with another morpheme. The Se Pomo term for the bird species 'golden-crowned kinglet' contains two homophones: da , which is either 'sun' or 'wife' and $x\acute{q}o$, which is either 'land' or 'white man'. The term, $dax\acute{q}o\acute{c}ta$ ($\acute{c}ta$ 'bird'), can be analyzed, then, as 'sun-land bird', 'white-man's sun bird', 'white-man's wife's bird' or 'wife's-land bird' (the first is most likely). And (3) Multiple interpretations of the semantic-syntactic relations holding between constituents are possible. A not-infrequent situation giving rise to this is when there is a possibility of multiple interpretations of the case relation holding between a noun and a verb. For example, the Tunica term meaning 'hammer' or 'war club', $r\acute{i}nku\acute{t}\acute{a}p\epsilon ka$ ($r\acute{i}nku$ 'wood, stick' + $t\acute{a}-$ 'agent' + $p\acute{\epsilon}ka$ 'to hit') could conceivably be interpreted as 'stick which is used for hitting' on the pattern

of yúhkitášuhci 'sewing needle' (yúhki 'pointed object, needle' + tá- + šúhci 'to sew') or as 'hitter of wood' on the pattern of háhkatátomu 'mortar' (háhka 'corn' + tá- + tómu 'to pound in a mortar').

A value of 33 is assigned to a term which is thought to be related to a specific propositional content, but in which there is one or more morphemes which occur in no other lexical item in the language. The various English terms for species of berries such as cranberry, boysenberry and loganberry are examples of this. Another group of examples is found in Se Pomo, where the names of many small animals are reduplicated constructions, consisting of a stem of unique occurrence. Examples are 'aw'aw 'crow' and činčin 'chipmunk'. Finally, there is the diverse class of partially unanalyzable terms, such as Se Pomo mxaṭnel 'California newt', which clearly expresses that something is scorched (mxaṭ-) even though -nel can be assigned no meaning.

A value of 1 is assigned when the propositional content of the term is less clear than in the above cases. The Karok term for a bird species 'mountain tanager', išviripčè-x, consists of išvirip 'jeffrey pine' and čè-xhi 'to make the call of the mountain tanager'. While this bird is clearly the maker of this call, and while a speaker can conceive of a relation between the pine and the bird such as 'lives in', whether or not the two stems form a coherent proposition is open to question. Finally, there are borderline cases of monomorphemic lexical items which nonetheless are conceived of as descriptive, though there is a total lack of explicit derivation: there is zero-derivativization, as in the Tunica word for 'warrior', náka, which is also the term for 'war'; and I have at least one instance of monomorphemic unmarked metaphor, the Se Pomo term for 'mountain slider lizard', kfal. Speakers say that this is really the term for the fish 'pike', but that this lizard is called kfal because it has a snout shaped like a pike's.

3.3. Syntactic complexity

The third metric is relatively straightforward. The basic assumption is that the more major stems (nouns, verbs and adjectives) and the more derivational morphemes present in a descriptive term, the more detailed and complex can be the proposition which it expresses. Further, if a term contains one or more verbs it is more descriptive, ceteris paribus, than a term containing the same number of non-verb major stem.

For illustrative purposes I will give one example here of each value for each of the two sub-metrics (which, as stated in table 20), are to be averaged to give an overall value):

- Stem complexity: 1. Se Pomo. pilatu?selamtadapu 'dish-cloth' (pilatu 'dish, plate' + ?sel- 'to wash' + -m 'instr. or location deverb.' + tadapu 'cloth')
2. Se Pomo. kućin ci.wa 'goat')
3. Tunica. húmamélirúsa 'blackberry bush' (húma 'berry' + méli 'black' + rúsa 'briar (patch)')
4. Tunica. číput?e 'pomegranate' (čípu 'passion flower' + t?e 'augmentative')

- Derivational complexity: 1. Karok. axpaha.kníkinač 'fawn-lily or adder's tongue (species of flower)' (axpaha 'headdress' + ikriki- 'to attach' + -kiri 'instrument deverbative' + -a 'nomina actionis deverb.' + -ič 'diminutive denominative -- "little headdress attachment")
2. Se Pomo. ?a?kaṭal 'thief' (?a- 'agent deverbative' + ?kaṭ- 'to do something wrong' + -al 'agent deverbative')
3. Tunica. tákoma 'comb' (tá- 'agent' + koma 'to comb')

