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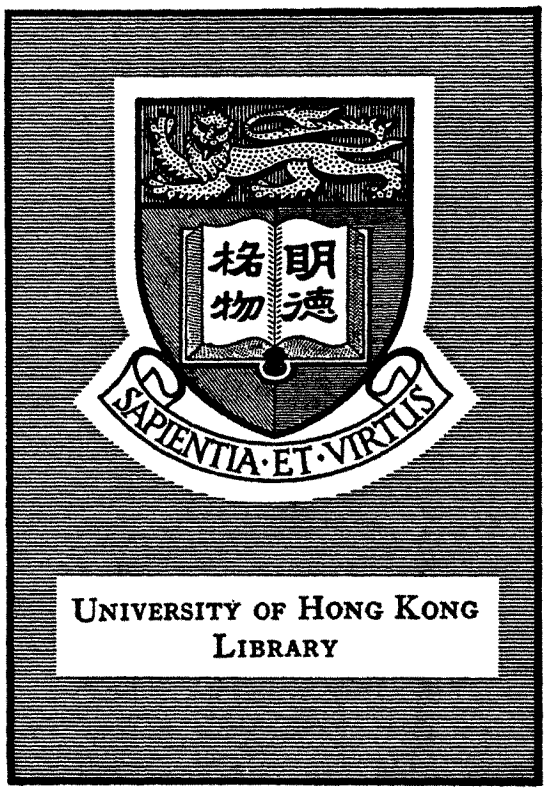

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ARTICLES

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Contents from Working Papers in Language and Language Teaching - No. 1 and 2

PARTICIPLE PREPOSING IN ENGLISH AND THE PROBLEM OF HIERARCHICAL CONSTRAINTS ON LINGUISTIC STRUCTURE[1]

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1. *Introduction*

The phenomenon of participle preposing in English is a classic problem in English grammar. By participle preposing we mean that the participle of certain verbs in a relative clause may be moved forward (and upward) to the adjectival position just before the antecedent of the relative clause. While non-native speakers of English typically have trouble with these forms, native speakers often find it difficult to explain the constraints in operation.

That this phenomenon is a problem in English is primarily due to the relatively unexplored differences between prenominal modification, which typically and categorically involves adjectivals, and post-nominal modification, which typically and categorically involves relative clauses. There are basically two problems here.

The first basically pertains to the question of the necessity of the relative-clause origin for all attributive (prenominal) adjectives, for it can be clearly established that many attributive adjectives do not have relative clause origins. Some well-known examples are:

a.	gala affair	* the affair (which) is gala
b.	nervous system	* the system (which) is nervous
c.	alimentary canal	* the canal (which) is alimentary
d.	causal acquaintance	* the acquaintance (which) is casual
e.	happy coincidence	* the coincidence (which) is happy
f.	foreign policy	* the policy (which) is foreign
g.	brave sight	* the sight (which) is brave
h.	proud moment	* the moment (which) is proud
i.	ethical drugs	* the drugs (which) are ethical

Two relatively recent papers by Bolinger (1967) and Lucas (1975) have attempted to deal with this problem in an insightful manner.

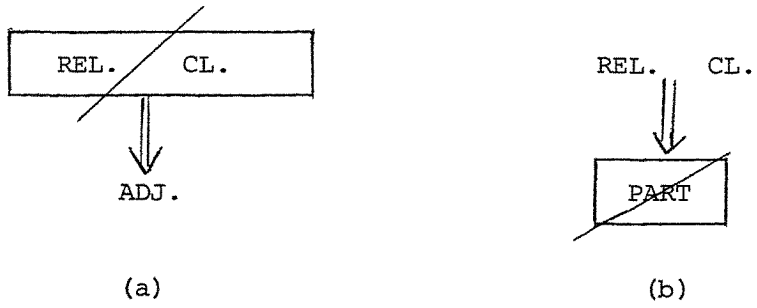
The second problem is related to the question of which elements in the predicate of the relative clause may be preposed as prenominal participles. The paper by Lucas is

basically concerned with the question of the relative clause origin as a sufficiency condition for participle preposing. For example:

j. { The two headed snake / * The (one) headed snake } —— The snake which has { two heads / a head }

k. { * The killed judge / The murdered judge } —— The judge who was { killed / murdered }

These two component problems may be characterized schematically as follows:



(a) (b)

Figure 1

Figure 1a is examplified by (a) to (i) in which no straightforward relationship may be established between an attributive adjective and simple underlying relative clauses.

Figure 1b in fact characterizes two separate but related processes. The first may be characterized as that of the pseudo-participle, for 'headed' in (j) is an adjective and has no corresponding verbal form. The underlying constraints are related to possessive and partitive relationships between the antecedent and the modifier. The paper by Hirtle (1970) and the note by Hudson (1975) have explored this problem in interesting ways. This kind of relationship is basically that which obtains in nominal compounds and the Sanskrit grammarians had long ago characterized it as belonging to the class of Bahuvrihi compounds. Examples from Sanskrit are: Tigmaçrñga 'sharp-horned' and haritasraj 'green-garlanded'. The second process is that of the preposibility of the true participles, and will be the object of our concern here.

2. *Syntactic Considerations*

Let us consider the following:

(1) the murdered judge

* the killed judge

(2) the rescued sailor

* the saved sailor
(except $saved_2$ in the religious sense, which will be explored in a later section)

(3) the relocated rock

* the moved rock

These verbs are transitive verbs and members of each pair are synonyms at least within the contexts of the sentences from which the participial forms are derived.[2] Upon closer look there are fundamental differences within each pair.

Assume a group of terrorists carried out a planned murder by machine-gunning their victim, a judge, at a supermarket and assume that several innocent bystanders were also gunned down in the process. It may be said that:

1a. The judge was *murdered/killed* at the supermarket.

1b. The innocent bystanders were *killed* at the supermarket.

but not

1c. * The innocent bystanders were *murdered* at the supermarket.

Let us now assume that a ship was sunk in a storm and the sole survivor, a sailor, was picked up by a passing ship after drifting in a leaking life-boat for two weeks without food or water in a shark infested area. We could say:

2a. The passing ship *rescued/saved* him from the sea,

or

2b. The sailor was *rescued/saved* by the passing ship.

We could also say

2c. The passing ship *saved* his life,

but not

2d. * The passing ship *rescued* his life.

Similarly we can say:

2e. The passing ship *saved the sailor from a fate worse than death.*

but not

2f. * The passing ship *rescued the sailor from a fate worse than death.*

Furthermore it is possible to say:

1d. The *drought killed* any *chance* of a plentiful harvest this year.

2g. The *fire saved* the *bank* from going under.

3a. The untimely *death* of a great man *moves everyone* to tears.

Note that we cannot substitute *murder* for *kill*, *rescue* for *save*, or *relocate* for *move* in these sentences.

Taking this clue we are now led to find a simple common factor that could account for the different syntactic properties. One common factor has to do with the selectional restrictions of the verbs. Note that *murder*, *relocate*, *rescue* must take animate subjects whereas *kill*, *move*, *save* may take inanimate subjects as well. Thus we can have:

1e. The *fire killed* the judge.

2h. The *fire saved* the sailor.

3b. The *explosion moved* the rock.

but not

1f. * The *fire murdered* the judge.

2i. * The *fire rescued* the sailor

3c. * the *explosion relocated* the rock.

This hypothesis is supported by additional evidence:

(4) the captured villain

the *caught villain

(5) the displayed treasure

the *shown (*showed) treasure

(6) the transmitted message

the *sent message

(7) the remitted funds

the *sent funds

(8) the donated money

the *given money

(It is possible to speak of *given fact*. We shall return to such examples later)

Thus we can say:

4a. The oil *embargo caught* the *country* off guard.

5a. The oil *embargo shows how* much we depend on other *countries*.

6a. The *threat* of war in the Middle East *has very often sent the presidential envoy* scurrying for a plane.

7a. The *explosion sends rocks* in all directions.

8a. The *fire gave* him an excellent *idea*.

We note that the subject of each of these sentences are inanimate nouns. It is easy to see that these verbs will take animate subjects as well. However, the fact that we cannot substitute *capture* for *caught*, *display* for *show*, *transmit* or *remit* for *send*, or *donate* for *give* in these sentences confirms the initial hypothesis that verbs with preposable participles require animate subjects.

So far we have been concerned with pairs of synonyms or near synonyms. It will be necessary to show how that the initial hypothesis may be applicable in general as well. Examples are not hard to come by:

(9) the slapped hand

the *touched hand

(10) the accumulated wealth

(11) the dissipated energy

(12) the animated cartoons

(13) the forgotton incident

(14) the lacerated body

(15) the mangled limbs

The relevant verb forms in these examples as a rule require animate subjects and the list could grow very long.[3]

The attractiveness of this hypothesis appears to be enhanced by the fact that it will also account for certain cases in which intransitive verbs are involved:

(16) the escaped convict

(17) the departed soul/cousin

(18) the fallen leader

Similarly the relevant verb forms in these examples do, as a rule, require animate subjects. (The case of the *fallen tree* will be taken up later.)

A simple formulation that can expediently account for both past participles of transitive and intransitive verbs will hold that the preposed participle comes from an active verb in the underlying relative clause. In the Chafian framework, the nouns involved are not subjects and objects but all *patients*; in the Fillmorean framework they are *agents*.

