

Conceptual primes in early language development

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1. Introduction

In his inspirational book *Acts of Meaning*, the esteemed psychologist Jerome Bruner (1990: 72) argues that: “how we ‘enter language’ must rest upon a selective set of prelinguistic ‘readiness for meaning’. That is to say, there are certain classes of meaning to which human beings are innately tuned and for which they actively search.” Bruner here articulates a nativist approach to language acquisition, but a conceptual/semantic nativism rather than the syntactic nativism of Chomskyan linguistics.¹ Bruner continues: “Prior to language, these exist in primitive form as protolinguistic representations of the world whose full realization depends upon the cultural tool of language”.

The present study explores certain hypotheses about the nature and identities of the innate concepts which may underpin language acquisition. These hypotheses have arisen from one of the most promising and productive approaches to cognitive semantics – the natural semantic metalanguage (NSM) approach originated by Anna Wierzbicka (1972, 1980, 1996, cf. Goddard 1998a, Goddard and Wierzbicka eds. 1994, forthcoming). Though the NSM approach has been responsible for literally hundreds of descriptive studies in lexical and grammatical semantics and pragmatics across a wide range of languages,² it has not been applied very extensively to language acquisition. The only previous studies, Wierzbicka (1995) and Tien (1999), are unpublished. I hope to show, however, that the NSM approach generates interesting research hypotheses on language acquisition and allows for increased precision and testability in the notoriously diffi-

cult area of child language semantics. In particular, it enables one to propose concrete and constrained semantic analyses of early "child meanings", proposals of a kind which are surprisingly sparse in the otherwise abundant literature on early lexical development (e.g. Bates et al. 1988, Bloom 1973, Bowerman 1978, Braine 1976, Clark 1993, Dromi 1987, Gopnik and Meltzoff 1997, Halliday 1975).

The general outline of the NSM theory is well-known (but see Goddard 1998b for a discussion of popular misconceptions), so I will not go into it in great detail here. The essential claims are: (i) that at the heart of any language there is a specifiable set of simple, indefinable concepts, i.e. conceptual primes, also known as semantic primes, (ii) that these conceptual primes can be found embodied as the meanings of ordinary lexical items (words, bound morphemes, or phrasemes) in all languages (Goddard and Wierzbicka 1994), (iii) that conceptual primes have an inherent "conceptual syntax", in the sense that they can be combined in certain specifiable ways which make sense; such combinations, furthermore, can be expected to have equivalents in all languages, (iv) that conceptual primes and their combinatorial syntax³ can be thought of as comprising a "mini-language" in terms of which all other meanings (whether expressed by words, grammatical constructions or prosodies) can be explicated. Most NSM researchers do not regard the natural semantic metalanguage merely as a useful analytical tool but rather as a conceptual and psychological reality. Conceptual primes are supposed to be, literally, elements of comprehension, and semantic explications framed in primes are supposed to be, literally, models of the conceptual meanings encoded in and expressed by linguistic forms.

The current inventory of primes can be listed (using English exponents) as in Table 1. There are, of course, many aspects of the metalanguage and its realization in the English language which cannot be displayed in a summary presentation. For example, many of the words listed are polysemous, but in each case only one, specifiable sense is being proposed as a conceptual prime. The organization of Table 1, i.e. the grouping and categories, is intended to reflect some of the functional and combinatorial relationships among primes.

Table 1. Proposed semantic primes (after Goddard and Wierzbicka in press)

Substantives and substantive relations:	I, YOU, SOMEONE/PERSON, SOMETHING/THING, PEOPLE, BODY, PART OF, KIND OF
Determiners and quantifiers:	THIS, THE SAME, OTHER, ONE, TWO, ALL, MUCH/MANY, SOME
Descriptors and evaluators:	GOOD, BAD, BIG, SMALL
Intensifier:	VERY
Mental predicates:	WANT, FEEL, THINK, KNOW, SEE, HEAR
Speech:	SAY, WORD, TRUE
Actions and events:	DO, HAPPEN, MOVE, TOUCH
Existence and possession:	THERE IS, HAVE
Life:	LIVE, DIE
Augmentor:	MORE
Logical concepts:	NOT, MAYBE, IF, CAN, BECAUSE
Time:	WHEN/TIME, NOW, BEFORE, AFTER, A SHORT TIME, A LONG TIME, FOR SOME TIME
Space:	WHERE/PLACE, HERE, BELOW, ABOVE, INSIDE, SIDE, FAR, NEAR
Similarity:	LIKE

The claim of NSM researchers is that the primes indicated in Table 1 are necessary and sufficient to explicate all the meaning content expressible through the words, grammar and intonation patterns of the adult language. To what extent the same can be claimed for the language of young children is an open question, and one of the main concerns of this paper. A point I would like to emphasize, however, is that to the extent that the proposed primes (or a subset of them) turn out to be necessary and sufficient for modeling early child meanings, they will escape a potent criticism which has been leveled at other approaches to the semantics of child language. This criticism was first voiced by Susan Carey (1982). She pointed out that the majority of semantic descriptors used in child language research are highly abstract and theory-laden. Terms such as 'recurrence', 'agentive', 'dative', 'factitive', 'instrumental', 'regulatory', 'implication',

'dimension', 'polarity', and so on, come to mind. According to Carey, such "elegant and abstract" terms represent "a sophisticated schematization of knowledge by linguists". As such, they may be useful for certain purposes, but they are not plausible candidates for what Carey calls "developmental primitives", in the sense of "innate ... or at least very early-acquired concepts, out of which all other concepts are built" (p. 351).

This criticism cannot be leveled at the NSM system, or at least, not with anything like the same force, because the NSM primes are not "abstract terms from theories which the child has not yet encountered". On the contrary, they are plain words and expressions of ordinary language, which the child is hearing every day, and which, in many cases, exist in the child's own active vocabulary. If we wish to fashion a system of semantic-conceptual representation for the child, then the NSM system is, at the least, a very good place to start.

