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DELL H. HYMES
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SEMANTIC RELATIONSHIPS IN PAPAGO
FOLK-DEFINITIONS

JOSEPH B. CASAGRANDE AND KENNETH L. HALE

A. INTRODUCTION

Speakers of a language do not intuitively gain familiarity with the full range of meanings of all lexical items in the language. There will inevitably be occasions when the meanings of particular words must be explained to language learners, whether children or adults. Every language must thus in some degree serve as its own metalanguage to explicate semantic usage. Here then is a universal linguistic need. In Western and other literate cultures we have recourse to dictionaries, laboriously compiled by learned men, but speakers of unwritten languages must necessarily be their own lexicographers. We too must often be practical lexicographers and thus makers of folk-definitions as when instructing a child, or interpreting our own experience of usage that goes beyond our dictionaries.

In this paper we wish to present a selection from a sample of about 800 Papago folk-definitions. The definitions are arranged in categories primarily intended to reflect the semantic principles implicit in their construction.¹ Some attention will also be given to the grammatical form in which these folk-definitions are cast. In the concluding section we compare the semantics of folk-definition with types of relationship in word association and discuss briefly the research strategies that may be useful in further studies of folk-definition and related topics.

¹ The definitions were collected in the summer of 1961 by Kenneth L. Hale, who is indebted to the American Philosophical Society, which supported the work on intra-language variability in the course of which the definitions were obtained. He is also deeply indebted to Mr. Luke Preston for the patience and capability he showed not only in giving definitions but also in serving as principal informant during the summers of 1956, 1957, and 1961. We are grateful to Duane G. Metzger and Oswald Werner for helpful suggestions and comments on an earlier draft of this paper.

Copies of tapes collected during the summer of 1961 are deposited in the library of the American Philosophical Society. The originals will be deposited in the archives of Languages of the World, Indiana University.
To our knowledge, no one has systematically collected and examined an extensive corpus of folk-definitions from an unwritten language. With a few exceptions, such as the Franciscan Fathers’ *An ethnologic dictionary of the Navaho language* (1910), most dictionaries of unwritten languages are little more than lists of roughly translated equivalents. This paper is a modest beginning; it does not constitute a folk dictionary of Papago. But is is an attempt to let “the speakers of a language ... themselves (to) suggest the proper types of conditions for the meanings of the various terms in their language” (Weinreich, 1962, 34), a position which we heartily endorse.

The various Papago dialects and their Pima sister dialects are presently spoken by more than 11,000 people in southern Arizona and in adjacent areas in northern Sonora. The definitions used in this paper were collected primarily from one person, Mr. Luke Preston, born about 1885 at Sekil Himitk (síkol himidk) and now living at San Xavier, near Tucson, Arizona. The dialect spoken by Mr. Preston is essentially that which Underhill (1939) has called “Archie”, and which is referred to by some Papagos as tótogwañ. His speech is strongly influenced by Pima since in his early years he lived with his family near Sacaton in the Pima-speaking area. His formal schooling included several years spent at the Phoenix Indian School. Mr. Preston speaks English well and is literate in that language, but he prefers to speak Papago in situations where either language could be used.

Although data reported here are mainly from a single informant, a smaller sample of definitions collected from two other Papago-speakers tended to conform closely to those given by Mr. Preston. Many of the definitions given by two informants are identical.

This paper is a by-product of a more general study concerned with variability in lexical usage among speakers of the mutually intelligible dialects of Pima-Papago. In order to determine the extent and domain association of lexical differences among these dialects, a test list and questionnaire were prepared. The test questions were first composed in Papago and took the form of definitions in which the defined item had been replaced by an interrogative phrase (e.g., ša: ʔo piʔáʔaga hígaʔí mo ʔob ʔáb ʔimúʔukad gwáñom. “What do you call that upon which a knife is sharpened?”, to elicit the term for “hone” or “grindstone” — lí:ma at San Xavier, shíwkcuʔù at Sacaton). After a number of questions had been formulated and tested with informants, the possibility suggested itself that the questions could be more satisfactorily constructed if based on definitions given by a native speaker of Pima-Papago. Mr. Preston
proved willing and able to volunteer such definitions. He had often given explanations, in Papago, of uncommon words appearing in texts, but the formulation of definitions for common, textually frequent words, which seldom if ever require explanation in ordinary Papago usage, was a new experience to him. In his definitions, Mr. Preston attempted to state what he considered to be the most obvious and important semantic relations between certain lexemes in his language. His definitions are of interest in themselves, quite apart from their usefulness in the project for which they were originally intended.

B. TYPES OF SEMANTIC RELATIONSHIPS

At a rather abstract level, a definition can be regarded as a statement of a semantic relationship between a concept being defined and one or more other concepts, presumed to be known to the hearer (reader), and having properties considered relevant to the term being defined. In this analysis of Papago folk-definitions, we have attempted to provide an exhaustive set of mutually exclusive types of semantic relationships, that is, a set under which all the types used in our sample of definitions can be subsumed. We have tried to let the classification of definitions emerge from the data rather than to impose a preconceived scheme. Nevertheless the types of definitions identified for Papago bear a striking resemblance to those discussed in such general treatments as Robinson (1954).

It should be noted that a large proportion of the definitions as given by Mr. Preston are compound rather than simple, that is, they make use of two or more types of semantic relationships. For example, the definition for dá:k “nose”, as given, is: “the nose (dá:k) which stands beneath our eyes (mo ?ab kí:k ?ab twú:puí wíco), from which, furthermore, we breathe (mac ?am Páamjí: Píp ?í:bhi), is the nose (k hab wuñ dá:k)”. There are at least two components, one defining dá:k by its spatial orientation with respect to the eyes, the other defining it by its relation to the act of breathing.

In the citation of examples in this paper, compound definitions are not given in their original form. Rather, the relevant portion exemplifying a particular semantic relationship is given alone, first in an English translation, then, in parentheses, in the original Papago. Ellipses are used to indicate portions that have been deleted. For example, if the spatial relationship were being exemplified, the citation for dá:k “nose” would appear as follows: “... which stands beneath our eyes (mo ?ab kí:k ?ab twú:puí wíco) ....” Ellipses here stand for the additional rela-
tionship included in the fuller definition and also for material that is relevant more to the frame of presentation than to information conveyed by the definition, e.g., the closing phrase “... is the nose (k hab wu’d dá:k).”

There follows first a list of the 13 types of semantic relationships we have identified in Papago folk-definitions. Each of these is then discussed in greater detail and examples are provided. The various semantic relationships are described in formula-like statements of their nature. These statements could perhaps be expressed more precisely and elegantly using a mathematical or logical notation, but we have not attempted to do so. The types of relationships are listed very roughly in the order of their frequency in the sample collected.

1. **Attributive**: $X$ is defined with respect to one or more distinctive or characteristic attributes $Y$.

2. **Contingency**: $X$ is defined with relation to a usual or necessary antecedent or concomitant $Y$.

3. **Function**: $X$ is defined as the means of effecting $Y$.

4. **Spatial**: $X$ is oriented spatially with respect to $Y$.

5. **Operational**: $X$ is defined with respect to an action $Y$ of which it is a characteristic goal or recipient.

6. **Comparison**: $X$ is defined in terms of its similarity and/or contrast with $Y$.

7. **Exemplification**: $X$ is defined by citing an appropriate co-occurrent, $Y$.

8. **Class Inclusion**: $X$ is defined with respect to its membership in a hierarchical class $Y$.

9. **Synonymy**: $X$ is defined as being equivalent to $Y$.

10. **Antonymy**: $X$ is defined as the negation of $Y$, its opposite.

11. **Provenience**: $X$ is defined with respect to its source $Y$.

12. **Grading**: $X$ is defined with respect to its placement in a series or spectrum that also includes $Y$.

13. **Circularity**: $X$ is defined as $X$.

We now turn to the discussion of each of the types in turn.

1. **Attributive**

$X$ is defined with respect to one or more distinctive or characteristic attributes $Y$.