However, it will be seen that the ANIMATENESS CONSTRAINT cannot account for many other cases. Thus in contrast to *the escaped convict*, we note the following:

(19) the *fled convict

(20) the fallen convict tree

Convict is the animate subject of *fled* (which does not permit inanimate subjects) and *tree* is the inanimate subject of *fall*. The fact that (19) is not acceptable but (20) is, contradicts the animateness hypothesis.

Moreover there are members of verb pairs which require animate subjects as a rule but not all members of such verb pairs may become preposed participles.

(21) the discovered body

the $\overset{*}{?}$found body

(22) the acquired skill

the $\overset{*}{?}$learned skill

(23) inherited title

acquired title

*bought title

(24) borrowed lawn mower

*lent lawn mower

$\overset{*}{?}$loaned lawn mower

3. *Phonological Considerations*

A review of the data presented thus far also shows that, with the exception of *given money* (8), participle preposing appears to be correlated with the monosyllabicity status of the derived participle. This can in fact explain why *fled convict* is not acceptable. Moreover, a POLYSYLLABIC CONSTRAINT could contribute to explaining why both *fallen leader* and *fallen tree* are acceptable.

There are other supporting examples:

(25) questioned prisoner

*asked prisoner

(26) invited stranger

*asked stanger

(26a) conquered mountain

*climbed mountain

(26b) acquired skill

*learned skill

?

(we will come to *learnéd man* later)

(27) *sold book

unsold book

(28) *met visitor

personally met visitor

(29) *read books

unread books

(30) *led troopers

encouraged troopers

(31) *told story

untold story

(32) *bought book

recently bought book

(33) *praised leader

much praised leader

(34) *taught man

self-taught man

educated man

There is independent evidence that some kind of a residual polysyllabic (or disyllabic) constraint from an early era is still observed in English today:

(35) *learned man

learnéd man

(36) *sunk treasure

sunken treasure

(37) *(clean) shaved head

(clean) shaven head

(38) *proved truth

proven truth

(39) *cursed Caine

curséd Caine

(40) *blessed event

blesséd event

Note that in Modern English the monosyllabic form is expected in the underlying relative clause of these examples:

35a the man who has learned (*learnéd) much ...

36a the treasure which the pirates had *sunk* (*sunken) into the sea

37a the man whose head the barber has shaved (*shaven) clean

38a we hold this to be truth that has been proved (? proven)

39a Caine whom God has cursed (*curséd)

40a this event which God has blessed (*blesséd)

There is still a tendency among older speakers (and in British English) to speak of a *drunken driver* rather than a *drunk driver*, *belovéd father* rather than *beloved father*, *markéd improvement* rather than *marked improvement*.

Still other evidence: *nakéd; wickéd;* (two)-*leggéd;* advised vs. *advisédly;* professed vs. *professedly;* alleged vs. *allegedly;* assured vs. *assuredly;* shame-faced vs. *shame-facedly*. The question is raised here whether the maintenance of this trend might have something to do with a related but limited process in present-day English: (ə) epenthesis in derived homorganic clusters. (e.g. hatéd, floodéd, passed; busés, taxés, fates; messés, kissés, hates.[4]

However, this constraint by itself also cannot account for many cases. We have noted in (8) that *donated money* and *given fact* are both acceptable but not **given money*. Even though in both cases *given* is disyllabic. The underlying constraints are more complex than so far suggested.

Let us review our findings thus far in terms of the following examples (more specific justifications for each group will be given at the end). We shall first show that either hypothesis is sufficient to account for some facts and then show that neither is sufficient to account for all the facts.

The question is raised here whether the maintenance of this trend might have something to do with a related but limited process in present-day English:

	Conforms to Animateness Hypothesis	Conforms to Polysyllabicity Hypothesis	Actual Acceptability	
(41)	yes	no	no	fled convict
(42)	yes	no	no	climbed mountain
(43)	yes	no	no	led troops
(44)	yes	no	no	sold magazine
(45)	yes	no	no	met visitor
(46)	yes	no	no	read book
(47)	yes	no	no	seen adulterer
(48)	yes	no	no	smelled food
(49)	yes	no	no	heard concert
(50)	yes	no	no	viewed reality
(51)	yes	no	no	learned skill
(53)	no	yes	no	given money
(54)	no	yes	no	produced hazard
(55)	no	yes	no	surpassed record
(56)	no	yes	no	demanded pay-rise
(57)	no	yes	no	required attention
(58)	no	yes	no	necessitated imposition (of rationing)

In relationship to (56), (57) and (58) note that we could say:

56a Rising *crime rates demand* action on the part of the police.

57a Their *proposal requires* careful study.

58a The *embargo necessitated* the immediate imposition of rationing.

In the last case the alternative surface forms can be *made necessary* (for 58a) and *necessary* (for 58).

	Conforms to Animateness Hypothesis	Conforms to Polysyllabicity Hypothesis	Actual Acceptability	
(59)	yes	no	yes	checked parcel
(60)	yes	no	yes	trained mechanic
(61)	yes	no	yes	peeled orange
(62)	yes	no	yes	fried chicken
(63)	yes	no	yes	baked potato
(64)	yes	no	yes	pooled resources
(65)	yes	no	yes	polled opinion
(67)	no	yes	yes	scandalized capitol (Watergate)
(68)	no	yes	yes	forgotton incident
(69)	no	yes	yes	given truth
(70)	no	yes	yes	captivated audience
(71)	no	yes	yes	conquered mountain
(72)	no	yes	yes	transformed personality
(73)	no	yes	yes	poisoned drink
(74)	no	yes	yes	illuminated street
(75)	no	yes	yes	heated water
(76)	no	yes	yes	escaped convict

Note that the following sentences are acceptable and they justify our assignment of 'no' for column 1:

68a We believe that *death forgets* no one and it will come to all of us. (no personification)

70a The falling *meteor captivated his fantasy*.

71a We believe that *hate* will *conquer* everything.

72a That unfortunate *incident transformed* him into a cynic.

73a The *lactin* secreted by the plant will *poison* any living soul.

74a The *full* moon *illuminated* the deserted streets below.

75a The *fire* in the fireplace will be good enough to *heat* this room for a while.

76a The excess *steam* will *escape* through the safety valve.

It is of some interest to note that while we could say that the sun *warms* (up) the water and Martha *warms (up)* the soup (i.e. *up* is optional) it is preferable to say the *warmed up soup* (over the *warmed soup*). This suggests that the Disyllabicity constraint perhaps rates **higher** than the Animateness constraint. However, the example of *given truth* and **given money* militate against this ranking. Let us consider still other cases:

	Conforms to Animateness Hypothesis	Conforms to Polysyllabicity Hypothesis	Actual Acceptability	
(77)	yes	yes	yes	mangled body
(78)	yes	yes	yes	lacerated body
(79)	yes	yes	yes	learnéd man
(80)	yes	yes	yes	scratched surface
(81)	yes	yes	yes	unclimbed mountain
(82)	yes	yes	yes	desired pay-rates
(83)	yes	yes	yes	transposed score
(84)	yes	yes	yes	captured bandit
(85)	yes	yes	yes	(his) personally led troops
(86)	yes	yes	yes	unsold goods
(87)	yes	yes	yes	unseen passage
(88)	yes	yes	yes	much applauded instructor

For the purpose of this presentation I shall assume that 'human controlled' machines fulfill the Animateness criteria. Thus we could say:

80a My *car has just scratched* yours.

81a *Tanks* are *climbing* the mountain.

One could probably argue that these can be good candidates for analysis as instrumentals, but note that we can also have:

80c John's car had defective hand brakes and rolled down the hill, though luckily no damage was done, except Bill's car was scratched by John's.

Note also that while **led troops, *seen passages* are not acceptable, as we have noted before, *personally led troops, unsold books, unseen passage,* which meet the Polysyllabicity constraint, are acceptable. This again appears to justify the Polysyllabicity constraint. However, note that (88) *the much applauded instructor/performer* etc. is much more acceptable than *the applauded instructor/performer etc.*, even though *applauded* is already polysyllabic and meets the Animateness constraint. On the basis of the discussion thus far, we are unable to account for this. Consider further:

	Conforms to Animateness Hypothesis	Conforms to Polysyllabicity Hypothesis	Actual Acceptability	
(89)	no	no	no	caught bandit
(90)	no	no	no	taught mechanic
(91)	no	no	no	killed judge (explosion)
(92)	no	no	no	touched building (fire)
(93)	no	no	no	helped harvest (rain)
(94)	no	no	no	moved rock (explosion)
(95)	no	no	no	saved sailor (passing ship)
(96)	no	no	no	liked friend

Justification for column 1:

89a The *fire caught* him by surprise.

90a The *fire taught* him a lesson.

96a We have often seen how *fate likes* to play tricks on us.

Note that in (95) if *saved sailor* is interpreted in the sense of religious conversion, it will be acceptable. The assumed savior will be animate if not human and $saved_2$ will meet the Animateness constraint. This would mean that the Animateness hypothesis would rank higher than the Polysyllabicity hypothesis because $saved_2$ is monosyllabic.