1.1. Diary study of Pete

Many of the examples discussed in this paper are drawn from diary notes of the language development of my son Pete (a pseudonym), who was born in August 1996. The notes were made by myself and by my wife, Mee Wun Lee, commencing (in earnest) from the time just before the child's second birthday. Our procedure was not as rigorous or systematic as some other diary studies, but it did yield a continuous sampling of the child's utterances over an 18-month period. I was the main record-taker. I tried to make a point, whenever I was with the child, of having some notepaper and a pencil with me, and I simply jotted down any utterance which seemed either typical of the way the child was speaking at that time, or interesting in the sense of showing "emergent" meanings or structures. Often some notes on the context or apparent intention of the child were also necessary. At different times, observations were made all over the house – at the breakfast table, in the bath, in the living room, in Pete's bedroom, and in the backyard, as well as in the car, at friends' houses, on shopping trips, at playgrounds, and so on. This is, admittedly, a rather

haphazard and intuitive technique but it is not different from the procedure followed by many linguists in taking field notes of an indigenous language in a naturalistic setting.

Diary studies are most useful when they selectively focus on specific issues of interest to the investigators (Mervis et al. 1992). My observations were guided firstly by an interest in semantic primes, and secondly by an interest in general syntactic development. The fact that one is taking a day-by-day record tends to make one sensitive to new developments and thus more likely to record them; but on the other hand there were many hours each day when the child was not being observed, so the diary records cannot be taken to indicate the earliest occurrences of any word or structure. In most cases they probably pick up features which have been present for an unknown previous time. (We did not record utterances which were simply repetitions, in whole or part, of something which had just been said by an adult.) My wife, who is a native speaker of Cantonese, often spoke to the child in Cantonese when they were alone together; and especially in the early days I also used to address the child using my own rudimentary command of this language. Not surprisingly, a good proportion of Pete's earliest words were Cantonese, but for the purposes of this paper I have usually given English equivalents.

Unlike several children who feature prominently in the child language literature, Pete is not an "early talker" but his general language development seems fairly typical of a child growing up in a middle-class Western household. From an examination of the corpus I have divided his early language development into the following rough stages.

Prelinguistic stage

Stage I (from about 14 months): single words

Stage II (about 21 to early-26): two word combinations

Stage III (early-26 to mid-29): some multi-word sentences, usually limited to a simple clause with an adjunct; also, only one utterance at a time.

Stage IV (mid-29 to early-32): two or more related sentences in a row; begins to have conversational exchanges.

Stage V (early-32 to 36 months): onset of complex sentences (*want*-complements, *when*-clauses, clausal linking with *and*), early morphology (*-ing*, *-s*, *-er*) and grammatical verbs (e.g. inchoative *get*-construction, *have to*, *make*-causative).

Stage VI (36 to 41 months): past tense *-ed*, *if*-clauses, clitic copula *-s*.

The present paper focuses primarily on the very early stages, i.e. the Prelinguistic stage, Stage I (one-word stage) and Stage II (two-word stage).

1.2. Semantic primes in the production vocabulary vs. the "conceptual vocabulary"

It is useful at the onset to summarize the emergence, in Pete's production vocabulary, of lexical exponents of the proposed conceptual primes. This is done in Table 2, in which each column represents one of the Stages just described. Within the columns, the order does not represent chronological sequence but rather the groupings used earlier in Table 1. A couple of items (PART and MOVE) appear earlier than I would have expected from the research literature (cf. also Tien 1999: 115–141), but otherwise there is little in this sequence which will surprise child language researchers.

The onset times given in Table 2 assume that certain primes are first expounded by words which are different to those of the adult language (cf. Wierzbicka 1995). For example, SMALL first appears as *little*, A SHORT TIME as *a little while*, BEFORE as *first*, AFTER as *later*, THE SAME as *too*, and WORD as *called*. It is not possible here to discuss and justify these decisions adequately, but in any case the adult exponents of these primes all appear by Pete's third birthday. The main general observation is simply that most of the proposed primes are clearly present by the child's third birthday; the remaining ones follow within a further six months or so (Goddard Forthc. a). Of course, one could certainly not expect all children to follow Pete's sequence, given the sizable individual differences in early lexical development even among English-speaking children (cf. Bates et al.

1988). Aside from personality differences, factors influencing the production sequence are individual preferences in "lexical selection" on phonological grounds (especially in the early stages) and the nature of the language input, e.g. Schwartz and Leonard (1982), Ninio (1992). Looking cross-culturally, differences in interactional style with infants is another potent factor (cf. Schieffelin and Ochs 1986).

Table 2. Acquisition sequence of lexical exponents of primes in Pete's production vocabulary, up to 41 months

Stage I	Stage II	Stage III	Stage IV	Stage V	Stage VI
	I		YOU		
	PERSON	PEOPLE		BODY	
	THING/WHAT	PART		KIND	
THIS		OTHER	MUCH/MANY	ONE	
	THE SAME(TOO)	TWO	ALL	SOME	
	GOOD				
	BAD				
	BIG				
	SMALL(LITTLE)				
	VERY(SO)				
	WANT		WORD(CALLED)	KNOW	
SEE	MOVE	HAPPEN	SAY	HEAR	
	DO	TOUCH		THINK	FEEL
		HAVE	THERE IS		DIE
MORE	NOT(NO)	CAN		MAYBE	IF
				BECAUSE(COS)	
		NOW			
	BEFORE(FIRST)	AFTER(LATER)	A SHORT TIME (LITTLE WHILE)		A LONG TIME
	WHERE/PLACE				
	HERE	NEAR(NEXT TO)	SIDE		
	INSIDE(IN)	FAR			
	ABOVE(UP)				
	BELOW(DOWN)				
		LIKE			

I hasten to note that the presence of a lexical exponent does not mean that a prime is "fully acquired", in the adult sense. The child may have active command over only a small part of the prime's syntactic possibilities (as they exist in the adult language), with the result that

its range of use may be highly restricted in comparison with adult usage. For example, though the word DO appears early in the third year it is a long time before the child is able to use it with the full range of complement and valency options, e.g. DO SOMETHING TO SOMETHING, DO SOMETHING WITH SOMETHING, DO SOMETHING TO SOMETHING WITH SOMETHING. Nevertheless, the presence of the lexical item, used with apparently the same meaning as its adult counterpart, is concrete linguistic evidence that the corresponding concept has some foothold, so to speak, in the child's mind.