Among the attributes used are the following:

a) **Stimulus properties**. (These may be either intrinsic, e.g., color, size,
shape, texture, etc., or extrinsic, e.g., expressing some evaluative notion such as pretty, dangerous, or the like.)

b) Distinctive marker. (“Scorpion” is defined in part as having a long tail with a stinger on it, “centipede” as having many legs.)

c) Habitat. (“Burrowing owl” is defined in part as living in holes in the ground.)

d) Behavior or action. (“Bee” is defined in part as making honey; “star” is defined as coming out at night and shining.)

e) Age, sex, line of descent, generation. (These components are used to define kinship and other status terms.)

All definitions of plants and animals in the sample are at least in part attributive, and most of these employ two or more of the attributes a-d listed above. A definition of an animal may, and usually does, include the assertion that it “goes around” (Póimíd, pl. Póiyopo), thus implicitly placing that which is being defined in the class of animals, including humans. Similarly, a definition of a plant usually includes the assertion that it “stands” (kí:kí, pl. cú:cú), thus implicitly placing the defined item in the large class of standing or rooted objects, including plants. In addition to the class inclusion implied in these assertions, two very general types of “behavior”, characteristic of animals and plants respectively, are contrasted.

Classification by Papagos of plants and animals in terms of behavioral attributes has been discussed in an interesting paper by Mathiot (1962). (See also now her paper in this volume). Mr. Preston’s definitions corroborate Mathiot’s findings to a striking degree. For example, in defining birds, Mr. Preston distinguishes between those birds that characteristically “go around on the ground” and those for which ground living is not a chief characteristic. This distinction in flight habits is reflected grammatically (Mathiot 1962, 344, 346-347) by the classification of birds as, respectively, aggregate nouns (quail, chicken, etc.) and individual nouns (buzzard, owl, etc.).

tóto n “ant”: “...those which go around (hígam mo ?an ?ì Póiyopo): they will come out now because it will be getting warm (hímu ?at wo ?ì wūwhá, natpj ?an wo hú:ka); some are black and some are red (há?í scúc, c há?í swípigí); they get things here around the house and keep putting them away in their hole (Pán hápícu Púpú Pí:na kí: Póid; gd hú bápíhamahím Píwágga Páb ....”

nákšal “scorpion”: “that one also goes around (híg Pán ?íp Póimíd); it has horns, too; they appear to be its horns (hab wa ?íp gi Pá²ag; cú?ig mo g Pá²agaj); it has a long tail (gi cíw báhi); but it has a stinger standing
on its tail (k c hab ş hab wa ?am wa kि:sc g ?iřú:ş g ?iřáhi Pán); with which it bites or stings people (hikaj hakíki, hacú?akaḍ) ....

máihogi “centipedes”: “and that one also runs along the ground (c híg ?an ?ip mímda jíwiḍo); it is a bitter as well (hab wa ?ip cuki?ïdag); and it has many legs (c gi mú?i kákhio) ....

mú:wal “fly”: “those that go around in the house (hígam mo ?in póiyopó ki:c ?iď); which infest things (mo há?icu ?iajid) ....

bána:l “bee”: “... which makes honey (mo g sítol ná:to)”,

bitokol “stink bug”: “... which is black (mo scoř); and it goes around (c ?an Póimid); and it sticks its rear end up (c ?am wo si sipuḍ kíkiwúa); and it releases a scent (k ?am wo si ?išuíwi)

hóhogimal “butterfly”: “... but it has quite large wings (ș hab wa hí ša ?al gípígid ?á?an); and it is also quite pretty, quite colorful (c ?ip ša?i skí:gaç, šari šó?oi) ....

šó:po “grasshopper”: “another thing goes around through the grass (Pín há?icu ?ip Póimid ša?i Póid); it will jump so far and then land (há?aso ?am wo dá?à, k ?am wo ?i dáhiwúa); then forward again (?am bá?ic ?ip) ....

bábad “frog”: “... which goes around in water (mo ?am šú:dagič ?iď Póimid); it goes along hopping (gi dádiic hímac) ....

kómkicuḍ “turtle”: “and that also goes around which is plentiful in the mountains (c híg ?an ?ip Póimid mo wa smú:pij dú?agt Pán); which is hard on its back (mo gi skávk ?am PiPo: Pán) ....

círmamag “horded toad”: “and those also go around which are small (c híg ?an ?ip Póimid mo ?al cípícinj); it has some things sort of standing on its head, they are sharp (?am gi ?al Pímó?o Pán ?al hacú:çe; gi ?al smú:uk) ....

kó?owi “rattlesnake”: “that also goes around which is dangerous (híg ?an ?ip Póimid mo sta?i:bidaːma); which bites people (mat wo hakúi) ....

űnuwi “buzzard”: “and that also goes around which eats dead things (c híg ?an ?ip Póimid mat há?icu mú:kig wo hú:;) ....

kókoho “burrowing owl”: “... but they are small (c hab ş hab wa hí ?al cípícinj); and they act like mice (k hab cú:pić mo g náhağio); they live in holes (gi ?al wá:page Piď kí:;) ....

wípismal “hummingbird”: “and those ... which are small (c hígam ... mo ?al cípícinj); their bills are rather long (sa ?al cípíciwaj g hací:ciñ) ....

kákáicu “quail”: “... which always goes on the ground or runs on the ground (mo cum hikid ?am jíwiḍo Póimid, ?o mid ?am jíwiḍo); it has something sticking up on its head (?am gi ?al hacú:çe Pímó?ó dá:m) ...."
kósoñ “desert rat”: “... they also go around wherever there are cactus (Pan Póiyopo Pip híbai mo há?icu?ûk g hó?i); and they gather them and live underneath them (k híg Pip hí hínmapad, k wúco ñam kí:).”

cä:kol “squirrel”: “those that go around on some kinds of trees, cottonwoods or mesquites (hígam mo Pan Pal Póiyopo Pan há?icuk Páb, Páuppa Pó kúit Pán); and they have rather large tails (k sá Pal gírígícíd bá:bhai); their tails are thick; I guess it’s fur (habá:bhai ñam sá sápa¡wa:ðk, Pás wópo).”

góhí “mulberry tree”: “they are supposed to stand around here (Pín Po hí wa cú:c); they have fruit (mo gi Pal Pí:bdag); they bear at this time of year (Pí:dañ Pí:bad).”

kúi “mesquite”: “... which stand around (mo ñam cú:c); whenever it is time, they bloom and bear beans (mo híbai Pab Pí Páráhí, k Páb hiót, c Páb wihógt).”

cí:pul “willow”: “... which also stand around (mo ñam Píp cú:c); ... but its leaves are rather narrow (k c hab s hab wa g Pal há:ha:gaj Pal Párájíj).”

hódoi “stone”: “... which sit on mountains (mo Pan dú?agt Pán dá:dha); which are hard (mo skáwph).”

dú?ag “mountain”: “... which stand (mo ñam cú:c); where stones sit piled up (mo g hóhódoi Pím dá:dha, ságulkás).”

hú?ú “star”: “those which come out when it is dark (hígam mo Pan Pí wúwhak, mat wo súk); which sort of shine (mo Páb Pal tóhonoj).”

másad “moon”: “... which comes out at night (mo cú:huge Píd Pan Pí wúškí); ... whereby it is light (mo híkaj sténálíg).”

tás “sun”: “that which goes over and thereby gives us light (híga?í mo ñam hámad, c hákaj ttónolíd).”

si:s “older sibling”: “... which is our sibling; which is the older (mo wúð twí:nag; mo wú?á?gü?icu?û).”