We have now seen different kinds of evidence. (a) Confirmation that both constraints are justified, (b) conformity to either hypothesis could predict the preposibility of the participle, (c) when both constraints are met there will be participle preposing and when both are not met there will not be, (d) there appears to be some degree of indeterminancy between the ranking of the two constraints.

We will now attempt to show that (c) is not true and that still another constraint must enter into the overall consideration.

Consider the following unacceptable example in which both hypotheses are met:-

	Conforms to Animateness Hypothesis	Conforms to Polysyllabicity Hypothesis	Actual Acceptability	
(97)	yes	yes	no	remembered event (vs. forgotton fiasco)
(98)	yes	yes	no	commanded troops
(99)	yes	yes	no	obtained skill (vs. acquired skill)
(100)	yes	yes	no	instructed pupil (vs. specially instructed pupil)
(101)	yes	yes	no	assisted teacher
(102)	yes	yes	no	captured prisoner
(103)	yes	yes	no	deflorated mother
(104)	yes	yes	no	married widow
(105)	yes	yes	no	widowed child

It may be remembered that here we have assumed possible *personification* (e.g. Death *remembers* no excuse) to be not an exception to the animateness hypothesis. Note that we have

*The *fire remembered* no good will (?)

*The *explosion remembers* no excuse for delay.

*The *explosion* will *murder* everyone there.

but

The *explosion* will *wait* for nobody.

The *explosion* will *kill* everyone in there.

(I assume no marked personification in the last 2 cases).

In contrast to (102) we note that *recaptured prisoner* and *captured bandit* will be acceptable. There is simply too much redundancy in (102) *captured prisoner* (which sometimes happens for effect e.g. *trained specialist*) because prisoners are normally placed in prison and just like (103) *deflorated mother* it is infelicitous. The same goes for (98) and (100). On the other hand, (104) *married widow* and (105) *widowed child* are also infelicitous, but because of *contradictions*.

Note that from: 'The widow whom somebody from Italy finally married', it may be possible to have the *married widow* (in the sense of the *remarried widow*) under special conditions/ relationships between the speaker and hearer. We shall return to cases like this later.

These two kinds of infelicity (based on *redundant information* and on *constradictory information*) are basically tied to the problem of *change of state*. Consider now:

	Conforms to Animateness Hypothesis	Conforms to Polysyllabicity Hypothesis	Actual Acceptability	
(106)	no	no	yes	bruised ankle (by a fall)
(107)	no	no	yes	torn curtain (by wind)
(108)	no	no	yes	cut finger
(109)	no	no	yes	cooked goose
(110)	no	no	yes	carved rock

	Conforms to Animateness Hypothesis	Conforms to Polysyllabicity Hypothesis	Actual Acceptability	
(111)	no	no	yes	shocked husband (by discovering about...)
(112)	no	no	yes	sealed entrance (by avalanche)
(113)	no	no	yes	buried treasure (by flood)
(114)	no	no	yes	burned corpse (by fire)
(115)	no	no	yes	known excuse
(116)	no	no	yes	grown man
(117)	no	no	yes	fixed price

Justification for designations in the first column may be found in the following examples:

108a The flood has *cut* the southern states in two and *it* has brought the number of homeless to two thousand.

110a Over the years the strong offshore wind has carved the limestone cliffs into shapes of varying sizes and *it* will continue to do so.

115a We believe that *death knows* no excuse, for *it* comes to everyone.

117a The *storm* did a good thing for *it* fixed for good my jammed windows in the attic.

(*Death* and *storm* are normally not capitalized and *it* is used rather than *he* or *she*. This would be different in poetry or sometimes even in the colloquial language, as, for example, when a storm or typhoon is given a name.)

The conclusion that may be drawn from these last twenty examples is clear: in these examples the actual outcome of participle preposing is just the opposite of what is predicted by the joint constraints of animateness and polysyllabicity. While we have seen justification for both constraints, it is now clear that we must look for yet another, if not others.

We should note from the outset that these two constraints basically involve inherent features of the verb which may change over time. Thus verbs can be divided between two classes: those requiring animate subjects and those which do not. This is an inherent feature, but class membership may change with time, or selection restrictions may be violated under poetic license for the purpose of communicative virtuosity.[5]

On the other hand, at the phonological level, verbs can be divided between monosyllabic and polysyllabic verbs. This is also an inherent feature and morphological derivations or language change may alter this classification for individual items. The discussion thus far shows that animateness and monosyllabicity are more marked than other features, which may be supported by independent evidence.

Returning to the immediate need of accounting for examples (97) to (117) we note that for the last group the proposition of the semantic constraint of *change in state* is well justified. Thus *bruising, tearing, cutting, cooking, carving, sealing, burying, burning,* all imply CHANGE OF STATE on the part of the object (i.e. *patient* in Chafian terms). In most of these cases the change in state is irreversible, but the most important feature is the change in state being focused on by the participial form. Similarly a *shocked husband* and a *grown man* have undergone changes in stage, in the former perhaps temporary, but in the latter the reference is also to a terminal state. A *known excuse* is in a state different from when it was unknown and a *fixed price* is different from a previous unknown state. In these examples new information has been felicitously provided.

In our discussion of examples (97) and (105) we have noted that when the felicity condition is not met no change of state or new information is provided. In the case of (102), prisoners are presumed to be incarcerated just as bandits are presumed to be at large. Thus *recaptured prisoner* implies change in state, just as *captured bandits* implies change in state. It is of some interest to note that there is a difference in degree between these last two examples. *Recaptured prisoner* implies (1) escaped from confinement, and (2) subsequent recapture. There is a total of two implied changes in state. In the case of *captured bandit* one infers only one change in state. Thus it would be possible to speak of degrees of change in state. Let me elaborate on the analysis of multiple changes in state by giving some additional examples:

	Change in State By Degree	Example
(118)	0	* the captured prisoner
(119)	0	* the instructed pupil
(120)	0	* the married widow
(120a)	0/1?	* the divorced widow

	Change in State By Degree	Example
(121)	1	the escaped prisoner
(122)	1	the divorced wife/mother/father
(123)	1	the captured bandit
(124)	1	the imprisoned lawyer
(125)	2	the escaped bandit
(126)	2	the recaptured prisoner
(127)	2	the remarried widower
(128)	2	the divorced woman
(129)	2	the remarried mother
(130)	2	the remarried woman
(131)	3	the recaptured (escaped) bandit
(132)	3	the thrice divorced mother
(133)	3	the thrice imprisoned lawyer
(134)	4	*?the escaped recaptured bandit
(135)	4	??the four-time divorced mother
(136)	4	??the four-time imprisoned lawyer
(137)	4	the four-time loser
(138)		the ten-time winner

The *divorced widow* represents an instance of infelicitous contradiction. The case of infelicitous redundancy found in *instructed pupil* parallels that of *captured prisoner*, but as was noted previously such forms might be found in actual use for the purpose of effect. The generally accepted case of *trained specialist* is such an example. In certain cultures in which a widow is considered to be a *married* woman without a living husband, (120) could be unacceptable. In those other cultures in which a widow is considered 'unmarried' i.e. 'single' then (120) will be a case of infelicitous contradiction except in the special sense

of a 'married individual'. In Italy, where the influence of the Catholic Church is very strong, or in the Orient, the former is probably true but in the present-day U.S. the latter is probably true.

There is evidence that an upper bound exists in language with respect to the number of changes in state that could be compactly codified into the participial form. Note that (134) the **escaped recaptured bandit* has questionable acceptability and there is a fourth degree change in state. On the other hand, (131) the *recaptured (escaped) bandit* is acceptable and it indicates a third degree change in state. This coincides with the fact that numerative adverbs only go up to *thrice* in English, and (135) the *four-time divorced mother* is not as acceptable as the *mother who was divorced four times*[6] just as (136) *the four-time imprisoned lawyer* is less preferable than *the lawyer who was imprisoned four times.*

From this evidence, it would be possible to postulate what might be called *cognate states*[7] on the basis of which deviations from normalcy or changes in state may be described. Thus in the interpretation that a widow has the cognate state of 'not-married', (120) will be unacceptable in the same way that *married bachelor* (or *married spinster*) is unacceptable. Similarly the *cognate state* to motherhood is assumed to be *married* but the *cognate state* to *womanhood* is *single.* Hence a *divorced woman* indicates second degree change and *remarried woman* third degree change but *remarried mother* indicates only a second degree change even if the individuals in question are the same individual.[8]

The nature of *change of state* could be further differentiated between DYNAMIC and STATIC changes in state. The more commonly understood notion of change in state implies dynamic change in state. Thus *broken* mirror, *melted* ice, *fallen* tree, *bruised* ankle, *torn* curtain, *cut* finger, *cooked* goose, *carved* rock, *shocked* husband, *burned* corpse, *grown* man, *conquered* mountain, *escaped* bandit, *recaptured* prisoner etc. indicate results of dynamic changes in state. The general trend in these cases involve terminal changes resulting from dynamic deviations from the cognate or normal states.