4. Comparing the two systems

Having presented my proposal for descriptivity grading, it remains to be seen how the results compare with the results of my application of Ultan's system. In this

TABLE 23 - Karok Occupations

Corpus: 25 Terms

Descriptive Terms: 23

Overall Descriptivity: 92%

<u>Grade</u>	<u>#</u>	<u>%</u>	<u>Figurative Degree</u>	
0	2	8.0		
3	1	4.0		
4	2	8.0	Max. lit.	2 8.7
5	2	8.0	Narrowing	21 91.3
6	13	52.0	Metonymy	0 0
7	1	4.0	Prag. Met.	0 0
8	4	16.0	Sym. Met.	0 0

It will be noted, to begin with, that in all three cases the number of terms considered descriptive is higher in my system than in Ultan's. This derives from our differing views on partially analyzable terms, which Ultan automatically gives a grade of *0 'provisionally classified as labels but [being] potentially descriptive terms' (Ultan 1975, page 11). I tend to classify these terms as descriptive, because of my stated position that a descriptivity grade should reflect a maximum potential value.

The raw totals resulting from my grading system produce a scale from 1 to 100 and, by dividing by and rounding off to the nearest 10, results in a 1 to 10 scale directly comparable to Ultan's. This has been done in table 21, and only the rounded figures are given in tables 22 and 23.

Comparing the figures in the two systems reveals a significant point of similarity and a significant difference. The figures are similar in showing clusterings of values at comparable relative points on the scale. In the case of Hunica body parts the greatest and second-greatest concentration of terms is found in the highest and second-highest grades containing terms, respectively. In the Pomo fauna considerable clustering is found near the highest grades containing terms but less so in the highest. This pattern is also found in the Karok occu-

pation term gradings. The Tunica pattern is apparently a factor of the absence of metaphorical terms in this domain, the Pomo pattern, a factor of the larger percentage of non-isomorphic (Ultan) and narrowing and metonymic terms (Moshinsky). The Karok clustering is pushed back from the upper end somewhat by two factors: practically no 1 values assigned on the paraphrase metric (Ultan) and lower ratings for syntactic complexity (Moshinsky).

The significant point of difference in the figures is with respect to the absolute values. In all three cases there are terms which are assigned the maximum value of 10 on the Ultan scale, while in none of these cases is 10 assigned on the Moshinsky scale. This is caused by the inclusion of syntactic complexity in the latter but not in the former system. For a term to get the highest value in the Moshinsky system it must show not only non-metonymic and non-metaphorical semantic construction and high explicitness, but also noun and verb stems and considerable derivational complexity. No term in this data is so structured. The likelihood of a term receiving an overall grade of 10 (= 95 or higher) in this system is probably very small indeed.

The pragmatic processes underlying descriptions (such as form and location) are not, by virtue of their non-scalarity, quantified in either system, and must be stated separately. The semantic processes are not measured directly by Ultan's system, are by Moshinsky's first metric, and are given here as they do differ from the Ultan specifications, and are not derivable from the averaged Moshinsky grades.

Specific examples of the grading of terms by both systems can be found in the Appendix. It can be noted that one of the greatest descriptivity value differentials is to be found in the analysis of terms which I have described as having the structure 'Unique Species + True Generic'. Such terms will be graded *0 by the Ultan system,

but can receive a considerably higher grade with the Mo-shinsky system.

5. Another proposal for quantification

It is quite apparent that similarities of grade-clustering in both systems can result from different factors. This results in the non-transparency of a summed descriptivity grade for a given term, and would be true for any conceivable grading system. The fact that two grammatically and semantically dissimilar terms such as Se Pomo ʔawʔaw 'crow' and Karok ʔassak va*txarakavrũ*kvutihān 'California wood fern' (see sec. 2.23.) receive the same descriptivity grade by my system tells us something, perhaps, about their similar place within the spectrum of greatest-to-least descriptivity, but tells us nothing about the analytic basis of this status.