With this as background, the key issue to be addressed in this study can now be approached. With a small number of notable exceptions, most of the child's early words are *not* exponents of conceptual primes – for example, Stage I words such as *mama*, *papa*, *bath*, *bird*, *duck*, *nana* (banana), *ball*, and *oh-oh*, Stage II words such as *mouth*, *hand*, *wheel*, *door*, *off*, *broke*, *made*, *noise*, and many others. Dozens of early words appear whose semantic structure cannot be explicated in terms of the child's inventory of lexicalized primes. What can the NSM theory say about this situation? One response would be to observe that most of the child's early words must have simpler meanings than the corresponding words in an adult's vocabulary. This may be true enough, but it still seems impossible that dozens of Stage I words (for example) could be explicated in terms of a small handful of conceptual primes. The only possibility is that the child is making use of a larger set of primes, including some which are present conceptually but which still lack lexical exponents.⁴ As Bruner (1990) put it, there must be meanings which are present “in protolinguistic form” prior to their emergence in language proper.

From a theoretical point of view, this deduction is hardly surprising. It is well-known that children's comprehension runs well in advance of their production vocabulary. Synthesizing results from various studies, Ingram (1989: 140–143) suggests that, as a norm, about 100 words are understood (in some fashion) even before the first recognizable words are produced. In Pete's case, a parental “self-interview” identified about 60 words which we believed the child could understand (in some fashion) at 15 months. These included the following (or their Cantonese equivalents): *dog*, *cannot*, *drink*, *eat*,

water, *go out*, *hurry up*, *milk*, *hand*, *foot*, *fly*, *ball*, *pick up*, *teddy*, *wet*, *hot*, *don't want*, *see*, *come*, *nappy*, *light*, *this*, and many others. From the NSM point of view, if something is understood (in a linguistic sense) then it is necessarily understood *in terms of* some conceptual primes. In short, the child must have a certain “conceptual vocabulary” of prime concepts even before the onset of intelligible words.

Theoretically, this is all well and good, but from a methodological point of view it is problematical. How can we identify conceptual primes which may be active in the child's mind, in the absence of tangible surface exponents? As far as I can see, there are two possible sources of linguistic evidence: (i) semantic analysis of the child's production vocabulary, and (ii) semantic analysis of the child's comprehension capabilities. The second option presents even more methodological difficulties than the first, and I have nothing to say about it in this paper. What I will try to do is to undertake semantic analysis of words in the child's *non-prime* production vocabulary, for if we can determine the meaning of these words this would furnish direct evidence of the conceptual vocabulary of the child at that age. In this I am taking a lead from Tien (1999), who, as far as I know, was the first to argue that conceptual primes may be “latent” in a child's early lexicon, in the sense of being hidden or implicit in the meanings of other, non-prime words.

The task may seem like a daunting one, but it is not altogether different from that which faces a field linguist who undertakes semantic analysis of an unknown adult language from an unfamiliar culture. In either case we have to begin with close naturalistic observation of usage: documenting the range of contexts in which a certain expression is used – and not used – and comparing the usage of alternative expressions which can be found in different contexts. Then we experiment to discover the most economical semantic explications which match the attested range of usage. Obviously one must guard against the assumption that the child's meaning for a particular form corresponds to the adult meaning, i.e. against “adultocentrism”, the child language analogue of ethnocentrism.

In this paper I deal only with a fairly small number of early child words and utterances, and the fine details of the analyses in many

cases remain open to question. Even so, the exercise supports some highly specific proposals about which primes emerge first at a conceptual level and about the time lag between conceptual acquisition and lexicalization.

2. Semantic primes in early “conceptual vocabulary”

2.1. *Explicating “proto-linguistic” meanings*

By general agreement, a child’s first recognizable words are not his or her first attempts at intentional communication. The first words come after a lengthy period of prelinguistic (or proto-linguistic) expression by means of (consistent) signals composed of sounds, prosodies, gestures and gazing. For example, according to Halliday (1975), his son Nigel was producing meaningful proto-linguistic signals (sound-meaning pairings) from as early as 9 months, with this system of signals expanding in size and function for about six months prior to the child’s first truly language-like utterances. At 13 months, for example, Nigel used a form *ʔã ʔã ʔã ʔã* to indicate something like ‘I want that’, and another form *yi yi yi yi yi* (high level tone) to respond when asked if he wanted a particular object to be given to him, meaning something like ‘Yes. I want that’ (Halliday 1975: 24). Halliday emphasizes that expressions like these are not “word-like” in the adult sense, but are direct form-meaning pairings; and also that they are for the most part not derived from forms of the adult language. Nevertheless they are intentional and systematic, they represent a child’s long experience with his or her own system of expression, and they are fundamental in readying the child for language development in the adult sense. Similar conclusions have been reached by Carter (1978, 1979), Dore (1975), Dore et al. (1976), and Scollon (1976, 1979).

Regrettably I did not attempt to document and analyze Pete’s proto-linguistic system. Even so, I think it will be useful to articulate some hypotheses about the kinds of meaning he was expressing in

this period. For this purpose, I have studied Halliday’s account of Nigel and attempted to interpret some of what he says into NSM terms – with apologies to Halliday. The following ideas are ordered roughly according to Nigel’s sequence of development and my confidence in them (the two orders happening to coincide). First, the primes WANT, SEE, DO, and THIS are involved in very early messages like the following, which Halliday assigns to the instrumental, regulatory, and interpersonal functions, respectively:

WANT THIS
DO THIS
SEE THIS

Later, WANT and SEE form the basis of a “proto-mood” distinction in Nigel’s speech, indicated by the contrast between high tone (I WANT) and falling tone (I SEE), respectively. This appears to correspond to the proposal by Bates et al. (1979: 115) that early child speech shows a distinction between proto-imperatives and proto-declaratives. Proto-imperatives – “the child’s intentional use of the listener as an agent or tool in achieving some end” – are framed or introduced by the component I WANT –. Proto-declaratives – “a preverbal effort to direct the adult’s attention to some event or object in the world” – are framed or introduced by the component I SEE –. In adult speech, of course, the declarative mood is associated, prototypically, with a more complex illocutionary component based not on SEE, but on KNOW, namely I WANT YOU TO KNOW SOMETHING. (Some researchers apply the proto-imperative vs. proto-declarative distinction also to the use of pointing by infant children, cf. Reddy 1999: 43.)