On the other hand there are non-dynamic changes in state which concern cases of *static deviations* from expected or normal states (cognate states). Thus **one headed snake* is unacceptable, because the expected or normal state (i.e. cognate state) of snake includes the attribute of 'one-headness'. It is infelicitous to speak of a **one-headed* snake *except* in contrast to *two-headed* snakes, which represents a case of deviation from normalcy. Such deviations from normalcy are static changes in state and represent no conceivable results of dynamic changes: one assumes that such snakes were born with two heads even though it is possible but improbable to have a case of dynamic change resulting from an additional head transplanted by some hypothetical skilful surgeon. Except for the mythical hydra and the Hindu demon Ravana,

the universal cognate state of all animals includes the attribute of one-headness. The exceptional case of the *seven-headed hydra* represents neither dynamic nor static change in state. It is purely descriptive through implied deviation from the universal cognate state of all members of the animal kingdom. This parallels the case of *two-legged* animals vs. *four-legged* animals, for the cognate state of animals includes a variable attribute of *either* two-legged *or* four-legged. The specification of either two-leggedness or four-leggedness points to no deviation from normalcy but only provides descriptive information about which of two kinds of animals is being discussed. On the other hand, to speak of a *two-legged man* is being infelicitous (except, perhaps, in contrast to four-legged animals) and *three-legged dog* (or three-legged animal) implies deviation from normalcy.

There is indication that an implicational relationship exists between dynamic and static changes in state: dynamic changes in state usually imply static changes (i.e. deviation from normalcy) but the reverse is not true. Thus dynamic change in state exemplified by *broken* mirror, *melted* ice, *fallen* tree, *bruised* ankle, *torn* curtain, *cut* finger, *burned* corpse etc. also implies static change in state or deviation from normalcy. On the other hand it is less clear if *cooked* goose or *grown* man also implies deviation from normalcy in the same way deviation is found in the above examples. We have also noted that examples such as *two-headed* snake or *three-legged* dog are instances of deviation from normalcy but there is no clear implication of dynamic changes in state.

In addition to the examples discussed in the two preceding paragraphs we note still others. Thus speaking of a *divorced bachelor* (in contrast to *confirmed* bachelor) could be felicitous and implies deviation from normalcy *only* if it entails a prior second degree dynamic change in state i.e. the individual's bachelorhood comes as a result of (marriage and) divorce. But *married bachelor* is contradictory and infelicitous because the implied dynamic change in state would lead to such *extreme* deviation from normalcy that is infelicitious (i.e. a contradiction in terms). The two possible interpretations for *married widow* discussed earlier point to the same relationship between dynamic and static changes in state.[9] Similarly, *captured bandit* reflects both dynamic change in state and the resultant deviation from normalcy (i.e. static change in state) and is felicitous and acceptable. However, the acceptability of *captured prisoner* drops immensely because it implies neither dynamic nor static change in state.

In (98) *command troops*, a cognate state of troops is "being commanded by some (indefinite) officer", hence there is neither dynamic nor static change in state and the felicity condition is not fulfilled. On the other hand (the general's) *personally commanded troops* brings to mind a clearer picture of the nature of troop command and it reveals that there is a static change in state with regard to this specific group of soldiers who are presumably not expected to be personally commanded in the field by the general. Similarly in contrast

to (100), specially instructed pupils indicates a static change in static in that this particular group of students under discussion was *not* expected to be specially instructed. In parallel fashion, *unassisted teacher* is acceptable and is in marked contrast to (101) **assisted teacher*. The static change indicated is that of deviation from the expected state of teachers receiving (perhaps clerical or instructional) assistance, which is assumed to be a cognate state to *teacher*. Note that if assistance is *financial*, (101) will be acceptable because a cognate state to teacherhood is regular salary *without* additional financial assistance. Hence the (financially) *assisted teacher* indicates a static change from this cognate state. Similarly the (financially) *unassisted teacher* also indicates a possible second degree change in state in that the individual concerned did *not* obtain financial assistance which may be a *new* cognate state with respect to financial assistance.

(99) *obtained skill* in contrast to *acquired skill*, which is acceptable, shows a difference in the cognate states of the two verbs. When something is *acquired* it is for keeps (at least intentionally) but one *obtains* something not necessarily for keeps. Thus one *obtains* (not **acquires*) an automobile for use on a weekend but one *acquires* (not **obtains*) an automobile for good.

Qualitatively this is also evidence for classifying different kinds of change in state. First, examples (106) to (110), (112) to (116) indicate changes to *physical states*, which is probably most common. Second, there could be changes in the *psycho-emotional state*. Consider the following groups of examples:

Group I (SOCS)	Group II (OOCS)
the hated brother	the shocked husband
the trusted friend	the disappointed thief
the beloved leader	the scandalized gentleman
the forgiven sinner	the persuaded father
the desired mate	the worried mother
the disliked teacher	the excited wife
the forgotten friend	the pleased teacher
the much feared uncle	the rejected suitor

In group I, it is the (understood) underlying subject of the verb that undergoes the primary change in state whereas in Group II (like those discussed under changes in physical state) it is the underlying object of the verb that undergoes the *only* change in state. Thus in Group I *hating* is not done by the *brother*, *trust* is bestowed on the *friend* (though he may not be necessarily deserving it) *love* is likewise bestowed on the *leader*, and *forgiveness* on the *sinner* (who may not be a forgiving person). The criterion by which *desirability* is gauged rests not with the identified *mate* but with the unidentified one, *dislike* is for the *teacher*, not by the teacher, and both *forgetting* and *fearing* are not carried out by *friend* and *uncle* respectively. In short the primary psychological and emotional burden is borne by an unidentified underlying subject. On the other hand, in Group II, the primary psychological and emotional burden of *shock*, *disappointment*, *scandal*, *worry*, *excitment*, *pleasure* and *rejection* is respectively borne in a straighforward manner by *husband*, *thief*, *gentleman*, *mother*, *wife*, *teacher* and *suitor*, which are underlying as well as surface objects. For the purpose of this paper, we shall consider the first kind *Subject Oriented Change in State* (SOCS for short) and the second kind *Object Oriented Change in State* (OOCS for short), which includes verbs relating to physical changes in state.

We have established now that both SOCS verbs and OOCS verbs can participate in the participle preposing construction which is conditioned (perhaps not exclusively) by the semantic constraint of change in state. Some data from cross-linguistic comparison may be in order here. In Chinese the semantic constraint of change in state also correlates with certain syntactic constructions.[10] It is interesting to note that with a few exceptions, only OOCS verbs in Chinese may participate in the Disposal Construction, which may be seen as an object preposing construction. The most basic of these is the Disposal/Executive/Causative Construction. It can be simply described as changing the basic SVO order to that of SOV by inserting BA before the object:

SUBJECT BA-OBJECT VERB

Simple OOCS verbs such as *da* 打 'to hit', *ma* 罵 'to scold' and *pian* 騙 'to cheat' can undergo BA-Preposing:

139(a) 張 三 打 了李四
Zhang San da-le L.S.
Z.S. hit-completive L.S.
"Z.S. hit L.S."

(b) 張 三 把李四 打 了
Zhang San BA L.S. da-le
Z.S. BA L.S. hit-completive
"Z.S. hit L.S."

張三罵了李四

140(a) Z.S. ma-le L.S.

"Z.S. scolded L.S."

張三把李四罵了

(b) Z.S. BA L.S. ma-le

"Z.S. scolded L.S."

張三 騙 了李四

141(a) Z.S. pian-le L.S.

"Z.S. cheated L.S."

張三把李四 騙 了

(b) Z.S. BA L.S. pian-le.

"Z.S. cheated L.S."

On the other hand simple SOCS verbs in Chinese such as *hen* 'to hate', *ai* 'to love, *xiangxin* 'to trust', and *pa* 'to fear' cannot undergo BA-preposing:[11]

張三 恨 了李四

142(a) Z.S. hen-le L.S.

"Z.S. hated L.S."

* 張三 把李四 恨 了

(b) *Z.S. BA L.S. hen-le

"Z.S. hated L.S."

張三愛了李四

143(a) Z.S. ai-le L.S.

"Z.S. loved L.S."

* 張三 把李四愛了

(b) *Z.S. BA L.S. ai-le.

"Z.S. loved L.S."

張三 相 信 了李四

144(a) Z.S. xiangxin-le L.S.

"Z.S. trusted L.Z."

* 張三 把李四 相 信 了

(b) *Z.S. BA L.S. xiangxin-le.

"Z.S. trusted L.S."

張三怕了李四

145(a) Z.S. pa-le L.S.

"Z.S. feared L.S."

*張三 把李四怕了

(b) *Z.S. BA L.S. pa-le.

"Z.S. feared L.S."

By comparison with English it would appear that *change in state* also plays a part in a preposing construction in Chinese, albeit a different kind of (Nominal) preposing construction. Furthermore, the more precise constraint in Chinese would be *Object Oriented Change in State.* This cross-linguistic comparison shows that the two 'movement rules' in English and Chinese entail, among other things, a semantic load, and it lends support to the functional approach to syntax.

Returning to other longitudinal dimensions of change in state, we recognise a third possible change in *moral state.* Hence the change in state in *saved*$_2$ *sailor* in the sense of the converted sailor (but not in the sense of 'rescued sailor') and the interpretation of *fallen woman* are to be sought more in the realm of morality than physical displacement or changes. Similarly, *fallen men* may be odd on first hearing to most speakers because *fallen* has been dominated by moral interpretation and in the male dominated world such an interpretation is rather infelicitous. Thus by extension the *fallen leader* is interpreted only with respect to *his* (leaders are usually male) well-being. If we should continue to explore this along the lines of cultural-psychology we could note other interesting examples that have yet to be interpreted: the *disgraced sinner,* the *(?) *shamed child,* the **sinned woman,* etc.