A more serious problem is the arithmetic basis of the grading. Not only does the summed grade tell us little, it is difficult to defend quantitatively. The numerical differences between values derive from the numerical values stipulated within the metrics by the designer: my metrics are all 1-100 scales with internally equidistant values. One could argue that there is a greater inherent difference between narrowing and metonymy say, than between metonymy and pragmatic metaphor. One could argue this from the point of view of semantic theory, on the one hand, or from experimental results, on the other. There is a further problem in giving equal weight to the different metrics. What sort of evidence would one need to determine the relative weighting of figurative degree and syntactic complexity, for example? In all cases one would not only be likely to arrive at different numerical results given different examples of these phenomena, but one would be engaging in a circular activity: designing the metric on the basis of the results which it produces.

While the absolute difference in numerical values assigned to particular lexical items by my (or perhaps any conceivable arithmetic) system are at best vaguely suggestive, I would maintain that my system does provide useful and replicable decisions with respect to the relative descriptivity of terms: though the quantity difference between terms x's 67 and term y's 75 may be ad hoc, the system will justifiably classify both as highly descriptive, and correctly rate term y as more descriptive than term x.

Van den Boom has suggested (personal communication) that these problems, as stated, inevitably result from an arithmetically calculated system, and that better insights could possibly be attained using geometric analysis: each metric would be expressible as one element of an n-tuple $\langle \alpha_1, \alpha_2, \dots, \alpha_n \rangle$ for each metric 1 - n, and would be associated with a vectorial dimension. A group of descriptive terms would thus be placed not as integers along a numerical scale, but as points within an n-dimensional space. While such an analysis has not yet been undertaken, the suggestion that a term should be associated not only with the sum grade, but also with an n-tuple (triple for the Ultan system, quadruple for the Moshinsky system) has been adopted, and all terms in the appendix are so identified.

6. Conclusion

The descriptive content which inheres in and can be ascribed to nouns as a result of their internal morphological complexity has been analyzed from the points of view of its degree of departure from literal description and of the explicitness and complexity of its morphosyntactic structure. Three metrics which express these properties have been postulated. While the significance of a single quantificational value for a given lexical item is open to question, the individual metrics are thought

to capture the most significant defining properties of relative descriptivity, and a comparative display utilizing analytic geometric methods might offer the possibility of a more enlightening mode of single point comparison between lexical items, semantic domains and languages.

A comparison of the descriptive degree of the five domains treated reveals a pattern which may or may not stand up to further testing: the highest degree of descriptivity is found in those domains whose semantics allows for a highly unified formation of functional descriptive terms by a small number of derivational elements offered by the language (i.e., occupations and implements). A second level of average descriptivity, found in flora and fauna terms, is based in highly heterogeneous patterns of lexical formation, where the internal semantics reflect predominantly cultural symbolic rather than functional propositions. The remaining domain, that of body part terms, shows a somewhat lower degree than the others, and evidences, both intra- and inter-linguistically, highly diverse bases of formation.

Studies of other semantic domains from the perspectives outlined in this paper should enable the establishment of generalizations about the relation between grammatical, semantic and cultural symbolic processes, and provide interesting new insights into their role in characterizing and differentiating the various semantic domains which make up the major lexicon.

APPENDIX - Descriptivity Lexicon

All descriptive terms discussed in the body of the paper will be listed here, by language, in alphabetical order (? does not count in alphabeticization) as follows:

TERM 'gloss': $U\langle\alpha_1, \alpha_2, \alpha_3\rangle, U_g / M\langle\beta_1, \beta_2, \beta_3, \beta_4\rangle, M_g$

The term is followed by an English gloss. It is then graded, first by the Ultan system, the triple giving the values for individual metrics in the order presented, within the angled brackets, and the overall Ultan descriptivity grade is then given following the comma. The term is then graded similarly by the Moshinsky system, with Stem Complexity and Derivational Complexity being specified separately as the last two elements of the quadruple.