ší:píj “younger sibling”: “... is also our sibling; which is younger (wúð Píp twí:nag; mat wúð wó bá?ie Pá:li).”

jí:k “mother’s younger sister”: “... which is our mother’s sibling; which is the younger (mo tji?í wúð wí:nag; mo wúð Pá:licu?û).”

hákít “father’s younger brother”: “... which is our father’s sibling; which is the younger (mo g tó?í wúð wí:nag; mo wúð Pá:li-ci?û).”

tátal “mother’s younger brother”: “... is also our mother’s sibling and is the younger (wúð Pip tji?í wí:nag, c wúð Pá:licu?û).”

wówoít “father’s younger sister”: “... the woman who is our father’s sibling (mat wúð wó tó?í wí:nag g Púwi).”

wósk “father’s father”: “which is our father’s father (mo g tó?í wúð Pó:g).”
ká:k "father’s mother": “is our father’s mother (t?ô:g wu?d jë?i) ....”
cíhêa “girl”: “a female who is just a youngster (pûwi mat wu?d wabs wo ?âːlicu?û) ....”
kë:li “old man”: “... which is an old man (mo wu?d hîkîu pôrô, dham) ....”
?ôks “old woman”: “... which is an old human being; a female (mo wu?d hîkîu himajkam; pûwi)”.

2. Contingency

X is defined with relation to a usual or necessary antecedent or concomitant, Y.

As indicated in the general statement given above, there are two closely related notions involved in this type of definition. In one case, X is defined in relation to some condition or event, Y, which it usually or necessarily follows (e.g., a tickling sensation in the throat causes or is followed by coughing). In the other case, X is defined with reference to some condition or event, Y, which is its usual or necessary concomitant (e.g., when there is rain, there is lightning).

The contingency relationship is the one most often used in defining verbs. In form, most definitions of this type begin with a conditional clause, corresponding roughly to “if” and “when” clauses in English.

wákôn “to wash”: “if a person gets dirty, he washes himself (mat g pôpôdham wo pîbîdû, k wo pîwáko)”.

gâswáa “to comb”: “when some person’s hair is tangled, he combs himself (mat hîma g pôpôdham g mópôj wo swñónagi, t wo pîgâswáa)”.

gà:q “to seek, look for”: “when we lose something, we look for it (matt hârîcu wo hîb hú wûa, k ?am wo gâ:bad)”.

sîhon “to stir or poke fire”: “if it is not burning well, one stirs the fire (mat pî ?am hú wo ?î si s?àp mhîlhid, ?at ?am wo sà?î sîho) ....”

cúː? “to extinguish”: “if we light a fire somewhere and do not want it any longer, we extinguish it (matt hîbai ?am wo nàːd, k wo pî táccu ?îp g nàːda, k ?am wo cúj)”.

bîhî “to take, get, pick up”: “when we want something, we take it (matt hârîcu wo táccud, c ?an wo bîi)”.

dâːgîto “to release, drop, discard”: “when we do not like a thing, we discard it (matt hârîcu pî wo hóːhoʔid, k wo dâːgîto) ....”

dâːrîcud “to throw, sg. obj.”: “when we do not want something, we throw it away (matt hăscu pî wo táccud, c gm hú wo dáːpi)”.

hûhag “to haul”: “when we put things into a wagon, we haul them
(matt háꞌicu ?an wo túa ?am kálîtc ?iĝ, k wo húha)."

?i wú:šaŋ “to rise, emerge, come out”: “when one has been sitting and
wants to stand up, he rises (matt ?an wo dâhâkahim, ho skikwûim, k
wo ?i wú:š).”

?i gí:? “to fall”: “whenever we do something wrong [while] up high,
we fall (matt híbi wo pi ?áp tjú: ?an ?ú:q, k wo ?i gí:).”

bîsck “to sneeze”: “when some place itches in our nose, it makes us
sneeze (mat híbai ?am wo si smóhógidk ?am tdá:k ?iĝ, k wo tbîsck).”

?i?ihog “to cough”: “when some place itches in our throat, it makes us
cough (mat híbai háꞌicu ?am wo smóhógidk tbá?iŋk ?iĝ, t wo t?i?ihogc).”

wîhot “to vomit”: “... when we try to eat something that is not good,
it makes us vomit (matt háꞌicu wo cum hú:, mat pi wo kí:gaŋ, t wo twí-
hosc).”

náum “to get drunk, sg.”: “when a person drinks a lot of wine, he gets
drunk (mat g ?ó?ôdham wo gí:pi ?i: g náuwait, k wo náum).”

kó:wo? “to be full, sated”: “whenever we eat anything and eat a lot of
it, it makes us full (matt híkid háꞌicu wo h úg, k ?am wo ?i gí:í wo h ú:,
t wo tkó:wo?i).”

kú?à ( ~ hú:) “to eat”: “whenever we are hungry for something, we eat
it (mat híkid háꞌicu wo thúgimc, ?att wo h ú:).”

?i?í “to drink”: “whenever we are thirsty for water, we drink it (matt
híkid wo tóñom, t wo st?í?ímc g ñú:dagi, ?att wo ?i:).”

bá?à “to swallow”: “whenever we eat anything, we swallow it (mac
híkid háꞌicu kú?ad, c ?am bá?à).”

s-mác “to know”: “when we see something, we know what it is (mac
háꞌicu ñiúd, c g smá:c mo háscu wu?i).”

jí:k “to taste”: “when we want to find out how something tastes, we
taste it (matt háꞌicu wo smá:cim mas hás ká:k, ?att ?ab wo jí:).”

s-cí?ítò “to remember”: “when one has heard something long ago, he
remembers it nonetheless (mat híma háꞌicu wo ká:kad híki hú: wa?i, k c
hab s hab wa scí?ítòkad).”

híhím “to laugh”: “someone sees something, and it is funny, he
laughs (mat híma háꞌicu wo ñiúd, t wo sta?á?áskimakad, t wo híhímad).”

?ás “to laugh at, ridicule”: “when someone says something in a funny
way, we laugh at him (mat híma háꞌicu wo stá:hádam wo ?á:gidad, tt wo
?ásad).”

bá?at “to get mad, angry”: “when we do not like something, we get
mad (matt háꞌicu pi wo hó:höapid, k wo bá?at).”

s-kí?:?id “to get mad at, hate, scold”: “when someone does not obey us,
we scold him (mat híma pi wo tkáíha, tt wo skí?:?id).”
mú:k “to die”: “when he is not breathing, one says ‘he died’ (mat híkid wo pi ṭi:bhi, k hig hab ṭi?á?aga ’mú: ṭat’).

s-duáakam “in good health, alive”: “... when we always feel good, that is ‘in good health’ (mac cum híkid sáap ttá:tam, k hig hab wuḍ ‘sdúakam’).

s-hí:kig “happy, glad”: “when something is agreeable, we are glad (mat há?ícu wo stahó:ho?ídmakad, tt wo shí:kigkad).

ʔí-gímalhun “to be proud of”: “when one has something good, he is proud of it (mat híma há?ícu wo skí:g ṭi?ángga, k c wo ṭí-gímalhunad).

s-ʔó:hod “to reject”: “when something is not our desire, we reject it (mat há?ícu pi wuḍ wo ttácuikad, tt wo sʔó:hod).

s-hí:gamk “to be jealous”: “when we see someone else’s possessions, and they are good, we are jealous of them (matt há?ícu g há?íngga wo níi, t wo skí:gaj, kutt wo shahí:gamk).

śuak “to cry”: “when one cannot stand something painful, he cries (mat híma há?ícu skó?ok pi wo nákog, c wo śuakad).

ʔó:ʔog “tear”: “when one cries, his tears flow (mat híma wo śuakad, t ṭab wo níʔílopá g ṭó:ʔogaj).

níid “to see”: “we always see things, if our eyes are good (cum ṭac híkid há?ícu níid, mat g twú:pui wo sáapik).

ʔí:mig “kinship, to use kinship terms in address”: “... when we know how several [people] are related to us, we call it ‘kinship’ (matt há?i wo smá:ck, hás hab wuḍ wo ṭi tjú:juň, tt hab wo ṭá: ṭí:mig).

wípgi “to lightening”: “... when it rains, it lightnings (mo jújkud, c ṭam wo si wípgi) ...”.

ʔó:ʔot “to drip, leak”: “when the roof of a house is not in good condition and it rains, water drips (mat híbbái g kí: pi ṭam hú wo si skí:gaj híg máʔíspaédgaq, ho jú:k, k wo ṭó:ʔo g sú:dagi).