Still at an early stage, the elements NOW and HERE are implied in some of Nigel’s prelinguistic signals, in combinations such as the following:

DO THIS NOW

differs from DO THIS by “an additional feature of urgency”, Halliday’s gloss ‘Do that right now’

SOMEONE HERE NOW a component of one of Nigel's "initiating expressions ... used typically when another person comes newly to his attention"

Before long, it seems that MORE enters the picture, in combinations like:

DO THIS MORE – Halliday's gloss 'do that (again)'
SEE MORE – Halliday's gloss 'look, that's interesting'

Interestingly, the prelinguistic Nigel clearly seems to express the message DON'T-WANT. On an adult semantic analysis, this involves negation (NOT) in combination with WANT, but there is no direct evidence in Nigel's early vocalizations for negation as a separable component. Possibly DON'T-WANT is a single unanalyzable meaning for him at this stage.

During the proto-linguistic stage Nigel also appears clearly to express some simple messages about his "feelings". From fairly early on, there are expressions glossed by Halliday as 'that's nice' and 'nice to see you' (pleasure). Towards the end of the period, Halliday lists two expressions which seem to express negative feelings; he glosses them as 'let's be sad' (shared regret) and 'I'm fed up' (complaint). In adult language, one would assign components such as I FEEL SOMETHING GOOD and I FEEL SOMETHING BAD but these seem too complex for the young Nigel, and there is no evidence for the presence of FEEL, GOOD, or BAD as separate items. I therefore suggest that in the early stages of development, there are two global and undifferentiated meanings which we can represent as: FEEL-GOOD and FEEL-BAD.

In summary, therefore, a consideration of proto-linguistic messages suggests that the following set of meanings may be present, in some incipient fashion, even prior to the first ordinary word: WANT, SEE, DO, THIS, SOMEONE, NOW, HERE, MORE, DON'T-WANT, FEEL-GOOD and FEEL-BAD.⁵

2.2. *Explicating early Stage I words*

I will focus on the following small set of (non-prime) words from early in Pete's Stage I. There are indications (Dromi 1987, 1999) that the early and late periods of the one-word phrase may be qualitatively rather different, in terms of the child's word-learning strategies.

mama, papa

bath!

nat! 'hot/cold' (from Cantonese 'hot')

oh-oh!

bird! (Cantonese)

duck! (Cantonese)

broom-broom! 'car'

What can we infer about the meanings of these words, when Pete was 18-20 months of age? Obviously we cannot attribute to the child anything like the semantic complexity of the comparable words in the adult lexicon. Nevertheless it is necessary to attribute *some* meanings to them, presumably the simplest conceivable meanings which are compatible with their range of use in his speech.

The words *mama* and *papa* surely involve – minimally – the element SOMEONE(PERSON), presumably in combination with THIS. What else? One possibility would be to interpret *mama* and *papa* as, so to speak, proto-names; i.e. to attribute a semantic structure along the following lines (the use of inverted commas around *mama* in the explication is intended to refer to the sound of the word only).

mama =

this person

this person is called "mama" (i.e. word for this person is "mama")

papa =

this person

this person is called "papa" (i.e. word for this person is "papa")

According to these explications, the child's early words *mama* (and *papa*) have no descriptive content. They simply embody a recognition of a particular individual who is associated with a particular "label". Accepting this, however, means accepting that even very young children have some rudimentary notion of WORD. Some child language researchers would no doubt find this hard to swallow, for children at this stage; but others would not. Halliday (1975), for example, interprets the transition from the prelinguistic to the truly linguistic in terms precisely of the emergence of the "word" as a unit in the system: "The adult language is not a two-level system but a three-level system; it is composed not merely of meanings and sounds, but has another level of coding in between, one which, using folk-linguistic terminology, we may refer to as the level of *wording*" (p. 50, cf. also p. 34).

A great deal has been written about the early onset of the so-called "naming insight", which some researchers see as explaining the vocabulary spurt which many children experience later in the one-word stage (cf. McShane 1979, Goldfield and Reznick 1990, Harris et al. 1988, Harris et al. 1995). I am inclined to agree with Harris et al. (1995), however, that the vocabulary spurt "might better be thought of as marking a transition from the view that *some* things have names to a view that *everything* has a name" [my emphasis]. It seems entirely plausible that Pete's earliest awareness of "names" or "labels", i.e. in NSM terms WORDS, would be in relation to those special "someones", his *mama* and *papa*.⁶

Various researchers have noted that very young children often use certain words in ways which defy the adult expectation of a distinction between "nouns" (words for things) and "verbs" (words for actions and events). Rather such words seem to stand for, or even to be part of, an "activity script" featuring the child him or herself in some daily routine such as going to bed, changing nappy, or having a bath. Early in Stage I, the word *bath* was like this for Pete. He would utter it upon seeing the bathtub filling up. The following explication presents *bath!* more as an exclamation than a noun or a verb; and like exclamations in adult speech (in this respect) it relies heavily on de-

ictic elements like THIS, HERE, and NOW. Also implied is the locational (WHERE) relationship.

bath! =

I see something

something is happening here

I (can) be in water (this 'stuff') now

An important question which I will leave untouched is the status in the explication of the word *water*. I am prepared to take for granted that, experientially, water is directly recognizable to the child; but I am at a loss to know whether, and to what extent, the child has an articulated concept of *water*, deserving of its own "mini-explication".