English

blueberry : $U\langle 1, 3, 1\rangle, 8 / M\langle 75, 100, 33, 1\rangle, 64$
bluebird : $U\langle 1, 3, 1\rangle, 8 / M\langle 75, 100, 33, 1\rangle, 64$
boysenberry : $U\langle 3, -, -\rangle, *0 / M\langle 100, 33, 33, 1\rangle, 50$
breadknife : $U\langle 1, 3, 2\rangle, 7 / M\langle 75, 100, 33, 1\rangle, 64$
breadstick : $U\langle 1, 1, 1\rangle, 10 / M\langle 100, 67, 33, 1\rangle, 61$
consumer : $U\langle 1, 1, 1\rangle, 10 / M\langle 100, 100, 1, 33\rangle, 72$
cranberry : $U\langle 3, -, -\rangle, *0 / M\langle 100, 33, 33, 1\rangle, 50$
driver : $U\langle 1, 1 \text{ or } 3, 1\rangle, 10 \text{ or } 8 / M\langle 100 \text{ or } 75, 67, 1, 33\rangle, 61 \text{ or } 53$
eyebrow : $U\langle 1, 1, 1\rangle, 10 / M\langle 100, 100, 33, 1\rangle, 72$
liar : $U\langle 1, 1, 1\rangle, 10 / M\langle 100, 100, 1, 33\rangle, 72$
loganberry : $U\langle 3, -, -\rangle, *0 / M\langle 100, 33, 33, 1\rangle, 50$
murderer : $U\langle 1, 1, 1\rangle, 10 / M\langle 100, 100, 1, 33\rangle, 72$
nutcracker : $U\langle 1, 3, 1\rangle, 8 / M\langle 75, 100, 67, 33\rangle, 75$
redcoat : $U\langle 4, 5, 3\rangle, 1 / M\langle 50, 100, 33, 1\rangle, 56$
swimmer : $U\langle 1, 1 \text{ or } 3, 1\rangle, 10 \text{ or } 8 /$
 $M\langle 100 \text{ or } 75, 67, 1, 33\rangle, 61 \text{ or } 53$
teacher : $U\langle 1, 3, 1\rangle, 8 / M\langle 75, 100, 1, 33\rangle, 64$
toothpick : $U\langle 1, 3, 1\rangle, 8 / M\langle 75, 67, 67, 33\rangle, 64$
winner : $U\langle 1, 1, 1\rangle, 10 / M\langle 100, 100, 1, 33\rangle, 72$
yellowjacket : $U\langle 4, 5, 3\rangle, 1 / M\langle 25, 100, 33, 1\rangle, 47$

Finnish

häpykarva 'pubic hair' : U<1,2,1>, 9 / M<50,100,33,1>, 56
nielu 'throat' : U<2,3,1>, 7 / M<75,100,1,33>, 64

Hungarian

ebédlő 'dining room' : U<1,3,3>, 6 / M<75,67,1,33>, 53
egyengető kalapács 'planing hammer' :
U<1,3,1>, 8 / M<75,100,67,33>, 75
fúrógép 'drilling machine' : U<1,3,1>, 8 / M<75,100,67,33>, 75
kertészolló 'pruning shears' :
U<1,3,2>, 7 / M<75,100,33,33>, 69
pénzverőgép 'coin minter' : U<1,1,1>, 10 / M<100,100,100,33>, 89
reszelő 'file' : U<1,3,3>, 6 / M<75,67,1,33>, 53
találkozó 'a meeting' : U<1,1,3>, 8 / M<100,67,1,33>, 61
tonito 'teacher' : U<1,3,3>, 6 / M<75,67,1,33>, 53

Karok

ʔačipti·k 'middle finger' : U<1,1,1>, 10 / M<100,100,33,1>, 72
ʔahupʔámva·n 'woodworm' : U<1,3,1>, 8 / M<75,100,67,33>, 75
akxá·pak atatúra·hitihan 'morning glory' :
U<1,4,1>, 7 / M<75,100,67,33>, 75
ʔá·mA 'salmon' : U<1,3,1>, 8 / M<75,100,1,33>, 64
apsúnpu·Fve·na 'gopher snake' :
U<3,-,->, *0 / M<1,33,67,33>, 28
ʔararássa·k 'arrowhead' : U<1,1,1>, 10 / M<100,67,33,1>, 61
ʔassak va·txarakavrû·kvutihān 'Cal. wood fern' :
U<4,5,1>, 3 / M<1,100,67,33>, 50
astahvô·nanač 'coot' : U<1,3,1>, 8 / M<75,100,67,67>, 81
atraxʔípan 'shoulder' : U<1,3,1>, 8 / M<75,100,33,1>, 64
ʔávʔi·š 'cheek' : U<1,3,1>, 8 / M<75,100,33,1>, 64
axnatsínihič 'snowberry' : U<1,5,3>, 4 / M<50,100,33,33>, 61
axpahe·kníkinač 'fawn lily' :
U<4,4,1>, 4 / M<50,100,67,100>, 78
čamnúpanač 'woodpecker' :
U<1,3,1>, 8 / M<75,100,1,67>, 70