Pájíj “thin in girth, narrow, slim”: “when a person is emaciated, he is slim (mat híma g ṭó:ʔódham wo sgáki, c wo Pájíjkad).

s-wi:c “heavy”: “when we cannot lift a thing, it is heavy (matt há?ícu pi Pú:g wo Pí bíi, k hig swi:c).

s-káwk “hard, infrangible”: “when something will not break or shatter, it is infrangible (mat há?ícu pi wo Pímúl, ṭo pi wo Píháin, k hig hab skáwk).

3. Function

X is defined as the means of effecting Y.

Definitions of this type share the following formal feature: they are based on nominalizations from a source sentence of the type “we perform Y with (the aid of) X” or “Y is performed with (the aid of) X”. Thus, ṭón
“salt” is defined as that “with which (mo hikaj) something is salted (hápiću pi?ónmad).

As indicated in the examples below, two semantic fields or domains, body parts and material culture, are the most amply represented by functional definitions.

ná:k “car”: “... with which we hear when something is said (mac hikaj hápiću ká:, mo ?an hápiću ?an pi?á:g) ....”

wúhi “eye”: “... with which we see things (mac hikaj hápiću ?am níid) ....”

ni:n “tongue”: “... with which we speak (mac hikaj níok) ....”

tá:tam “tooth”: “... with which we chew things (mac hikaj hápiću kípiwía) ....”

pi?ídag “skin”: “... with which our body is covered (mo ?an hikaj hóbínol g thónspadag).

tá:d “foot”: “... with which we step and walk around (mac ?am hikaj tkíhišsap, c ?óimi%d).”

káhlo “leg”: “... with which we walk (mac hikaj ?am hím).”

mácpod “finger”: “... with which we take anything (mac ?an hikaj hápiću bíbhí).”

nówi “arm, hand”: “... with which we do things (mac hikaj ?am hápiću hás wúa) ....”

líal “money”: “we buy things with it (pac hikaj hápiću hanólawt).”

ná:was “pocket knife”: “... with which one cuts something (mo hikaj hápiću híkçik).”

liat “saddle rope”: “cowboys rope cattle with it (... wápkial hikaj hawúpda g háiwañ).”

pá:la “shovel”: “... with which earth is scooped up (mo hikaj pi?ípi?ita g jíwíd).”

tápiál “paper”: “... with which things are wrapped up (mo hikaj hápiću pi?ho?óbínod) ....”

pi?go “pick”: “... with which the ground is loosened (mo hikaj pi?móihun g jíwíd).”

wá:l “bullet”: “... which is shot in order to kill something (mat ?am wo ?ígátwi, hikaj hápiću wo múa).”

yá:wi “key”: “... with which a door is opened (mo hikaj pi?úkipí?ok g púalt).”

yí:wo “yoke”: “... with which they (i.e., oxen) pull things (mo hikaj hápiću wáñ?on) ....”

wónom ~ wónami “hat”: “... with which we shade ourselves (mac hikaj ?ab t?í:kcud).”
4. Spatial

$x$ is oriented spatially with respect to $y$.

This type of statement makes use of the set of locative expressions. Thus, a nominal concept $x$ is defined, in whole or in part, as being located in, on, under, etc., $y$. For example, dá:k “nose” is defined in part by its placement relative to the eyes: “... it stands (kí:k) below our eyes (ʔáb twú:pui wíco).”

These definitions normally include information that is additional to the spatial assertion itself, namely, the particular stance characteristically assumed by the defined object. Thus, body parts the height or length of which exceeds the girth or width are said to “stand” or “protrude” (kí:k, pl. cú:e); those the height of which is less than or equalled by the girth or width are said to “sit” (dáhà, pl. dáďhà), etc. That is, a behavioral attribute, stance, is included in most definitions using the spatial relationship (see also (1) *Attributive*).

It is characteristic of the definitions given by Mr. Preston (and perhaps of Papago definitions in general) that relationships that could also be conceptualized as part-whole relationships are expressed in spatial terms. As will be apparent in the list below, parts of the body are amply represented in spatial definitions.

ʔáʔag “horn”: “... which stand on their (i.e., cows’) heads (mo ʔán cú:e hamó:mì ʔán).”

ʔú:š “point, stinger — especially of scorpion”: “... which stands on the end of a scorpion’s tail (mo nákšal báhij kú:g ʔám kí:k).”

ná:k “ear”: “... which stand below our hair (mo ʔán cú:e tmóʔó wíco).”

móʔó 1. “hair”: “... which stands on our head (mo ʔáb cú:e ʔáb tmóʔó ʔáb).” 2. “head”: “... which one has sitting on top of oneself (mo ʔán dá:i:šc ʔídá:m) ...”

kú:a “forehead”: “... which is below our hair and above our eyes (mo ʔáb wíco g tmóʔó, mo ʔám twú:pui dá:m) ...”

kú:so “occiput”: “... behind our head, where our head ends (tmóʔó wí:gaj, mo ʔám ʔí:húg g tmóʔó) ...”

kú:swó “neck”: “... which stands out of our body (mo ʔám thón ʔámjíj ʔám kí:k) ...”

ní:n “tongue”: “... which stands in our mouth (mo ʔáb tcíʔ ʔáb kí:k)...”
Piš “chin”: “which sort of stands beneath our face (mo ?ab twúhloša wico ?ab ša ?al kí:k) ....”

cú:l “hip”: “... which is located on our body, here, at the base of the leg (mo ?an thôn ?ám hab cúrig, Piín hú:; tkáhío són ?áb) ....”

gi:gi “fat”: “... which probably exists throughout our body (matp ?an thôn ?óidec há?ícu?uki) ....”

cí:m “heel”: “... which is there behind our foot (mo ?im hú wí:gaj g ttád).”

hík “armpit”: “... which is here, under our arm; between [it and] our frame (mo ?í:na tnówi wico; thónspa?ag sá:gid).”

háhawkág “lung”: “... next to our heart; it probably lies, sits, or is in some way positioned (thúgid ?án g tpi:bdag; ?atp ?ip ká:c, dá?ha, hás ?atp cúrig) ....”

púindi “bridge”: “... which is built across a wash or gulley (mo ?an ?ái gáhi, ?o híktañ gáhi hab Piwúa) ....”

tó:mog “milky way”: “... above us (?án tdá:m) ....”

cí:wagi “cloud”: “... above us (?án tdá:m) ....”

In the following examples, a nominal concept X is defined as the usual or necessary location in which, on which, etc., an action, Y, is performed. Because X is defined with regard to the location of an action rather than the means or purpose of effecting an action, we regard the semantic relationship involved as being a type of spatial relationship rather than a functional one.

bá?ítk “throat”: “... through which we cause things to go while eating (mac ?am ?óidec há?ícu hihimicud, ?am kú?adc).”

má:gína “car, automobile”: “... in which people are hauled (mo ?ab ?áb Piínúhag g hímakam).”

lí:ma “grindstone, hone, file”: “... on which a knife is sharpened (mo ?ab ?áb Piimú?ukad g wáinom).”

sá:ldín “frying pan”: “... in which something is roasted [fried] (mo ?ab ?áb há?ícu Piigági (sic. Pi?lolid)).”

wá:ldí “bucket”: “... in which we get water (mac ?ab ?áb wá?íg g sû:dbgí).”

wá:lko “ship”: “... in which people are hauled (mo ?ab ?áb Piínúhag g hímakam).”