Pete's word *nat* derives from the Cantonese word for 'hot'. He often heard us say it to warn him about hot foods and drink, and also about the heater in our living room, but for a while Pete used his word *nat* not only about hot things, but also about very cold things – mainly about ice cubes and stuff taken directly from the freezer. An explication along the following lines seems to be called for. Notice the apparent necessity for the term TOUCH – a recent, and as yet largely untested, candidate for the prime inventory.

nat! ('hot/cold') =

I don't want to touch this

when I touch this, I feel something bad (or: I feel-bad)

In his one-word period, Pete uttered the word *oh-oh!* when he saw that 'something bad' had just happened to something, typically that something had fallen over, been broken, dropped or spilled. Needless to say, this usage was heavily modeled for him by his parents, but Pete's *oh-oh!* embodied a simpler semantic structure than adult usage.⁷

oh-oh! =

something bad happened to something now

Coming now to *bird*, *duck*, and *car*, we see what first appear to be clear examples of “nominal” terms, in the sense of words which are clearly and only used about things. In their very earliest uses, however, such words are used essentially to make an observation about immediate experience: the illocutionary frame of the one-word utterance is ‘I see —’. (Consistent with this, Halliday [1975] placed Nigel’s early one-word utterances of this type under the “Personal” (expressive) function.) As parents too, we tend to use words like these to young children precisely to point out things: ‘Look baby – (a) bird!’.

Clearly these words can have only a very simple structure compared to the enormous complexity of the adult words (cf. Wierzbicka 1985, 1996). Significantly, all three words refer to things that move. For *bird* and *duck*, I suggest a further salient feature is, so to speak, the locus of movement. Birds move up in the air; ducks move in the water. As for *broom-broom* ‘car’, I suggest its salient feature is that there is a person inside it.

bird! =

I see something

it can move up-high

this kind of thing is called “bird” (i.e. word for this thing is “bird”)

duck! =

I see something

it can move in water

this kind of thing is called “duck” (i.e. word for this thing is “duck”)

broom-broom! ‘car’ =

I see something

it can move

someone can be inside it

this kind of thing is called “broom-broom” (i.e. word for this thing is “broom-broom”)

Notice that these explications require the element KIND OF, even though the word *kind* does not “surface” till Stage V. Otherwise, they would be depicting the words *bird*, *duck*, and *broom-broom* as proper nouns, rather than as designations for recognizable classes of things. This is consistent with mounting psycholinguistic evidence for genuine categorization, i.e. categorization by kinds rather than simply by perceptual similarity, in very young children (Gopnik and Meltzoff 1997: Chapter 6, cf. Markman 1989, Keil 1989, Mervis 1987).

Even from this small sample, then, we can see the implied presence of a dozen-and-a-half primes which do not surface as words in their own right for some months to come: I, SOMEONE(PERSON), SOMETHING(THING), KIND, THIS, HERE, NOW, SEE, WANT, DON’T-WANT, BAD, HAPPEN, MOVE, TOUCH, CAN, ABOVE(UP), INSIDE, and WORD(CALLED). To this list we can add DO, MORE, and FEEL-GOOD, which were indicated already in the proto-linguistic period (even though they have not turned up in the handful of Stage I words we have just looked at). At the one-word stage, it seems, Pete has a conceptual vocabulary of at least 20 semantic primes, about one-third of the eventual adult inventory.

2.3. Explicating Stage II words

In the three-month period between about 26.07 and 29.15 Pete learnt to say a large number of new words, and increasingly to produce two-word combinations (though he also continued to use a lot of single-word utterances). As set out in Table 2, by the end of Stage II the child had about 21 exponents of primes in his production vocabulary. This set is not sufficient, however, to plausibly explicate the non-prime vocabulary of Stage II. Rather, semantic analysis of his non-prime vocabulary suggests that Pete’s conceptual vocabulary at this period already included most of the primes posited to appear in Stage III, plus several others which would not appear till subsequent stages.

First, it is worth pointing out a few fairly simple “semantic molecules” (cf. Wierzbicka 1995):

dark (here) = a person can't see here
(this is) stuck = this thing can't move here
(it's) all gone = it was here before, it isn't here anymore

A noticeable fact about Stage II is the appearance of sets of related nominal words (cf. Clark 1993, 1995), such as clothing words, body-part terms, words for vehicles and for animals, and words for things to eat and drink. Clothing words were among Pete's first nouns, the first of them (*pants, shirt*) appearing before any of the body-part terms. Actually the words in question were Cantonese "baby talk" words. *Fu-fu* means roughly the same as 'pants', and *saam* takes in shirts and t-shirts. The distinction is between the top part of the body (*saam*) and the bottom part of the body (*fu-fu*). As far as I can see, to get plausible "child-level" explications for these and other clothing words we need not only to refer to certain parts of the body, but also to the idea that people 'do something with' these items and end up, as a result, with parts of their body inside them. For example:

fu-fu (pants) =
 something
 a person does something with it
 afterwards the bottom part of a person is inside it

saam (top) =
 something
 a person does something with it
 afterwards the top part of a person is inside it

The terms 'top part' and 'bottom part' are obviously based on the primes ABOVE(UP) and BELOW(DOWN). The simplest thing would be to regard 'top' and 'bottom' as simply "adjectival" variants of ABOVE(UP) and BELOW(DOWN), respectively.

The need for the prime PART is surely clear from the proliferation of body-part terms, such as *mouth, eyes, nose, ear, head, and foot*. However, I do not think we have to posit the prime BODY at this stage; it seems enough to explicate *hands*, for example, as 'parts of a

person' rather than as 'parts of a person's body'. Notice that many of the body-part terms (*eyes, ears, hands, feet*) are explicated here "in the dual", so to speak. This reflects the view, which can be traced back to von Humboldt (cf. Plank 1989), that the gestalt of a "pair" is impressed even upon an infant child from the experience of having, and seeing, dual body-parts. In the case of the eyes, in particular, their "two-ness" literally stares one in the face.

eyes =
 two things
 they are part of a person
 because of these things, a person can see

mouth =
 part of a person
 things can 'go' inside a person there
 a person can do things (to things)
 with this part

hands =
 two things
 they are parts of a person
 a person can do many things with them

head =
 one thing
 it is part of a person
 it is above the other parts

feet/legs (kiok) =
 two things
 they are parts of a person
 they are long
 they are parts of the bottom of a person
 a person can do some things with them

ears =
 two things
 they are parts of a person
 one is on one side of the head
 one is on the other side of the head