There are other manifestations of change in state. We shall for the purpose of this paper summarise them as a fourth kind of change in the *state of well-being.* Previously discussed examples that fall within this group are: the *unassisted teacher,* the *rescued sailor,* the *relocated rock,* the *captured villain,* the *dissipated energy,* the *escaped convict,* the *departed soul,* the *fallen leader,* the *borrowed lawn mower,* the *conquered mountain* (**climbed mountain* is not acceptable because there is no change to its well-being), the *unsold goods,* the *sunken treasures,* (?) the *half-drunk* beer/coke, etc.

4. *Concluding Remarks*

We have explored and sketched the nature of the semantic constraint of change in state. We have also seen that its relevance is justified because it could account for examples such as from

(97) to (117) as well as others in Chinese. It now remains to be seen whether this constraint alone can account for all cases.

There is some indication that this is not the case:

	Conforms to Animateness Hypothesis	Confirms to Polysyl-labicity Hypothesis	Conforms Change in State Hypothesis	Acceptability
(146)	no	no	yes	no killed judge
(147)	no	yes	no	yes given fact
(148)	no	yes	no	yes given truth
(149)	yes	no	yes	no seen adulterer
(150)	no	yes	yes	no given money
(151)	yes	no	no(?)	yes drawn line

(146) establishes that either the animateness constraint or the polysyllabicity constraint is in operation. (147), (148) and (149) indicate that the polysyllabic constraint is in evidence. Note that according to the present analysis of change in state *fact* or *truth* remains the same whether it is 'given' (i.e. known) or not, and *give* may take an inanimate subject: *Thunderstorms* always *give* me headaches. (150) and (151) indicate that the animateness constraint is in evidence.

It would seem from the summary examples above that all three kinds of constraints (syntactic, phonological, and semantic) are necessary to account for the phenomenon of participle preposing in English. We have also seen that this configuration of constraints is manifested hierarchically, but the optimal hierarchy cannot be established easily. Some of the foregoing examples indicate a problem of indeterminancy with respect to this hierarchy. Much more exploration remains to be done, especially that concerning the exact nature of change in state, before this problem could be resolved. We note that the phonological constraint is concerned with a residual and receding phonological feature and we suspect in this case that inherent features involving syntax and phonology will rank higher than those of semantics, which have become much more pervasive. Our cross-linguistic comparison between English and Chinese indicates that the syntactic and phonological constraints noted here are more deeply anchored in the grammar than the relational semantic feature of change in state.

Subject to evidence to the contrary, we hypothesize that historically in English, Dynamic Change in State predates the rise of Static Change in State as a contributing factor to the preposability of participles. The change in state took on an expanded range to include lateral i.e., static change in state.

There are also other remaining problems concerning the relationship between adjective and past participle,[12] as well as present participle (which has not been dealt with here). Thus a *filled (emptied)* bottle is obligatorily a *full (empty)* bottle (how about a *half-emptied* or *half-empty* bottle?). A *fattened* lamb is a *fat* lamb but a *murdered* judge remains a *murdered* judge even though its terminal state may be captured by *a dead judge* which is not synonymous with the former. A *captive* audience is not a *captivated* audience and neither reflects the state of affairs seen in the terminal cognate state presented by *captive*. The relationship of noun, adjective and verb in the framework of modification continues to pose many challenges to those interested in grammar.

Footnotes

1. This is a revised version of an earlier paper given in seminars at the University of California, San Diego and other universities in the U.S., Europe, S.E. Asia and Australia. The author is grateful for comments by, among others, Y.S. Kuroda, R. Langacker, W. Chafe, W. Wang, S. Dik and R. Dixon. He alone, of course, assumes responsibility for the content of the paper.

2. It should be pointed out that under emphasis or direct contrast many of the asterisked examples may in fact occur.

3. There is the question of extreme poetic license such as: *death forgets no one*, which after all, involves mainly *personification*. We shall not go into this question beyond noting that what might constitute constraints on personification is a separate but not easy problem.

4. (ə) espenthesis is a phonetically motivated rule. But in the other instances the additional syllable at the end of the word conforms to the phonotactic requirement of polysyllabicity. Such phonotactic requirements are found in the Indo-European languages and there is a long history of precedents. *naked* and *wicked* appear to be past participles and are used exclusively as adjectives in present-day English. (No back formation is possible for the examples.) According to Partridge and the Oxford English Dictionary, these two words go back to verb stems whose participial forms become fossilized adjectives in Old English and Middle English respectively. These participles have remained as *disyllabic* forms to this day.

   The Augment attested in Indo-Iranian, Armenian, and Greek is a good example. In ancient Armenian,

   > "the augment affixed to all consonant-initial verb forms which, if not for this addition, would be monosyllables, e.g., eber 'he bore' = Gr.ἔφερε Skr. abharat, in contrast to beri 'I bore'; etu 'I gave', in contrast to tuakh 'we gave'. Since the monosyllabism of such a form as Arm. *ber or ac 'he led' is due to peculiarly Armenian fall of the final vowel, this rule indirectly attests the optional character of the augment in prehistoric Armenian, i.e., a state of the language comparable with that actually presented by Vedic and Homeric Greek...
   >
   > The augment has survived for a very long time in each of the three languages in which it appears. Modern Greek still uses it regularly, despite the frequent fall of initial vowels that is so characteristic of this language. As much on its way toward disappearance as it may have been at the relatively late date of its attestation, Armenian did make regular use of the augment under the conditions already indicated, and if, by the Middle Ages, the language no longer possessed it, it is because Armenian gradually eliminated the forms in which the augment appeared, and achieved polysyllabism in all persons of the aorist in new ways. In India, the augment has always endured

as long as the imperfect and aorist forms normally taking it; Pali and the Prakrits still have it. As for Iranian, the loss of the augment - naturally brought about by the substitution of participial forms for the personal forms - goes as far back as Pahlavi; yet in Yaghnobi, a remote dialect in which, exceptionally, the aorist has survived, the augment has also survived to the present day. Despite its formerly optional and subsidiary character, the augment is, then a stable element in the three groups of Indo-European languages possessing it.

It is therefore very significant that the augment is not found in any of the other Indo-European languages.

Since the augment is never a basic and necessary element of the verb form (or, at least, was not necessary until it became so in the course of the development of Sanskrit, Old Persian, Greek, and Armenian), there is no cause for surprise at this complete absence from a vast continuous area.

This absence is not due to any relatively recent fall. On the one hand, even under conditions leading us, on the basis of Indo-Iranian, Greek, and Armenian, to expect some trace of the augment, there is nothing of the kind in the languages in question, even in isolated form. On the other hand, the absence of the augment determined, or helped to determine, the development of verb forms." (emphasis mine, B.K.T.)

(Meillet, A.: The Indo-European Dialects (1980). transl. by S.H. Rosenberg, University of Alabama Press, 1967. pp. 125-217)

5. See for example T'sou 1968.

6. Note that (137) *the four-time loser* and (138) *the ten-time winner*, for example, do not contain participial forms.

7. The choice of such a term is linked to the traditional notion of *cognate objects* such as "to dream *dreams*".

8. In the case of *thrice married woman* there can be some uncertainty as to whether fourth degree or sixth degree is indicated. When three marriages for a single individual is referred to, the obvious reading is that of three changes in state plus the return to single status. It bears emphasizing that if the magnitude of changes in state is lower it is unlikely for there to be disagreement. This observation shows that there is a loosely defined but fixed range for change in state.

9. It is sometimes possible to exploit the latitude within which such extreme deviations may be granted. In certain cultures in which one of the attributes of bachelorhood is free associations with members of the opposite sex, it is possible to interpret *married bachelor* as a married male who *still* behaves like a bachelor. In a similar way it may be possible to interpret *married widow* along the lines of *football widow*.

10. There is a great deal of literature on this topic. See for example, Thompson (1973) and T'sou (1972).

11. The only notable exception is *wang* "forget", which is an instance of SOCS, for it can undergo BA-Preposing:

(a) 張 三 忘 了李四
Zhangsan wang-le Lisi.
"Z.S. has forgotten L.S."

(b) 張三 把李四 忘 了
Z.S. BA L.S. wang-le
"Z.S. has forgetton L.S."

At this point one could offer a speculative comment on a fundamental difference between English and Chinese. That the semantic distinction between SOCS and OOCS is significant in Chinese syntax but not in English syntax could reflect a deep cultural difference. The long history of ingrained Confucian ethics preaches denial of surface manifestation of subject oriented emotion whereas this is not the case of the Western tradition of Platonic ethics. That the verb *wang* 'forget' violates this could be construed as an artificial attempt to associate the cognate state of 'forget' with object oriented change in state, which is indeed the true purpose of 'forgetting'. But this is basically a speculative comment on metaphysics!

12. We have earlier pointed out on the basis of intransitive verbs that consideration of passification is not necessary.

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SKYSCRAPER. SKYSCRAPER. SKYSCRAPER : SOME NEW PERSPECTIVES ON MONITORING AND THE LANGUAGE LEARNER.