5. Operational

X is defined with respect to an action Y of which it is a characteristic goal or recipient.
kolwá:da “necktie”: “... which is worn around the neck (mo ?an pi:pá:padə) ....”
kámis “shirt”: “... which we wear (mač pab wá:kc) ....”
wógə “quiver”: “... they wear it slung over the shoulder (Pəm ... kúswiʔot) ....”
sí:l “saddle”: “... which they put on a horse’s back (mo ?an dádšə káwyu pō: ?án).”
pílin “bridle”: “... which they put on horses (mo g káwyu páb wá:pkid).”
sígəl “cigaret”: “... which are smoked; which are obtained in a store (mo píjí:n; mo ?am pi:pú:pu cíandac píj).”
pí:ba “pipe”: “... which is smoked (mo páb píjí:n).”
pú:lo “cigar”: “... which white men smoke (mo g milgá:n jí:n).”
silwí:sa “beer”: “... which is drunk there, in town (mo pi:pí:pí Pámaʔi, ká:yac píj).”
wí:no “wine”: “... which is drunk (mo pi:pí:pí) ....”
pá:n “bread”: “... which we eat (mač kúpá).”
wú:lo “burro, donkey”: “... it is worked and ridden (Pícíkpanacud, c píp Pál Pícícsaj).”
káwyu “horse”: “... which we ride; and some people work them in town (mač hácícsaj, c háʔi píp hácíkpanacud páb ká:yat páb) ....”
sdíajkam káwyu “bronc, wild horse”: “... which they catch and tame or break (mač ?an wa Púpáhím; háhímac, Pó hamá:soʔt) ....”
wátəpí “fish”: “... which these white men catch and eat (mo hakúpá Pí:dam milgá:n, ?an haʔúpúk) ....”
táí “fire”: “... one lights it (Pam ná:d) ....”
papaló:di “kite”: “... which we cause to go up high (matt ?am wo pú:g himc) ....”

6. Comparison

X is defined in terms of its similarity and/or contrast with Y.

Definitions of this type are normally, but not invariably, based on such a statement as: X ?o hab má:s mo g Y “X is like, or looks like Y.” Whatever its grammatical form, the comparative assertion may be followed by a detailing of one or more attributive properties by which X resembles or, more often, differs from Y.

It is interesting to note that comparisons of X are usually made with Y’s that fall at the same level in a folk taxonomic hierarchy (cf. Conklin, 1962).
şiʔi “wolf”: “... they are rather like coyotes (hab hi wa má:s mo g bá:ban), but they are big (c hab š hab wa ša gíʔigíːdaj) ...."

bán “coyote”: “... they are the same size as a dog (háhaʔasíj wa mo g gógs), but look somewhat different (š hab wa hi ša gáwwul má:s) ...."

místol “cat”: “... which is rather like a dog (mo ʔam ʔal gógs má:s), [but] having long claws (mo ʔon gi ʔal cípi:ciw húːc) ....”

wóso “rat”: “... they look somewhat like mice (hab hi wa cum ša má:s mo g náhaːgio), but look rather different (k c ʔiʔa ʔam ša ʔal gáwwul má:s); also, they are quite big (ʔiʔp šaʔi gíʔigíːdaj).”

nánakmal “bat”: “... which looks like a mouse (mo g náhaːgio má:s); but it has wings (c hab š hab wa gi ʔal ʔáp:an) ....”

cúːwi “jack rabbit”: “... those which are big are called jack rabbits (hígam mo ša gíʔigíːdaj hab ʔiʔáʔága cúːwi), and those which are small are said to be cottontails (c hígam mo šaʔi cípi:ciːmaj ʔaːš hab wuːt tóːbi).”

gógs ʔóʔóːdhám “monkey”: “... it is rather like a dog (hi wa cum má:s mo g gógs), but the face looks like a man[’s] (c ʔiʔa g wúːhiːʃa má:s mo g ʔóʔóːdhám) ....”

wúːlo “burro, donkey”: “... it is like a mule (hab wa máːs mo g múːla); ... it is worked and ridden (Pičícpanacud, c ʔiʔ ʔal Pičícʃaj).”

hóhogimal “butterfly”: “... they go around the way flies do (hab wa cum ša máːsa ʔan ʔóːmimð mo g múːwal); but they have quite big wings (š hab wa hi ša ʔal gíʔigíːdip ʔápːan) ....”

kóko “burrowing owl”: “... they look like owls (hab cum ša máːs mo g cúːckuːd), but they are small, and they act like mice (c hab š hab wa hi ʔal cípiːciːmaj, k hab cúːpiː mo g náhaːgio) ....”

pápaːlo “pigeon”: “... they look like whitewing doves (hab wa cum ša máːs mo g ʔóʔóːkokoːl); but they are big (k c hab š hab wa hi gíʔigíːdaj) ....”

wilgoːdi “apricot”: “... which looks like a peach (mo hab wa máːs mas g núːlaːs) ....”

kóːm “boxthorn”: “... which looks like a mulberry tree (maʃ g góhi hab máːs).”

cíːʃul “willow”: “... it looks like a cottonwood (hab hi wa cum ša máːs mo g ʔáuptpa), but its leaves are rather narrow (k c hab š hab wa g ʔal háːhagaj ʔal ʔáːpiːjiː).”

ʔúwi “woman, female”: “... they wear different looking clothes (ʔam wa gáwwul máːsa ʔíʔíŋɡáːdaj) ....”

cíːoː “man, male”: “... we who go around (mac ʔan ʔóːiːpoː); some are women (k háːrí hi wuːt ʔúːwi), and we are men (c ʔáːciːm wuːt cíːcoːj) ....”

ʔóʔóːbah “Maricopa”: “... which are like the Pima (mo hi wuːt wa cum máːsa mo g píːma) ....”
Pápat “sib term for father, in coyote moiety”: “... which is like Pápkə (mo hab wa másma mo g Pápkə).”

wá:w “sib term for father, in buzzard moiety”: “... it is like má:m (hab wa cum másma mo g má:m).”

7. Exemplification

X is defined by citing an example of an appropriate co-occurrent Y.

The relationships involved in this type of definition are the inverse of those used in attributive definitions; here, the attribute itself is being defined rather than the possessor of the attribute. Thus, in exemplification, “to hop” is defined as that which a frog (among other things) does, while in an attributive definition, “frog” is defined in part as that which hops.

Where X, the defined item, is a verb, it may be defined by citing a noun which occurs with it as subject or object.

ká:c “to lie (of flat object)”: “... as when we put something down, such as a plate (matt há?ícu ?am wo ?al ci; há?ícu húasá?ra) ....”

cúc “to stand (pl. inanimate)”: “that which is erected, as a fence (híga?í mo ?an ?icú?çí?ra, ... kó:lal) ....”

háín “to shatter, break (of flat object or object with thin, brittle walls)”: “when something is shattered, as a pot (mat há?ícu wo ?íháín, há?ra) ....”

múlín “to break (of rigid, stick-like object)”: “as when we take a stick and break it (matt g ?ú:s wo bik, k ?am wo si múl) ....”

míhi “to burn”: “as firewood does (mo g kú?agi hab ?íwúa) ....”

dó:m “to copulate with”: “a male will copulate with a female (cioj ?at wo dó:d g ?úwi).”

sá:d “to herd”: “... as when one herds something along, as cattle or horses (mat há?ma ?am wo há:s?dahid há?ícu?ù, háíwañ, ?o g kákawayu) ....”

Pújúgid “to shake it”: “as when we take hold of a mesquite tree or something and shake it (matt g kú?í ?o háscu ?an wo bik, k ?am wo ?í ?újugi).”

tónalid “to shine on, give light”: “as when the sun goes over and gives us light (mo g tá? ?an hímad, c g ttónálidec).”

dá?à “to hop, fly”: “as when a frog hops along (híga?í, bábad, mat wo dádíhida).” “as when a bird has been sitting and takes off (híga?í, Pú?úhig, mat ?am wo dáhàkahim, c wo dá:].”

Where X is an adjective, it may be defined by citing a noun whose referent possesses the attribute denoted by X.
síkolk “circular”: “... as wagon wheels (mo g kálit sípiskolkdag) ....”
 pó:las “spherical”: “as a melon (mo g míloñ)) ....”
s-kówk “flat and thick”: “... as a mattress (mo g káma) ....”
s-mú:uk “sharp”: “as a knife (mo g wáinom) ....”
s-jú:k “deep”: “as a hole (mo g wág) ....”
s-pí:owi “sweet”: “as sugar (mo g pásugal) ....”
síw “bitter”: “beer, coffee, wild gourd (silwí:sa, kówhi, pádaw) ....”
s-hí:rik “sour”: “when something is not ripe yet, for example, a peach
(mat há:ricu kói wo bái, mo hab másma g ní:las) ....”
s-kó:ok “hot to the taste”: “... chile (kó:rokol) ....”
s-wígi “red”: “... like our blood (hab más: mo g tí:pí:ri) ....”
s-cúk “black”: “... as a Negro (mo g scúkcu:pu) ....”
s-tú:ha “white”: “... like a white man (hab másma mo g milgá:n).”
s-ci:dagi “green, blue”: “any kind of leaf, as mesquite or cottonwood
(há:ricu há:hag, kúi, pó g páuppa) ....”