Another couple of Pete's early nominal words are *wheel* and *door*. The former is really a favorite word for Pete at age two, and perhaps would qualify as the prototypical part-term in relation to physical objects. An interest point about both words (especially clear in the case of *door*) is that they seem to require the semantic component SIDE.⁸

wheel =
 part of something
 it is round (i.e. when you see it,
 it is the same on all sides)
 it moves
 when it moves, the other thing moves

door =
 something
 it is in a place
 someone can be on one side of it
 after this, it moves
 after this someone can be on the other
 side of it

Like many other children, in his two-word stage Pete began to use a largish number of animal names, such as *horsie, dog, pig, cow, seal, cat, and monkey*. To analyze these meanings in detail would be a fascinating project, which I believe would show that, even at this early stage, such words can involve semantic components describing the animal's size, some salient body-part features, characteristic sound, reference to habitat and (at least in some cases) reference to its typical food. This kind of study is beyond the scope of the present paper, however, and for present purposes I mention these words only to make the point that they further attest to the conceptual presence of the notion of KINDS. I will move instead to some explications for a set of "verbal" words. As with the nominals, this listing is not exhaustive but it is a broad enough sample to indicate the range of semantic components which are needed.

Perhaps the expression *come here!* is not entitled to be termed fully "verbal", since it is, at this stage, essentially an imperative formula; and the same applies to *help me!* Even simple structures such as the following make it plain that the prime YOU is called for. Indeed, one could claim that any example of genuinely "addressee-directed" speech implies YOU – for YOU is what an "addressee" is.⁹

come here! =

I want you to do something
you are not here
I want you to be here

help me! =

I want you to do something
I want to do something (to this)
I can't do it

The expressions *fall down* and *bump* both seem to imply the element HAPPEN. At age two, Pete used *fall down* not only about himself (after he fell), but also about something he threw or dropped. *Bump* not only seems to imply HAPPEN, but also TOUCH (without TOUCH, it is hard to see how the "contact" aspect of the event could be captured). The explications also seem more plausible with an explicit causal component BECAUSE OF THIS (as shown).

fall down =

something happened to this thing/person
because of this, it is down now

bump (head) =

something happened to me
part of me (my head) touched something now
because of this, I feel something bad now

In connection with TOUCH, it is interesting to look at the word *off*, one of the most common "verbs" in Pete's Stage II speech. He would say things like *off shoe* (after taking his shoes off), *off fu* or *off socks* (to describe what was happening, or to ask for it to be done). At this time, we used to have him sleep in a "baby sleeping-bag", rather than covering him with blankets in the cold Armidale winter. In the mornings, he would say *off bag*. He would also use the word *off* about his nappy, or (in the two-word mode) say *off nappy*. Similar verb-like uses of *off* have been reported by Tomasello (1987), among others. The following explication for *off* has a kind of causative structure.

off ('take off/remove/get out') =

this thing was touching me somewhere before
after this someone did something
because of this, it's not touching me like this any more

The word *broke* is an interesting one. It was first used in situations where one part of something, e.g. a toy, fell off, or when a Lego construction came apart. On one occasion he used it after the cap had fallen off a marker pen. The explication not only employs HAPPEN but also the element ONE, which is not strongly in evidence elsewhere at Stage II.

broke =

something happened to it
because of this, it is not one thing any more

Give and *make* are an interesting pair. They both seem to demand an explicit “before-and-after” scenario: the situation as it was before is changed as a result of someone doing something. In the case of *give*, the change concerns possession (i.e. someone having something); in the case of *make* the change concerns the existence of something.¹⁰

(I) *gave it (to someone)* =
this person didn't have it before
after this I did something with it
because of this, this someone else has it now

I make house =
there wasn't a house here before
after this I did something with some things
because of this, there is a house here now

Verbs of physical manipulation, such as *put*, seem to call for a similar overall structure. The verb *eat* involves “doing” and a resultative component (including the component INSIDE).

(someone) *put (it) here* =
it wasn't here before
after this someone did something with it
because of this, it is here now

(I) *ate it* =
something was in my mouth
I did something to it with my mouth
because of this, it is inside me now

Finally in this quick sweep through some of Pete's Stage II words, some evidence for the conceptual presence of HEAR (cf. Tien 1999: 104–111). First, Pete used the word *noise* in month 25, for example, to remark on the noise of water draining away in the bath. Similarly, he used the words *cry* and *sing* when not much older than two years, e.g. to comment on another child crying. The meanings of these

words surely call for HEAR. Second, this was a time when Pete was already quite interested in the characteristic sounds made by animals and birds: “quack-quack” for ducks, “tweet-tweet” for birds, “moo-moo” for cow, “oink-oink” for pigs, and so on. He could produce any of these sounds at around two years of age. Surely this implies something like (for example):

“*quack-quack*” =
ducks do something
when they do it, a person can hear something like this: “quack-quack”

There are also two primes, specifically, KNOW and SAY, whose presence is implied by functional (illocutionary) facts. They do not appear in Pete's production lexicon for three or four months, but their conceptual presence is implied by the fact that the child begins, in Stage II, to ask simple information-seeking questions (both polar and *wh-*), as shown below, and also to respond appropriately to questions asked by adults. The illocutionary intention of questions, conveyed by intonation, involves the components: I WANT TO KNOW SOMETHING, I WANT YOU TO SAY SOMETHING. (Interestingly, all the recorded examples of Pete's early questions concern location. I am not sure what to make of this: perhaps that is just the main kind of thing he wanted to know about.)

- 25.26 *Moon there? Roo there?* (re. a photo, i.e. is that the moon there? is that a kangaroo there?)
26.12 (CG told Pete they were going to the coast tonight, to the sea) Pete: *Seal there?* CG: *No, no seals.* Pete: *Boat there?*
26.17 *Mama slippers where?*
26.18 CG: *Pete, we're going to Jaew tse-tse's place for dinner.* Pete: *Baby there?*
28.06 *Where plane?*

In summary, from the sample of explications offered here one can deduce that the following set of elements are present as conceptual

primes at Stage II, despite the fact that they have not yet surfaced as individual words. They are presented in three groups: those which are destined to appear as words in the next stage (Stage III), i.e. within a couple of months; and those which do not appear until subsequent stages.