- ʔiFuniha 'hair' : U<4,5,3>, 1 / M<50,100,1,33>, 56
ikšúpanač 'index finger' : U<1,3,1>, 8 / M<75,100,1,67>, 70
iktī·nara 'cane' : U<1,1,1>, 10 / M<100,100,1,67>, 78
ipnipá·va·n 'priestess' : U<1,3,1>, 8 / M<75,100,1,33>, 64
ʔišahaʔásip 'bucket' : U<1,3,1>, 8 / M<75,100,33,1>, 64
išpukasuprávara 'scale' : U<1,3,1>, 8 / M<75,100,67,67>, 81
išriva·n 'archer' : U<1,3,1>, 8 / M<75,100,1,33>, 64
išviripče·x 'mt. tanager' : U<4,5,3>, 1 / M<1,1,67,1>, 12
iəári·p 'Douglas fir' : U<1,1,1>, 10 / M<100,100,33,1>, 72
iəvayfúrax 'salamander' : U<4,5,3>, 1 / M<50,100,33,1>, 56
káFhi·č 'alum' : U<1,5,1>, 6 / M<25,100,1,33>, 47
kutʔánav 'snowplant' : U<4,5,3>, 1 / M<50,100,67,1>, 61
pihne·Fpišta·xva 'winged ant' :
U<4,5,3>, 1 / M<1,100,67,33>, 50
sáriə 'vine maple' : U<3,-,->, *0 / M<100,33,1,1>, 45
sipnukʔátimnam 'basket' : U<4,5,3>, 1 / M<25,1,33,1>, 14
tasvanʔípih 'shoulder blade' :
U<4,5,3>, 1 / M<25,67,33,1>, 36
tikánka·m 'thumb' : U<1,3,1>, 8 / M<75,100,1,33>, 64
tikʔárup 'palm' : U<4,5,3>, 1 / M<25,100,33,1>, 47
ʔuəkanpáhi·p 'redwood' : U<1,1,3>, 8 / M<25,67,33,1>, 36
or U<4,5,1>, 3 / M<25,67,1,1>, 31
ʔuxʔasiye·šríhva·n 'bartender' :
U<1,3,1>, 8 / M<75,100,67,33>, 75

Southeastern Pomo

- ʔabko 'shaman' : U<1,3,1>, 8 / M<75,100,1,33>, 64
ʔaʔkaʔal 'thief' : U<1,3,1>, 8 / M<75,100,1,67>, 70
ʔawʔaw 'crow' : U<3,-,->, *0 / M<100,33,33,1>, 50
blaykin 'vein' : U<1,3,3>, 6 / M<75,67,33,1>, 53
bšiqca 'arrowhead' : U<1,1,1>, 10 / M<100,100,33,1>, 72
bućma 'index finger' : U<1,4,1>, 7 / M<1,100,33,1>, 39
cakuqal 'carpenter' : U<4,4,3>, 2 / M<50,100,67,33>, 67
ćincin 'chipmunk' : U<3,-,->, *0 / M<100,33,33,1>, 50
daʔqoćta 'golden-crowned kinglet' :
U<4,5,3>, 1 / M<1,67,33,1>, 28
fqaclulu 'lizard' : U<4,5,3>, 1 / M<25,67,33,1>, 36
kfal 'mt. slider lizard' : U<5,-,->, 0 / M<25,1,1,1>, 9
kućin ci·wa 'kid' : U<1,3,1>, 8 / M<75,100,67,33>, 75