Where X is a noun, it is often defined by citing a characteristic possessor
of it.

sí:wdag “top knot”: “... of a quail (kákaicu).”
pá:rag “horn”: “... cows have horns (háiwañ mo gi pá:rag) ....”
wópo “down”: “... birds have down (pú:úhig mo ... pí:gidg g wópo).”
pá:an “wing, wingfeather”: “any kind of bird has wings (hás pí más: pú:úhig pí pí:gidg g pá:an).”
bá:hi “tail”: “horses have tails (kákawyu pó bá:bhai) ....”
mú: “vagina”: “women are supposed to have that which is a vagina
(pú:uwí hí pí:gidg híga:pi más wu: mú:).”

8. Class Inclusion

X is defined with respect to its membership in a hierarchical class Y.
A common base for the formulation of class inclusive definitions is the
simple statement: X pó hab wu: Y “X is a Y.” However, there is consider-
able variety in the grammatical form of these definitions. Often, the class
membership of a defined item is mentioned only in passing and in the
context of a longer definition that employs one or more other semantic
relationships. For example, háwañ “crow” is defined as “those birds
(hígam pú:úhig) which go around; which are big and black (mo pí an
póiyopo; mo sa gi:gidaj c cúck) ....” Also, class inclusion is often implied
in definitions classified as attributive, since certain characteristics of
behavior and appearance are shared by all the members of a large class.
To assert that an item being defined possesses such a characteristic is tantamount to placing it in a class (see (1) *Attributive*).

baná:l “bee”: “... which are winged insects (mo wuḍ múmwal) ....”
kó:koč “crane”: “... a bird (Púʁúḥig) ....”
báʔag “eagle”: “... they are big birds (gíʔí wuḍ Púʁúḥig) ....”
wípismal “hummingbird”: “... and those birds which are small (c híγam Pál Púʁúḥig mo Pál cíʔicimaj) ....”
cúkuḍ “owl”: “... which is a big bird (mo gíʔí wuḍ Púʁúḥig) ....”
kákaicu “quail”: “... a bird (Púʁúḥig) ....”
tó:wá “turkey”: “... domesticated animals (šósołga); birds (Púʁúḥig) ....”
cúcul “chicken”: “... they are people’s domesticated animals (wuḍ hašołga) ....”
Páʔagam kóʔowi “sidewinder”: “... rattlesnakes (kó:kowi) ....”
jíwakag “king snake”: “... those snakes (híγam wáhammaḍ) ....”
wígi wámaḍ “red racer”: “... those snakes (híγam wáhammaḍ) ....”
cíadag(i) “Gila monster”: “... which are said to be lizards (maʃ wuḍ húhujuḍ) ....”
Ní:big “whale”: “... which is supposed to be a fish (mo hí wuḍ wa wátotip) ....”
maŋsána “apple”: “... which is a fruit (mo wuḍ háʔicu Pí:bdag).”
Póʔódham “Indian, person”: “... people (hímajkam) ....”
Póʔobab “Maricopa”: “... Indians (Póʔódham) ....”
Pó:b “Apache”: “... Indians (Póʔódham) ....”
Jú:kam “Mexican”: “... people (hímajkam) ....”
Cí:no “Chinese”: “... people (hímajkam) ....”
Mó:mlí “Mormon”: “... is supposed to be a white man (hí wuḍ wa mílgan).”

9. *Synonymy*

*X* is defined as being equivalent to *Y*.

In any such equivalence relationship, either *X* or *Y* or both may be unitary or complex lexemes that some times are mutually substitutable in grammatical sentences. The equivalence of *X* and *Y* is often only approximate, but their meanings are regarded as being close.

káck “ocean”: “... big water (gíʔí šú:dagi) ....”
wísilo “calf”: “... cow’s offspring (táwiwání máḍ).”
wóči “new, young”: “... modern [lit. of now, today] (hímukam) ....”
tónom “thirsty”: “... wanting to drink (šíʔim) ....”
sáidd “gasoline, oil”: “... inflammable liquid (smíhidkam šú:dagi) ....”
mi:l “thousand”: “... ten hundreds (wístmá:m síant).”
pi:š “dollar”: “... ten dimes (wístmá:m lífl).”
wúhan “to wake someone up”: “... to get someone up (wágmíd) ....”
káwulk “short in height”: “... low (júmalk) ....”
s-tá:hadag “amusing”: “... funny (sta:pá:askima) ....”
s-kó:magi “gray, white [csp. of horses]”: “... white (stúhà) ....”

In the following examples, X and Y are regarded as quite exact equivalents but belong to different dialects.

mayá:da “June bug”: “... June bug (wáinom kólasham) ....”
lí:wa “jacket”: “... jacket (wa:kidalig).”
pi:go “pick”: “... sharp-at-both-ends (Pá:rai s-mú:ruk) ....; yearling bull’s horns (Pá:hidkam tó:lo Pá:pag).”
wiyó:di “acorn”: “... acorn (túa).”
Pópojk Pó:kam “camel, hunchback”: “... camel (kamí:ya) ....”

10. Antonymy

X is defined as the negation of Y, its opposite.

This method is almost always used in defining concepts that are represented in Papago by morphemes in the grammatical class of adjectives.

júmalk “low”: “... not high (pi Pű:g) ....”
šopolk “short in length or height”: “... not tall (pi cíwaj) ....”
káwulk “short in height”: “... not tall (pi cíwaj) ....”
s-jú:hu:pu:uk “winding, sinuous”: “... not straight (pi šili:nh) ....”
s-móik “soft”: “... not hard (pi gíwk) ....”
s-jú:šadk “loose”: “... not tight (pi káwk) ....”
s-hí:šik “bitter”: “... not sweet (pi Pí:powi) ....”
kómalk “flat and thin”: “... not flat and thick (pi kówk) ....”
s-dár:phk “smooth”: “... not rough (pi cío:dagi) ....”
s-cío:dagi “rough”: “... not smooth (pi dá:phk) ....”
s-Pí:šastk “noncrying, grown up [of child or baby]; unflinching [of man]”: “... not babyish (pi Pá:palma) ....”

11. Provenience

X is defined with respect to its source Y.

In all definitions of this type, the elative expression Pámji:š “from, out of” is used.
12. Grading

\( X \) is defined with respect to its placement in a series or spectrum that also includes \( Y \).

\( \text{lú:nas "Monday": "... the one following Sunday (Pójjakm g dómik)."} \)

\( \text{má:ltis "Tuesday": "... the third day from Sunday (wá:tk tás Pab Pámjið g dómik)."} \)

\( \text{wialnos "Friday": "... which Saturday comes in front of (mat Pám bá:ric wo Pí:úa g šá:wa:í)."} \)

\( \text{s-Píam "yellow": "when something is sort of white, but not very white (mo há:ricu ša stú:ha:k, či hab wa pi Pám hú Pi si stú:ha:k) ...."} \)

13. Circularity

\( X \) is defined as \( X \).

In definitions of this type the concept being defined and the concept to which it is related are represented by the same Papago morpheme. Thus, as contrasted with all other types, whether or not these may be judged adequate in some degree, circular definitions give little or no information about the meaning of the word being defined.

\( \text{ciwaj "long, tall": when something is long, one says ‘it’s long’ (há:ricu wo ciwaj, k č hab wo Pí:úa: ‘ciwaj Pó’).} \)

\( \text{mía “near, nearby”: “when something is sitting nearby, we say ‘near’ (há:ricu Pám wo mía dá:ha:kad, Pátt hab wo Pá: ‘mía’).} \)

\( \text{mí:k “far”: “when something is far away, we say ‘it’s far’ (há:ricu gm hú wo mí:kad, Pátt hab wo Pá: ‘mí:k Pó’).} \)

\( \text{ñí:nda “to wait”: “when one waits, that is called ‘to wait’ (mat híma Pám wo ñí:nda, híg hab Pí:úa:ga ‘ñí:nda’).} \)

\( \text{má:scam “to teach”: “if someone teaches us something, we call it ‘to teach’ (t híma há:ricu wo tma:sc, tt hab wo Pá: ‘má:scam’).} \)
má:k “to give”: “... when one gives us something, we call it ‘to give’ (mat há?lícu ?ab wo tmá:, mac hab ?ápágá ‘má’).”