To appear in Stage III: PEOPLE, PART, OTHER, TWO, HAPPEN, TOUCH,
HAVE, CAN, NOW, AFTER(LATER), LIKE

To appear in Stage IV: YOU, SAY, WORD(CALLED), THERE IS, SIDE

To appear in Stage V: ONE, KNOW, HEAR, BECAUSE

In the case of the Stage III group, what we are seeing is virtually the entire list of primes which appear at Stage III (with two exceptions: NEAR(NEXT TO) and FAR). This hardly seems like a surprising result any more. We saw the same pattern in relation to Stage I; and, as mentioned earlier, it is a pattern which is consistent with the fact that comprehension competence runs several months ahead of production competence. The conceptual presence of primes which only surface lexically four, five, or six months afterwards, however, does seem to call for some special explanation (see below).

3. Discussion

The findings of this study of Pete's early semantic and conceptual development can be summarized as follows. All but a handful of the proposed NSM semantic primes have lexical exponents by 41 months, i.e. by age three-and-a-half (cf. Goddard *Forthc.* a). Semantic analysis of Pete's *non*-prime words and utterances shows, however, that many conceptual primes are present well prior to acquiring surface lexical exponents. The general pattern is that the production vocabulary of primes lags several months behind the conceptual vocabulary. About 10 primes seem to be present in the conceptual vocabulary even in the proto-linguistic period, prior to the first recognizable word as such. They are: SOMEONE, THIS, WANT, DON'T-WANT, SEE, DO, MORE, NOW, HERE, and possibly a pair of "proto-primes"

FEEL-GOOD and FEEL-BAD. By the end of the one-word stage, Pete's conceptual vocabulary had doubled to 20 or so primes, about one-third of the adult inventory, even though at this time only a small handful of primes had lexical exponents of their own. By the end of the two-word stage, Pete's conceptual vocabulary had again doubled, to account for over two-thirds of the adult inventory.

Perhaps the most important question raised by this study is to what extent Pete's acquisition sequence is typical – in terms of production vocabulary, in terms of conceptual vocabulary, and in terms of the relationship between them. As mentioned earlier, one might expect there to be significant differences in the production sequence across children and across languages, which it would be interesting to map out and try to explain.¹¹ In relation to the acquisition sequence of primes in the conceptual vocabulary, I would like to advance the hypothesis that this is much more stable and consistent across children and across languages. These issues, it seems to me, have the potential to sustain a wide-ranging research program.

A second research area concerns a range of specific questions about the developmental sequence of conceptual primes. For example: What explains which primes appear early and which appear late? Why don't more primes appear earlier in production, during the one-word and two-word periods? Why do some primes take longer than others to "bridge the gap" between their first appearance in the conceptual vocabulary and their eventual appearance in production? What explains the late lexicalization of certain primes? And so on. Developmental, functional and syntactic factors may all play a role here. For example, MORE, NO, and THIS may occur so early because they can be used as single words and still convey a functionally useful message. KNOW, HEAR, and BECAUSE may appear only relatively late in production because to manipulate these terms in production requires command over complement and adjunct structures, which may present too much of a processing problem for the child.

A third area for further research concerns syntactic aspects of language development. Conceptual primes have valency, complementation and combinatorial properties (cf. Goddard and Wierzbicka *in press*) which, it can be argued, are the basis of syntactic structure at

large in the adult language. As mentioned earlier, however, the child's initial acquisition of a lexical prime does not normally constitute "full" acquisition because initially the child may command only a small part of the prime's syntactic possibilities. Thus, one could study the syntactic development of primes, both in production and in the conceptual vocabulary, and the relationship between this and general syntactic development.

It should be clear that paraphrase in terms of the NSM semantic primes can provide a practical, yet highly constrained, method for formulating testable hypotheses about early child meanings, i.e. a serviceable method for actually "doing" child semantics. Furthermore, to echo the concluding words of Wierzbicka (1995), the approach generates new and interesting research questions about language acquisition.

In the Introduction I mentioned that there have been surprisingly few studies which propose a substantial body of semantic analyses of "child meanings". One of the notable exceptions to this generalization is Michael Tomasello's (1992) book *First Verbs*. In his opening chapters, Tomasello (1992: 33) makes the point repeatedly that any such project requires "some form of cognitive-developmental theory to help us reconstruct the child's point of view from our point of view as we examine the contexts in which she used a particular word". His own study began with the assumption that the child "lived in a sensory-motor world of objects and their spatial, temporal, and causal relations. Also, she may be assumed to know a good deal about other persons and how they work ..." (p. 36). As a mode of representation he adopted image-schematic diagrams, somewhat in the style of Langacker (1987), and explicitly linked his empirical study with one of the main currents in contemporary cognitive linguistics.¹² Needless to say, the present study can also be seen as an exercise in cognitive linguistics.

There may be questions raised, however, about whether the NSM framework does allow us to "reconstruct the child's point of view", in the sense of safeguarding us against adultocentrism. Doesn't the framework start, in effect, from adult language primes and impose them on children? How do we know that young children don't have

their own conceptual primes which are different from, or even incommensurable with, the adult system? I will conclude by saying something about these theoretical questions.

One cannot *a priori* rule out the possibility that the young child's semantic system is incommensurable with the adult system. On the other hand, practical experience shows that there can be a high degree of mutual understanding between young children and adults. A radical incommensurability thesis in relation to young children would also face the problem of accounting for the developmental continuity of child and adult understanding. In my view, the issue must remain open for the time being. One thing is certain, however. We will never get anywhere at resolving the issue unless we are willing to knuckle down and attempt serious semantic analyses of early child language. If we try, and fail, using a representational system which assumes some limited conceptual continuity with the adult system, then this will be evidence for incommensurability – and vice versa if we succeed. Above all, we have to try; and I submit that the NSM system offers a highly facilitative framework for doing just that.

On the second point, it is not really correct to say that the NSM system uses adult primes to explicate child language speech (thus imposing an adult point of view). From the present study it would seem that the meanings of a child's early words *can* be adequately paraphrased in terms of the language of the same child – as it will be a few months down the track. That is, even when the explications cannot be framed entirely within the child's own production vocabulary (which may be the case until the child is, say, four years of age), they can at least be framed in terms which will *soon* be part of that child's production vocabulary. Another way of putting it is that although the language of toddlers and young children is not yet "meta-semantically adequate" (as, apparently, all adult languages are) it does not stay that way for long. There is every indication that the entire NSM metalexicon exists in the production competence of a four-year old child. If so, the continuity/incommensurability issue should not be pitched in terms of child vs. adult, but in terms of two-year old vs. four-year old. In this respect, the NSM primes retain a significant advantage over other representational systems such as

complex, technical descriptors ('recurrence', 'instrumental', 'joint attention', and the like) and complex, technical diagrams, which truly are beyond the grasp of children at any age.