G.D. Low and D.M. Morrison

1. *Introduction*

It has long been recognised that internal psychological states and processes as well as broad social factors are important dimensions of language learning. Recently, however, researchers in both first and second language acquisition have begun to take an interest in low-level social and social-psychological processes in the context of dyadic and small group interaction. The result has been a series of articles examining the nature of the input to the learner and the way in which the learner interacts with his/her interlocutors (e.g. Hatch 1976, 1978; Snow and Ferguson 1977; the references in Bruner 1978). It is now clear that any adequate model or set of models of language learning needs to encompass complex interactions of variables not only internal to but also between individuals. Moreover, it is precisely this sort of model that would seem to be potentially the most useful to the classroom language teacher.

Several recent articles have put forward global models of the language learning process from the viewpoint of the isolated individual learner (Bialystok and Fröhlich 1977; Naiman, Fröhlich, Stern and Todesco 1978; Bialystok 1978). In each of these studies three conscious learning strategies are isolated and held to be discrete, presumably non-overlapping entities: practising, monitoring and inferencing. In the present paper we would like to take a closer look at two of these strategies, inferencing and (especially) monitoring, primarily as they relate to models of the learner's production and reception systems. Using the available literature, introspection, and a small sample of a larger body of data collected from language learners at the University of Hong Kong, we have attempted to specify a number of important considerations which an adequate model of the language learning process must account for. After putting forward a number of speculations concerning the relationship between monitoring, inferencing, and successful language acquisition, we conclude with some suggested directions for further research.

This paper constitutes the first progress report of the University of Hong Kong Language Centre Project on Language Learning and Small Group Interaction. We would like to thank Phinney Morrison for her help in constructing the original version of the flow chart which appears as Figure 2.

2. *'Monitor Theory'*

Almost all recent studies of second-language learning which consider monitoring, including the three just cited, accept the model of "adult post-critical learning" developed by Krashen and his associates (eg. Krashen 1977, 1978, 1979; Krashen, Butler, Birnbaum and Robertson 1978; Stafford and Covitt 1978), otherwise known as the 'Monitor Theory'. We therefore begin by examining Monitor Theory in some detail. This model is based on a central distinction between acquisition and learning. The argument is that adult language learners have access to two separate systems: an acquired system employing unconsciously applied internalised rules, and a separate system of consciously applied grammatical rules such as those taught by language teachers. This latter set of rules is available to the adult learner in the form of a 'Monitor', a hypothetical internal component which can alter utterances produced by the acquired system, but only under certain conditions. These are that (a) the user has sufficient time to apply the monitor and (b) the user is "focused on form", that is to say, concerned about the well-formedness of the utterance (Krashen et al. 1978). Monitor use is thus to be equated with the successful implementation of pedagogical rules presented by the teacher or read in grammar books. Figure 1 is similar to Krashen's (1977) illustration of the model.

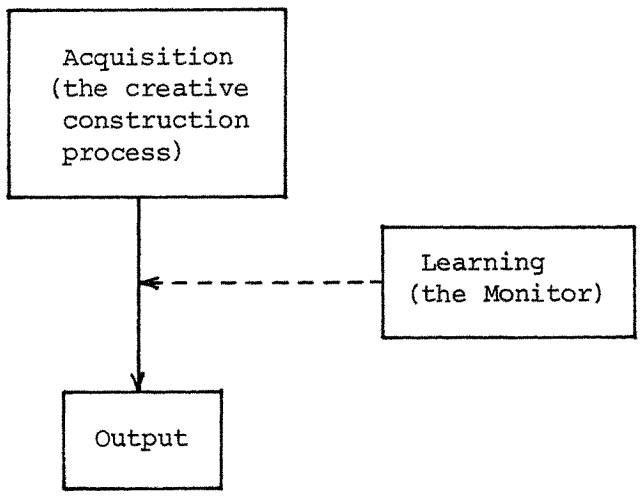

Figure 1. Krashen's Monitor Model

Evidence put forward as suggesting the existence of a Monitor stems primarily from two sources: studies of the difficulty (or more strictly, accuracy) order of some grammatical morphemes, and interviews with adult second-language learners. Krashen (1977) cites a number of difficulty-order studies which concluded that, when measured under conditions that would appear to discourage Monitor use (eg. natural, informal conversation),

adults learning English as a second language will tend to acquire grammatical morphemes in essentially the same order as do native-speaking children. Under conditions that would appear to encourage use of the Monitor (e.g. written tests), adults show a somewhat different difficulty order. For example, relatively fewer errors are made in contexts requiring use of the third-person-singular ending for verbs (Krashen 1977:156), while use of the definite article (viewed as easier to "acquire" than to "learn") falls in rank (Krashen 1979).

Evidence from interviews with second-language learners appears somewhat less conclusive, partly because of the rather small number of subjects involved in the studies. Stafford and Covitt (1978) interviewed only four students. Two seemed not to use any explicit rules at all in either oral or written performance, one attempted to apply such rules but was unsuccessful, and the fourth subject, while revealing some degree of success in monitoring on the basis of explicit rules, appeared also to have been hampered by the effort. In an earlier paper, Krashen and Pon (1975) described the case of a woman who, when presented with an error she had made in casual speech, was able to both correct the error and also cite the relevant rule involved. Her written English, according to Krashen, contained "virtually no errors" (Krashen 1977).

3. *Problems with 'Monitor Theory'*

Although Krashen's 'Monitor Theory' may be seen as a useful contribution to the search for explanatory models of second-language acquisition, it is open to several important criticisms. In the first place, while the model is apparently to be taken as representing both a learning and a performance theory, it fails to give an adequate account of either. The performance model states that utterance assembly is followed by utterance editing, with the product of formal learning being related only to the editing phase. Although it is obvious that any adequate model of real-time performance must allow for learning to take place, the exact nature of the link has yet to be established. Krashen (1977: 155-6) sees such a link in the claim that order of difficulty as measured by learner output at particular points in time is related in a specifiable way to order of acquisition, but a number of studies and reviews have pointed out that cross-sectional investigations can be misleading if applied to longitudinal theories (eg. Cancino and Hakuta 1977; Hakuta 1975). More importantly perhaps, the inventory of items and skills to which pedagogical rules might be usefully applied (the third-person singular, for example) is almost certainly very small in comparison to aspects of language and language use which must be acquired.

The extent to which language users are actually able to apply pedagogical rules even to relatively "simple" aspects of language is also questionable. For example, Seliger (1979) argues that conscious rules play only a superficial role in the performance of human speakers. He presents as evidence a study in which three groups - native speakers of English under the age of ten, bilingual children in the same age group (with home languages such as Armenian, Greek and Russian), and adult ESL learners - were tested for correct use of the allomorphs of the indefinite article (*a/an*), and then asked to verbalize the reasons for their choice. While many of the monolingual children could readily produce the rule relating to consonants and vowels that they had been taught in school, this rule was

not actually reflected in their performance. Learners in the other groups often produced the correct forms but then gave unworkable rules. The basis for the *a/an* distinction was given variously as a distinction between nouns that were animate/inanimate, human/non-human, and edible/inedible! In short, Seliger's finding was that there was no apparent relationship between performance and the ability to verbalize workable grammatical rules for this morpheme. Pedagogical rules may be useful in allowing learners to talk about what they know (or think they know), and may also serve as mnemonic devices for retrieving rarely-used internal rules, but they should not be viewed as comprising "actual output control mechanisms" (Seliger, 1979:369).

Another criticism of the Krashen model is that it is at once too complex and too simple. As Seliger (1979) points out, it is too complex in that it asks us to believe human language users have two completely separate systems, one for acquisition and one for learning, presumably each with its own neurophysiological basis. It is too simple in that it fails to account for reception,[1] and fails also to reflect the complexity of the processes that must certainly be involved. In particular, the 'Monitor Model' is unable to trace the various pathways that an utterance may follow from its initial assembly through to articulation. It is also, as we shall suggest, too restricted, in that it allows the speaker who is "focused on form" to do nothing except apply grammatical rules. Because of its simplicity, the 'Monitor Theory' provides no firm basis for research predictions, and is therefore not really a model at all in any interesting sense.

4. *The Need for an Expanded Theory*

Although we have suggested that Krashen's restricted form of monitoring is of limited interest, this is not to say that monitoring in a more general sense might not play an important role in the acquisition of a second and even the first language. Here is an extract from a discussion between a group of Cantonese-speaking university students who have been learning English for about fourteen years. The topic is 'a close brush with death'.

> *Uh...I...I am nearly...I am...I was...*
> *I was nearly drowned once...in...uh...*
> *in a campsite in Sai Kung. Um... we*
> *were...we were driving some...were...were...*
> *driving canoe...we were...we were canoeing...*
> *we were canoeing on the sea...and somehow...*
> *I...I am on on the same canoe with some*
> *little...little kids. They're very naughty...*
> *and they...and they jumped...and they jumped*
> *down...eh...into the sea...from the canoe.*
> *And somehow the canoe capsized and I...*
> *and I fell into the sea...and I...I cannot*
> *swim (laughter) I can't swim...I...I...I...*
> *I feeled...I felt that I am just sinking...*
> *sinking...(laughs)...and...but...uh... the*
> *feeling is very short...the duration.*

The text highlights a number of points that deserve serious consideration. First, the situation is one of interactive communication in the teacher's absence, and although participants were aware that the conversation was being recorded (by a boom mike suspended well above the group's line of vision), the topic, 'a close brush with death', has been found to relax the monitoring function in native speakers (labov 1970). In other words, in spite of conditions that would presumably discourage use of the Monitor, monitoring in a general sense is very much in evidence.