- ʔmanyosmi 'armpit hair' : U<1,1,1>, 10 / M<100,100,33,1>, 72
mfetʔ 'skunk' : U<5,-,->, 0 / M<50,1,1,1>, 17
mʔaʔnel 'Calif. newt' : U<3,-,->, *0 / M<50,33,33,1>, 33
palmxaʔ 'grey nuthatch' : U<4,5,1>, 3 / M<50,100,67,1>, 61
papel ʔyiqkal 'teacher' : U<1,3,1>, 8 / M<75,100,67,33>, 75
pilatuʔselamtadapu 'dishcloth' :
U<1,3,1>, 8 / M<75, 100,100,33>, 81
q̄aʔq̄aʔ 'crane' : U<3,-,->, *0 / M<100,33,33,1>, 50
qʔoy 'palm' : U<1,3,1>, 8 / M<75,100,1,33>, 64
sasmi 'pubic hair' : U<1,2,1>, 9 / M<50,100,33,1>, 56
ʔtan 'hand' : U<1,1,1>, 10 / M<100,100,1,33>, 72
ʔuyʔinayxay 'sunflower' : U<4,5,1>, 3 / M<25,100,33,1>, 47
x̄aʔit 'mudhen' : U<3,-,->, *0 / M<1,1,33,1>, 6
xal̄cma 'right hand' : U<1,4,1>, 7 / M<1,67,33,1>, 28
xaʔay 'fish gig' : U<1,3,2>, 7 / M<75,67,33,1>, 53
x̄aybadudk̄um 'drill' : U<1,3,3>, 6 / M<75,67,67,33>, 64
x̄ayko 'pipe' : U<4,5,3>, 1 / M<25,67,33,1>, 36
xnucuc 'titmouse' : U<4,5,1>, 3 / M<50,100,67,1>, 61
x̄kotx̄kotam 'guitar' : U<1,3,1>, 8 / M<75,100,67,33>, 75
x̄okaletabackickim 'train depot' :
U<1,3,1>, 8 / M<75,100,100,33>, 81
yukinq̄a 'foreleg' : U<1,3,1>, 8 / M<75,100,1,33>, 64

Tunica

- álawéčahótuš 'earlobe' : U<1,3,1>, 8 / M<75,100,33,1>, 64
-áškamáyisáhu 'fourth toe' :
U<1,4,1>, 7 / M<75,67,33,1>, 53
číputʔε 'pomegranate' : U<4,5,1>, 3 / M<25,100,1,33>, 47
háhkátátomu 'mortar' : U<1,3,1>, 8 / M<75,100,67,33>, 75
-hkentʔε 'thumb' : U<1,3,1>, 8 / M<75,100,33,1>, 64
húmamélirúsa 'blackberry bush' :
U<1,1,1>, 10 / M<100,100,33,1>, 72
húmaratáhera 'keeper of a fast' :
U<1,1,1>, 10 / M<100,100,67,33>, 83
kéwista 'honeybee' : U<4,5,1>, 3 / M<25,100,33,1>, 47
kúwatóhku 'bird' : U<1,2,1>, 9 / M<25,100,33,1>, 47
líhpatóhku 'blister' : U<1,3,1>, 8 / M<75,100,1,33>, 64

náka 'warrior' : U<5,-,->, 0 / M<1,1,1,1>, 1
ʔónitánira 'thief' : U<1,1,1>, 10 / M<100,100,67,33>, 83
púnatárahpani 'racquet' : U<1,1,1>, 10 / M<100,100,67,67>, 89
ríhkukóra 'cart' : U<1,5,1>, 6 / M<50,100,33,1>, 56
ríhkušíkuri 'sword' : U<1,4,3>, 5 / M<75,67,33,1>, 53
ríhkutápeka 'hammer' : U<1,3,2>, 7 / M<75,67,67,33>, 64
-šihparlétu 'bush bean' : U<3,-,->, *0 / M<100,33,33,1>, 50
-štósutahkiši 'eyelid' : U<1,1,1>, 10 / M<100,100,33,1>, 72
táhara 'singer' : U<1,3,1>, 8 / M<75,100,1,33>, 64
tákoma 'comb' : U<1,3,1>, 8 / M<75,100,1,33>, 64
támohu 'broom' : U<1,3,1>, 8 / M<75,100,1,33>, 64
tášihputásaku 'fork' : U<1,1,2>, 9 / M<100,67,67,33>, 72
tíšlinašihpari 'coral bean' : U<4,5,1>, 3 / M<1,100,33,1>, 39
ʔúšihotášihpu 'fork' : U<4,5,3>, 1 / M<25,67,67,33>, 47
yániši 'bovine' : U<3,-,->, *0 / M<100,1,33,1>, 39
yáruhʔósini 'hammer' : U<4,5,1>, 3 / M<25,100,33,1>, 47
yúhkitášuhci 'sewing needle'
U<1,1,1>, 10 / M<100,100,67,33>, 83

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