C. GRAMMATICAL FORM OF DEFINITIONS

As has been suggested above in the introductory comments on the various types of semantic relationships, it is often possible to identify the type of relationship by the particular Papago lexical and grammatical apparatus involved in its statement. For example, functional definitions make use of the instrumental expression híkaj “with, by means of,” and take the form of complex sentences including a nominalization of some source sentence of the type: X ?ac híkaj Y “we Y with X,” where X is the item being defined and Y is some action performed by means of X. Thus, one of the source sentences for the definition of ní:n “tongue” was probably: ní:n ?ac híkaj níok. “We speak (Y) with the tongue (X).” A definition of ní:n, using function only, would be formulated as follows: ní:n ?o wuḍ híga?l mac híkaj níok. “The tongue is that with which we speak.” Here, the nominalization ní:n mac híkaj níok “the tongue with which we speak” is imbedded into the matrix sentence ní:n ?o wuḍ híga?l “... The tongue is that (thing) ...” and the shared occurrence of ní:n in the imbedded or constituent sentence has been deleted. This definition, then, is built up of two sentences — a matrix and a constituent — to which a particular imbedding rule, nominalization, has applied. The use of an imbedding rule is not exclusive to functional definitions, but the form of the constituent sentence containing the instrumental expression is. The use of locative expressions in spatial definitions and of the elative expression in provenience definitions is exactly parallel to the use of the instrumental in functional definitions.

The use, in antonymy, of the negative formative pi “not”, to negate an adjective (Y) in the definition of its opposite (X), is another instance of a particular grammatical device that is used almost exclusively in definitions of a single type. A grammatical device may be used for more than one kind of definition; thus, the equational expression wuḍ “is, equals”, as in X ?o wuḍ Y “X is (a) Y”, is used both in synonymy and in class inclusion.

The formal difference between the types we have called attributive and exemplification rests only on the sentence constituent being defined. Both are based on sentences, of greater or lesser complexity, consisting of a subject and a predicate. In attributive definitions, the subject is
defined in terms of the predicate (the attribute), whereas in exemplification, the predicate (attribute) is defined in terms of the subject (the possessor of the attribute). Thus kadó:di “A marble” might be defined, in part, in terms of an attribute Pó:las “spherical”: kadó:di ṭo wud hígaʔi mo Pó:las. “A marble is that which is spherical.” The concept Pó:las “spherical” might be defined in terms of kadó:di “marble”, an object which possesses the characteristic of “sphericity”: kadó:di ṭo Pó:las. “A marble is spherical.” In either case, kadó:di is the subject and Pó:las the predicate of the underlying source sentence.

D. DISCUSSION

Those familiar with word association data will doubtless have a sense of déjà vue in encountering the materials we have presented. Although derived independently, the types of semantic relationships we have identified in our sample of Papago definitions do bear a marked resemblance to the kinds of relationships between stimulus and response words in the classic word-association test (Miller, 1951, 179-80). And, we should add, semantic relationships in both word associations and definitions share a certain intriguing ambiguity! One need not accept the particular classification of semantic relationships we have offered in this paper, yet still can grant that comparable types of relationships are involved in both word associations and definitions. One may, in fact, regard a one-word response to a stimulus word (e.g., “web” to “spider”) as an implicit or truncated definition. In many simple definitions, if one deletes the functioners, leaving only the descriptor, the latter would correspond to a one-word response. Conversely, one may regard a definition as a “phrase association”. If one were to elicit folk-definitions for the stimulus words used in a word association test and compare these folk-definitions with the one-word responses, one might discover many parallels between the two. For example, response frequencies in word associations may be paralleled in the frequency with which terms are associated as X and Y in definitions.

Listed below are stimulus-response pairs taken from the Minnesota Norms (Russell and Jenkins, 1954) that we believe exemplify semantic relationships equivalent to those we have given for Papago definitions.

| Attributive | ocean-blue | spider-web |
| Contingency     | hungry–eat  
dream–sleep |
|---------------|------------|
| Function      | hammer–hit  
scissors–cut |
| Spatial       | head–shoulders  
street–city |
| Operational   | whiskey–drink  
mountain–climb |
| Comparison    | butterfly–moth  
woman–man |
| Exemplification | sour–lemon  
green–grass |
| Class Inclusion | lion–animal  
eagle–bird |
| Synonymy      | command–order  
swift–fast |
| Antonymy      | dark–light  
sour–sweet |
| Provenience   | mutton–sheep  
cheese–cream |
| Grading²      | blue–red |

Although all the semantic relationships we have identified in Papago definitions have their counterparts in types of word associations, the inverse does not necessarily hold. The so-called “coordinate” relationship, as in the pairs “table–chair”, “eagle–hawk”, or “cabbage–lettuce”, where both stimulus and response words fall at the same level in a taxonomic hierarchy (Conklin 1952, 128), may implicitly involve the notion of comparison. However, the semantic relationship involved in other types of “coordinate” pairs, for example, “needle–thread” or “bread–butter”, is somewhat more elusive. If “butter” were defined as “that which we put on bread”, we would classify the relationship as “operational”, but if it were defined as “that which we eat with bread”, the types of relationships we have described for Papago would not include that marked by the phrase, “with bread”. The relationship involved between “bread” and “butter” is similar to that we have described for contin-

² The Kent-Rosanoff list does not include many stimulus words that would, we believe, readily elicit responses that could be interpreted as “grading” — a color response to a color term is an ambiguous case. However, we assume that the following associations would be frequent among English speakers and we would consider them examples of grading: ounce–pound; Sunday–Monday; dime–quarter.
gency, except that in the Papago sample, the contingency relationship is not used if both \( X \) and \( Y \) are nominal concepts. Other types of word associations such as those involving "clang" responses, for example, "table-stable" or "mutton-cotton", or sequential responses, for example, "whistle-stop" or "wish-bone", and the like have no analogues in Papago definitions.

Many of the semantic relationships in definitions are also evident in analyzable descriptive words, especially, but not exclusively, newly coined terms for cultural innovations. The following examples are from Pima-Papago; other instances can be found in Casagrande (1954, 222-227):

**Attributive:** sëpìpowicù “sugar (lit. sweet stuff).”

**Contingency:** nà:da “fire (lit. result of kindling).”

**Functional:** pëpëhonakù “pencil (lit. writing instrument).”

cìkpanakù “tool (lit. working instrument).”

**Spatial:** dá:m ká:ci “sky (lit. which lies above).”

**Operational:** pìmá:çamam “student (lit. one who is taught).”

**Comparison:** bàn wùhío “mattock (lit. coyote’s face).”

Páhídkam tó:lo pá:ag “pick (lit. yearling bull’s horns).”

cúkúd sósa “date [fruit] (lit. owl snout).”

**Class inclusion:** pásamakùd má:gin “passenger car (lit. car for going to town).”

cìkpanam háiwa “ox (lit. working cattle).”

**Provenience:** páigojìdkam “foreigner (lit. one from the other side).”

kó:ji giqì “bacon (lit. pig fat).”

**Grading:** gób: tàs “Tuesday (lit. the second day).”

wáik tàs “Wednesday (lit. the third day).”

As has been indicated earlier, the collection of these definitions was largely fortuitous; they were not collected in the first instance as an object of study in themselves, but rather as a tool for dialect study. Duane Metzger (personal communication) has pointed out that folk-definitions could be used as a useful tool in another way. He has suggested that the collection of folk-definitions could comprise an initial, heuristic strategy in a larger program, modeled on the work now being done by ethnoscientists (Conklin, Frake, Metzger, Williams, and a few others: see Sturtevant, 1964), whose ultimate output would be a detailed folk taxonomy of Papago.