Secondly, the monitoring process appears as a fundamental aspect of this speaker's production, implemented on the speaker's own initiative, and not based on audience feedback (cf. Vigil and Oller 1976). For example, she changes **feeled* to *felt* because the substandard form somehow produces a negative reaction in her own mind, not because she has been corrected by the teacher.

Thirdly, the sequence *we were driving some ...* → *we were driving canoe* → *we were canoeing* strongly suggests that a speaker who is closely examining his or her words can perform a number of operations, and not just apply grammatical rules. In this instance it does not seem unreasonable to postulate that the speaker has a mental image of people paddling canoes. She chooses (or so we must assume) to describe the action of propelling the canoes forward in a very general way (*driving some ...*), but seems unable to find the word *canoe(s)*. She initiates a lexical search, but by the time the word appears, she has changed the syntax of the sentence, and deleted *some*. The result is that what would have been grammatical if unusual, *driving some canoes*, is now quite obviously grammatically incorrect. The simplest possible explanation is that the speaker has, during the lexical search, changed her description from one of the action of propelling the canoes to one of the more general activity of canoeing. That is to say, the syntactic change reflects conceptual change. In the event, she uses a Chinese-type predicate, *drive canoe*, (cf. Cantonese /jà chē/ 'drive (a) vehicle'). Realising (a) that this is not a permissible form of compounding in English, or (b) that *drive canoe* is not the expression used to denote canoeing, or possibly even (c) that *drive* does not usually collocate with *canoe*, she searches for and finds *canoeing*. Thus it seems that a complex series of mental operations is involved in the progression towards an appropriate, grammatically-correct utterance.[2]

Lastly, in spite of the trial and error approach of producing, checking and then re-producing and re-checking short strings until the speaker is satisfied, there is nevertheless a discernable pattern. The speaker first produces a more general or less marked form: *feeled, am* and possibly *drive (canoe)*, and then alters it by recognising that it is an exception or is to be made more specific in some way: *felt, was, canoeing*. It would be of some interest to know whether this is purely accidental or whether the pattern is at all significant.[3]

Taken together, these observations clearly point to the need for a rather more complex view of monitoring than Krashen and his associates have given us. The fact that monitoring in this case tends to produce editing that is unidirectional, toward the more standard form, also raises the question as to the possible role of monitoring in the acquisition of language. In order to examine this question effectively, we need to develop a more precise definition of what we mean by monitoring.

5. *Towards a Definition of Monitoring*

A major problem in reviewing the literature on linguistic monitoring is that the term means different things to different authors, and sometimes different things to the same author. Krashen, for example, uses the term 'monitoring' in reference to correction of slips of the tongue by native speakers (Krashen 1979: 44), as well as to conscious application of pedagogical rules (application of 'the Monitor') (Krashen 1973: 320). For Laver (1970: 73-74), there are two quite different monitoring functions - monitoring for slips of the tongue, an unconscious and automatic process, and monitoring for the type of error which distorts the communication of the speaker's intentions. For other authors such as Rubin (1975) and Vigil and Oller (1976), monitoring can include the processing of audience feedback. Naiman et al. (1978: 34-41) may possibly include 'attitude to interruption' and 'extent of correcting others' as aspects of monitoring, though this is not entirely clear. Finally, researchers in experimental phonetics tend to see monitoring as relating to neuro-linguistic feedback mechanisms which form part of the control system for the articulatory organs (Dalton and Hardcastle 1977: 15-24).[4]

We can begin by suggesting that we are in practice dealing with different types of monitoring, and so we need first of all to find a set of distinctions which will allow us to isolate the more conscious type of monitoring we are interested in here. It needs to be born in mind throughout the discussion, though, that very little is in fact known for sure about the mechanics of articulatory control. The distinctions we offer below could perhaps be seen as the basis for a taxonomy of monitoring.

(a) *Linguistic Versus Non-Linguistic Monitoring*

We are only interested here in monitoring which involves a specific chunk of speech (or writing). Introspection and observation of our data suggest that there is an upper bound on the length of speech which may be concentrated on while monitoring; it seems to correspond to one, or possibly two, tone groups. We may thus reject as being something different, either 'monitoring for extraneous signals' such as flashes of light or non-speech noises (Cutler and Norris 1979), or 'monitoring a situation or event'. This is important, since it means we are not considering a general monitoring of a conversation - though of course we may still wish to consider situational variables with respect to a specific chunk of language.[5]

(b) *Attention Versus Non-Attention*

Krashen uses selective attention as the major distinguishing feature of monitoring. A speaker who is monitoring is "focused on form". Such a definition is attractive since it leaves open the question of what the speaker actually does with (or to) the words he is concentrating on. It will also distinguish higher level monitoring from very low-level, completely automatic muscular error-correction monitoring (the so-called 'gamma loop' control and possibly the higher compensatory loops found in jaw and lip control by Abbs (1973), Abbs and Netsell (1973) and Folkins and Abbs (1974, 1975)). The main disadvantage of only using attention as a definition is that, once it has been shown that speakers do more than apply grammatical rules to errors in output, the scope of monitoring while focusing on form is very broad. As has just been pointed out, even workers using Krashen's restricted view have different ideas as to what is and what is not involved in monitoring. From a taxonomic point of view, if we only use attention as the criterion, we cannot separate proofreading from other aspects of monitoring, nor can we make any statements at all about slips of the tongue and subliminal monitoring, since it is quite unclear whether the speaker is focused on form or not.

(c) *Awareness and Lack of Awareness*

Krashen consistently talks of 'conscious' monitoring, and presumably justifies this by saying that 'focused attention' implies consciousness. Although the distinction is relevant, it is hard to see awareness as a defining parameter. Although it is true that we are probably never aware of gamma loop control of muscles where this exists[6], it is not true that we are continuously aware of what is going on in our heads even in something as 'conscious' as proof-reading. We may decide to check a phrase or look for a new word and be quite conscious that we have done so, but we are not conscious of and cannot control the actual operation of those processes. With slips of the tongue there is again a mixture of things that are conscious and things that are unconscious. All we can really do is to say that certain types of monitoring involve at a general level a greater degree of awareness than others.

(d) *Observation Versus Control*

Information about any activity is communicated to numerous parts of the brain (Eccles 1977), which may therefore be said to be 'observing' that activity. We can also be said to be observing when simply

concentrating on a chunk of language. Irrespective of whether an error is detected, a speaker can choose whether or not to exercise control over the words and modify them in some way. Taxonomically, this distinguishes higher level monitoring from low-level gamma loop monitoring, where remedial action (control) must necessarily follow if the muscle contraction differs from the control signal. Beyond this, however, the distinction between observation and control does not seem to be a particularly useful one.

(e) *Voluntary Versus Involuntary Decisions*

We can choose to do a number of things with a chunk of language which is being "focused on". We can choose to display it internally any one of a number of times, we can choose to modify it (ie. edit or repair it), check it, accept it or reject it, search for words to complete it, indeed we can even choose whether to concentrate on it at all. Although we are aware of making these decisions, we may be only dimly aware, if we are aware at all, of the processes whereby the commands are carried out. If we use voluntariness rather than awareness as the important distinction, we can recognise that a voluntary decision may well be made on the basis of information (say, an error which has been detected) deriving from unconscious, subliminal monitoring. Taxonomically, gamma loop monitoring is not susceptible to voluntary decisions, other articulatory control systems are voluntarily controllable to a degree (phoneticians spend a considerable amount of time developing this sort of control), and monitoring for slips of the tongue comes midway between automatic and voluntary monitoring. The realisation that something is wrong or inappropriate rises involuntarily into consciousness, often accompanied by the correction, but beyond this point, the speaker can choose whether to repair the utterance or not, and in fact has the same range of possibilities as with voluntary monitoring.

(f) *Pre- and Post-(Production) Monitoring*

This is a distinction that does not generally appear to be made, but which we shall suggest is an important one. It is possible to examine one's words before articulating or producing them (we shall call this 'pre-monitoring) or after articulating them (henceforth called 'post-monitoring). A speaker who is pre-monitoring may, of course, choose not to actually articulate the words, whereas post-monitoring requires an actual linguistic signal. However, this signal may have come from anyone in the conversation, so postmonitoring is rather different from pre-monitoring. Proof-reading, of course, can only involve post-monitoring. Taxonomically, the position with regard to slips of the tongue is not clear. Fromkin (1971) suggests that errors are spotted after being sent but before being articulated. We may assume that decisions about repairing utterances occur after articulation (unless the repairs themselves are pre-planned, as distancing devices (Jefferson 1974) or

	Gamma loop monitoring	Higher level lip control loop*	Slip of tongue/ subliminal monitoring	Voluntary monitoring	Proof-reading
Involves selective attention?	no	no	?	yes	yes
Degree of general awareness	nil	generally minimal	Stage 1: minimal Later Stages: as per voluntary monitoring	varying degrees of awareness	acute awareness for short periods
Voluntary decisions?	no	no	Stage 1: no Later Stages: yes	yes	yes
Observation or control?	control only	both?	both	both	both
Level of operation	phonetic	phonetic	any Slips mainly phonological and morphological	any	not usually phonetic
Point of signal examination	ongoing	ongoing and possibly immed. pre-production	?error spotted pre-articulation. Repaired post-articulation	any	post-production

* Assumed description of loop(s) described in Folkins and Abbs (1974, 1975).