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Notes

1. A similar position was long held by Dan Slobin (1985), Melissa Bowerman (1985), and others, but in recent years they have begun to repudiate their earlier emphasis on an innate prelinguistic conceptual basis for language acquisition, in favor of an emphasis on the characteristics of the adult "input" language, especially its language-specific aspects (cf. Bowerman 1996, Slobin 1997). In my view there is no necessary conflict between these two positions, but it is not possible to pursue the matter here.
2. The NSM bibliography is extensive and cannot be reviewed here for reasons of space. Aside from works cited elsewhere in the chapter, representative works include: Ameka (1990), Chappell (1986), Goddard (1996, 1997), Harkins (1990, 1996), Hasada (1994), Peeters (1993), Travis (1998), Wilkins (1986).
3. It is true that in the NSM model it can make sense to speak of "universal syntax" or "universal grammar" (cf. Goddard and Wierzbicka forthcoming). For some readers such expressions may carry a connotation of autonomous syntax, so it is perhaps worth stressing that what is intended is literally a "conceptual syntax". What we are trying to say is that certain *combinations* of primes necessarily make sense and should be expressible in all languages, e.g. 'something', 'do', and 'good' can combine to form 'do something good'; 'say', 'something' and 'someone' can combine to form 'say something to someone'. Importantly, the potential for these combinations is inherent in and springs from the mean-

ings themselves. Thus the combinatorial syntax of primes is *not* autonomous (from meaning) – quite the opposite in fact.

4. Why, it might be asked, could the young child not be working in terms of "conceptual gestalts", in the sense of meaning complexes which are grasped as whole configurations without any apprehension of their individual conceptual constituents? In principle I have nothing against this suggestion, especially in relation to very young children (see my comments at the end of Section 2.1). However, the following analysis indicates that the same conceptual components (e.g. WANT, SEE, DO, THIS, SOMEONE, SOMETHING) apparently recur in many and varied early child words; and furthermore, that such concepts generally acquire surface lexical exponents within a few subsequent months. To my mind, these facts are most easily explained on the assumption that the concepts in question exist in a discrete fashion, so to speak, in the young child's mind.
5. If children's proto-linguistic signals can be explicated, and turn out to express combinations of a certain small set of conceptual primes, perhaps the same approach can be used about intentional communication by non-human primates (cf. Cheney and Seyfarth 1990, Tomasello and Call 1997). For example, the three alarm calls used by vervet monkeys to indicate the presence of three different predators (eagles, snakes, leopards) could perhaps be explicated as messages that 'something bad can happen, because something is moving up-above (for eagles)/down-below (for snakes)/near here (for leopards)'. See Jones (1999) for a discussion of conceptual primes in an evolutionary, phylogenetic perspective.
6. For some early talkers it might be that *mama* functions in its very earliest uses merely as a "calling device". In Pete's case, however, he used the word to indicate recognition of his mother, as well as to call her; and as the discussion in §2.1 indicated, there are reasons to believe that the "proto-declarative" function (with the illocutionary frame I SEE) is already present in the prelinguistic stage. With this in mind, the only alternative explication for *mama* (and *papa*) would seem to be as shown below. This explication does without WORD, but at the cost of attributing to the child something like a self-conscious generalization, which seems less than plausible.

mama =
this person
when I see/want this person, I say "mama"
7. Adult *Oh-oh!* can be used in a broader range of situations; for example, I could say *Oh-oh!* upon reaching into my pocket for my keys and realizing that they are not there. Aside from conveying the idea that something bad and unforeseen is imminent, there is also a component of "minimisation" (Goddard 1998a: 190).

8. The prime SIDE is intended to be "spatial-relational" in character. That is, it describes the positional relationship between two entities: 'X is on this (one, two, all, etc.) side(s) of Y'. In some languages (including English) the same word can also function as a nominal, but this nominal usage is semantically complex (roughly, 'one side of X = one part of X, this part is on one side of all the other parts of X') and non-universal. The proposed explication for *wheel*, therefore, is not intended to imply that a wheel has sides.
9. If a young child does not comprehend 'I' and 'you' that child would be quite at a loss to understand a lot of conversation between adults. It seems likely that children do understand the shifting referents in overheard speech long before they are able to carry out the same manipulations in their own speech. Oshima-Takane (1999) makes an argument that observing (and understanding) adults using pronouns with one another is highly facilitative of the child developing his or her own command over shifters.
10. Re. HAVE, it is interesting to note the importance of "offer" gestures, and of "giving" and "taking" generally, in toddler play, cf. Bronson (1981). It is also worth noting that "giving-and-taking" a small object is a routine which many adults play with a young, preverbal child.
11. Esther Dromi's (1987) daughter Keren was different in many ways to Pete. Not only was she acquiring Hebrew rather than English, she was an early and prolific talker. Her first word came at 10 months and by the onset of the two-word stage, late in month 17, she had acquired an impressive 337 different one-word utterances. Dromi (1987: 171-179) lists Keren's entire one-word lexicon and it is interesting to extract from this list the words which appear to be exponents of semantic primes: (in order of appearance) HERE, WHAT, THIS, MORE, UP, WHERE, NO, WANT, BIG, VERY, SMALL, GOOD, MOVE, SEE, YOU. Admittedly, some of these putative identifications may be mistaken, mainly because the English "glosses" relate to the adult meanings of the words, rather than necessarily reflecting the child's own usage. Nevertheless, there is a very substantial overlap between this list and Pete's early vocabulary of primes.
12. The diagrams in Tomasello (1992) are sometimes so complex that they cannot be understood without verbal explication, which makes it debatable whether they really succeed in detaching the representation from adult language (for discussion, see Goddard Forthc. b).

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