The primary strategy in this larger program would involve the use of a set of questions, in Papago, which would elicit a classification of entities in the Papago world. An initial question in such a set might be šà: Po
más X'an há?icug. “What kinds of X are there?” This would serve as a frame into which any Papago noun could be inserted in place of X. If Papago Pú?uhig were inserted in this frame, and the question were submitted to a Papago speaker, the answer would consist in a list of bird names: bá?ag “eagle”, núwl “buzzard”, cúkuď “owl”, kákaicu “quail”, etc. The answers could be validated subsequently in a number of ways, for example, by submitting the same question to other Papago speakers and comparing the lists obtained, or by asking the question no wuď X g Y. “Is Y an X?”, where Y is a member of the list obtained by asking the initial question. Presumably, adult speakers of Papago would agree in their answers to these questions.

Volunteered folk definitions include information, in the form of assertions regarding taxonomic classification, which could be used in constructing questions relevant to such a procedure — in effect, they supply some of the terms that could be inserted in the place of X in the initial question suggested above. For example, a number of Papago definitions included the assertion that an item being defined was in the class Pú?uhig “bird”. Among the definitions for birds were several which asserted that a particular bird was of the type that “go round on the ground”. Both assertions suggest a classification — there are birds, and among these there are those that are characteristically ground-living. If the question sá: Po más Pú?uhig ?an há?icug. “What kinds of birds are there?” generates a list of bird names, the question sá Po más jìwiďo Póimiďdam Pú?uhig ?an há?icug, “What kind of birds-that-go-around-on-the-ground are there?” would presumably generate a smaller list of bird names included in the list generated by the initial question.

Following Metzger’s suggestion, questions of this type were submitted to Mr. Albert Alvarez, a Papago-speaker then serving as an informant at the University of Illinois. His answers confirmed the classification implicit in Mr. Preston’s definitions. To the first question above, in which X = Pú?uhig, Mr. Alvarez’s response was a list of bird names, or names of animals “which have wings (mo gi Pá?an)”, as he expressed it. To the second question, in which X = jìwiďo Póimiďdam Pú?uhig, his answer was a list of birds subsumed in the initial listing, and including, for example, kákaicu “quail” and cúcul “chicken”, birds that characteristically remain on the ground whether or not they are actually capable of flying: this provides additional confirmation of Mathiot’s observations mentioned earlier. To the same general question, but in which X = Póimiďdam há?icu “things that go around”, Mr. Alvarez answered with a list, headed by PóPodham “person, Indian”, of animals capable of
moving under their own power, and with cū:cim hāricu “things that stand” as $X$, he answered with a list, headed by kūkui “mesquites (used as a generic term for trees)” and including, also, kī:kī “houses”, and dō:dag “mountains”.

It is clear from an examination of folk-definitions that the latter do not, in themselves, provide a folk taxonomy. Being volunteered, they are too unstructured. However, they do provide some useful insights that can be followed up by a rigorous and exhaustive program of questioning. Together with the initial heuristic, the larger program would allow one to characterize exactly the notion of “Papago domain”.

Another area of current concern in which one finds convergent interests is the field of information storage and retrieval. Following the lead of one investigator (Vickery, 1961), and carrying Metzger’s suggestion a step farther, one might frame a set of questions designed to elicit information about the larger matrix of semantic relationships in which any particular concept is placed. Unless one assumes that the semantic relationships we have discussed for Papago are universal (and they well may be!), a first step would be to determine the types of semantic relationships that obtain, or are most frequently used, in the language in question. It is clear that great care would have to be exercised in framing questions that would produce the desired information in the eliciting language. However, one might assume, as in the case of folk-definitions, that the speakers of any language would quite naturally and spontaneously themselves frame questions to elicit such semantic information.

With these cautions in mind, one might then frame (or discover) a set of questions, or alternative forms of questions, that could be used to elicit the 13 semantic relationships we have discussed for Papago. One as yet untried set of such questions is given below, with possible responses taken from our Papago examples indicated. It should be emphasized that these questions are intended to be merely suggestive and not definitive; nor do they pretend to cover all of the conceivable or possible types of semantic relationships that may occur, but only those we have discussed for Papago. An example of one type of semantic relationship (and thus possible question) that we have not considered is appended to the list that follows.

1. **Attributive:** What does $X$ (scorpion) have that is distinctive? $X$ has a stinger standing on its tail ($Y$).
2. **Contingency:** What usually precedes $X$ (sneeze)? A tickling in the nose makes us $X$. 
3. Function: What is $X$ (tongue) used for?
   We speak with $X$.

4. Spatial: Where is $X$ (horn) located?
   $X$ stand on cows' heads.

5. Operational: What does one do with $X$ (wine)?
   $X$ is drunk.

6. Comparison: What is $X$ (burro) similar to?
   $X$ is like a donkey.

7. Exemplification: What thing is (has the quality of) $X$ (spherical)?
   A melon is $X$.

8. Class Inclusion: Is $X$ (bee) a member of a class?
   An $X$ is a winged insect.

9. Synonymy: Is there another way of saying $X$ (calf)?
   $X$ is a cow’s offspring.

10. Antonymy: Is $X$ (bitter) the opposite of anything?
    $X$ is the opposite of sweet.

11. Provenience: Where does $X$ (milk) come from?
    $X$ comes from cows.

12. Grading: What comes after (or before) $X$ (Sunday)?
    Monday comes after $X$.

13. Circularity: Is $X$ (rose) an $X$?
    Yes, $X$ is a rose.

A semantic relationship not discussed for the Papago sample is the following:

*14. Constituent: $X$ is defined as being a constituent or part of $Y$.

This relationship might yield the following question and response:

\[
\text{What is } X \text{ (cheek) a part of?}
\]
\[
X \text{ is part of the face.}
\]

Clearly not all the above questions are appropriate for all concepts (lexemes), and their appropriateness presumably would be judged by one's informants. An extensive and exhaustive program of questioning along the lines suggested above perhaps is impractical, and would be subject to the usual semantic vagaries (e.g., metaphor). Such a program is theoretically possible, however, and we think that it suggests another point of entry into this difficult terrain.

To the extent that the terms related as $X$ and $Y$ conform to Papago semantic rules (e.g., as in class inclusion), the definitions volunteered by
Mr. Preston or any other informant would necessarily be judged as acceptable or adequate in some degree by their co-linguals and may accordingly be taken as representative of Papago speakers in general.

E. CONCLUSIONS

It is perhaps gratuitous to remind the reader that this paper is intended to be exploratory and not definitive. We have left many questions unanswered and others unasked. A few of the broader issues are noted below, and we are confident that others will occur to our readers.

1) What additional types of semantic relationships are employed in folk-deﬁnitions made by speakers of other languages?

2) To what extent are various types of semantic relationships employed by speakers of all languages; are these universals of language behavior?

3) Are the same types of semantic relationships employed in folk-deﬁnitions used by professional lexicographers in compiling formal dictionaries?

4) Are there significant differences in “cognitive styles” of folk-deﬁnitions, that is, in the types and the degree to which different kinds of semantic relationships are used, and if so, are these varying preferences associated in any way with differing world views?

5) Are particular types of semantic relationships consistently associated, across languages and across cultures, with deﬁnitions of words falling into various form classes (e.g., antonymy with adjectives; contingency with verbs) or belonging to different lexical domains (e.g., attributive and class inclusion with plant and animal terms; function with instruments and body parts)?

6) When not prompted by an investigator, under what circumstances are folk-deﬁnitions spontaneously produced? Are there social rules governing their occurrence as a type of metalinguistic speech event, and are there signiﬁcant cross-cultural differences in such rules (cf. Hymes, 1962)?

As will be readily apparent, the questions listed above are basically comparative ones that can only be answered when data are available on a number of languages. Clearly, much remains to be done, but we hope to have shown in this paper that folk-deﬁnitions can illuminate similarities and differences in the ways men cognitively organize the world they apprehend, and we hope thereby to enlist the interest of others in their study.
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