Table 1. Important Distinctions and Parameters in Monitoring

when changing the topic of conversation (Schegloff 1979)). Not very surprisingly, the distinction between pre- and post- production is not really relevant in the description of gamma loop control, which is better described, from a speech point of view, as monitoring an ongoing signal.

(g) *Task Level*

We need to distinguish between the simple fact of concentrating on a chunk of language and the level of analysis at a particular point in time. For example, two speakers can examine the words *You what?*. One speaker may be examining grammaticality while the other is concerned about its appropriateness as a reply to the Prime Minister. Taxonomically, all muscular monitoring is concerned with the phonetic level. Subliminal monitoring relates presumably to all levels, though slips of the tongue appear to involve mainly phonological, morphological and lexical levels. Voluntary monitoring, likewise, relates to all levels. Proofreading would seem to relate less often to the phonetic level, unless one is checking a play or speech. Even in these cases, one is rarely judging the phonetics of the original output signal.

The main features of the above discussion are summarised in Table 1. This scheme seems able to distinguish between voluntary linguistic monitoring and articulatory system control. The distinction between voluntary and subliminal monitoring is perhaps not as clear as one would like, but there appears to be a certain interaction between the two. Proofreading can now be seen as a significantly restricted form of voluntary, linguistic monitoring. This last point would not need making except that some studies have apparently considered proofreading to be an adequate global measure of monitoring (Krashen and Pon 1975; White 1977).

6. *A Partial Model of Monitoring*

Using the above framework as a guide, we may define the scope of our interest as relatively conscious, voluntary linguistic monitoring involving both pre- and post-articulatory points of examination. In fact we shall further restrict ourselves to monitoring speech, rather than written texts, although a large part of the following is applicable to proofreading as well. In an attempt to trace a number of major, or at least observable (if only by introspection) decision paths involved in the voluntary monitoring process, we have constructed a model. This admittedly partial model is built to account for a number of factors involved in monitoring particularly at the levels of syntax and lexis, but also at the level of pragmatics/discourse. Some additions and alterations would be needed for it to account for monitoring with respect to phonetics and a large part of phonology.

The model is shown in Figure 2. We begin (in the top left-hand corner) with the observation that the conscious mind is continuously fed with spurts of language which seem to bubble up, already assembled, from some deeper, subliminal level of cognitive functioning. We assume that these rising chunks or strings represent internal manifestations of what Laver (1970) calls *neurolinguistic programmes*.[7] These programmes are assembled in accordance, or so we assume, with a set of abstract rules and patterns stored somehow or other in long-term memory (LTM).[8]

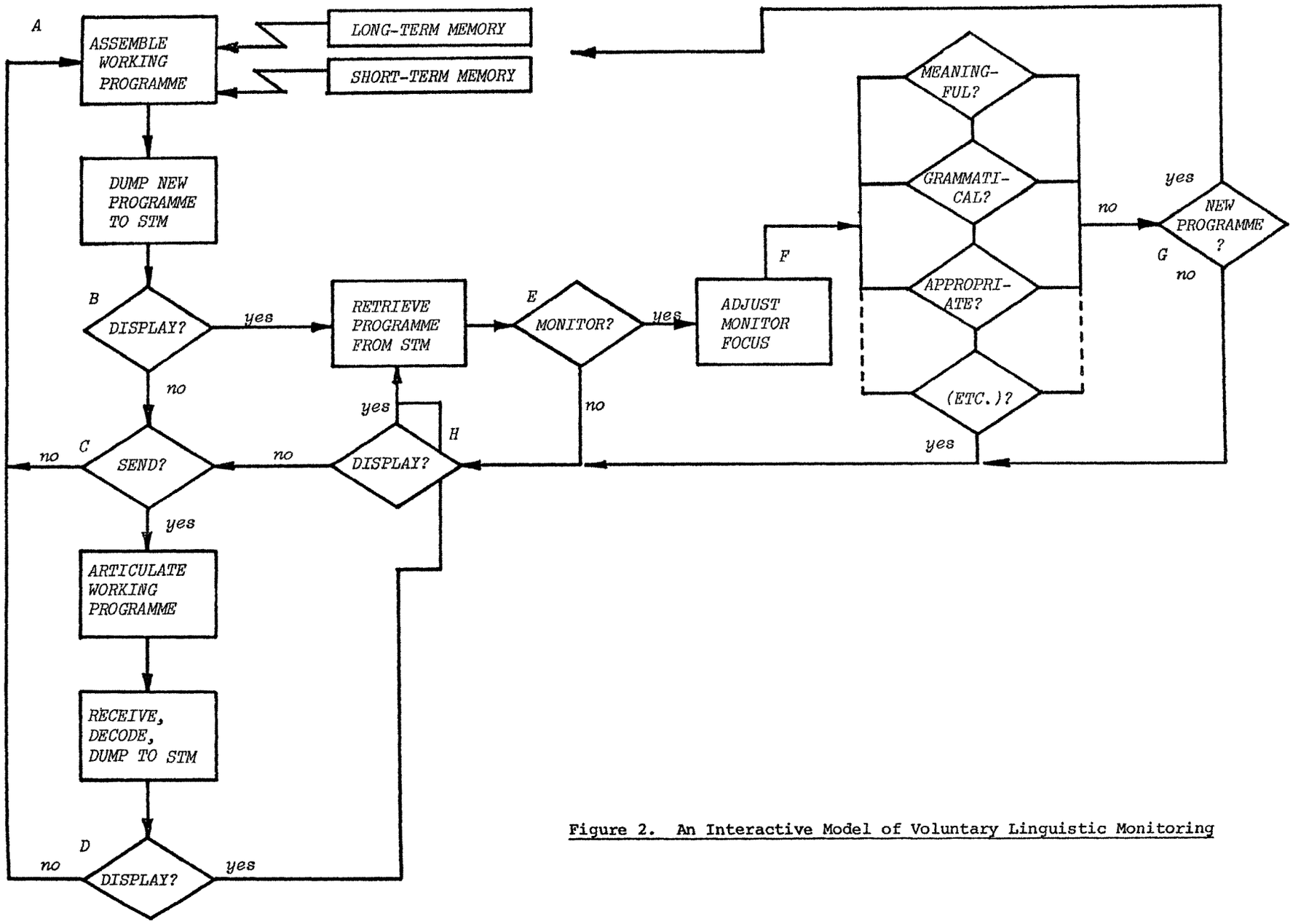

Figure 2. An Interactive Model of Voluntary Linguistic Monitoring

On the evidence of the authors' experience, the assembly process itself is not open to introspection. Often the programme is first manifested to us as a sound image, but graphs can also be present, along with other visual images. The exact point at which the programme becomes conscious is not clear, but, as was explained in Section 5, precise descriptions of awareness are not crucial to the view we are taking of monitoring. Nevertheless, it does seem possible to make two statements about this early stage. The first is that some degree of abstraction appears to exist. The image that rises does not correspond fully with the sound when it is uttered. The same seems to be true, for both authors at any rate, of visual images where these occur. It is extremely hard to be more precise and describe the nature of the abstraction, but again, this is not crucial to the operation of the model. The second statement that we can make is much less vague. It is the fact that by a certain, if difficult to describe, point in the process of emerging, short stretches of language, or programme, can be repeatedly called to mind. As a working hypothesis, we suggest that the emerging programme, or one (possibly two) tone groups of it, is automatically dumped into some shortish form of memory store, perhaps in the area of short term memory which Massaro (1975) has termed *generated abstract memory*. We shall henceforth refer to this as STM.

Having been dumped to STM, emerging programmes may be displayed internally. At this point the programme can, if desired, be checked along any one of a number of parameters, including meaningfulness, grammaticality, appropriateness, lexical accuracy etc., or it can simply be held in display and repeated, without anything being done to it. If a programme *is* compared with an internal pattern and an inconsistency is detected (as when a grammatical string 'feels wrong'), a decision to repair or reprogramme may be made. We suggest this is interpreted to mean that a new, superseding programme may be assembled, possibly drawing on fragments of the old, superseded programme still held in STM. However, the fact that an error is detected does not mean that the programme will necessarily be replaced. A speaker can easily decide that a potential utterance would be totally inappropriate, but choose to go ahead and utter it regardless.

We assume that the repair process involves sending the message back to the cogitating part of the brain and to the assembly process, along with some sort of operational command. We can make a number of hypotheses about one aspect of this. Given the observation that one often searches consciously for a word, we assume that lexical search procedures are under voluntary as well as involuntary control. However, it is often extremely hard to actually find the correct (or a suitable) word, and so we hypothesise that lexical search may be initiated as part of the voluntary monitoring process, but that the result is harder and less effective than involuntary searching. This is important, since it implies that it is possible to actually assemble an utterance voluntarily in one's head. This process can be distinguished from the more usual, automatic assembly in that it is far slower, much harder and involves the speaker in attending to form far more than usual. Having allowed voluntary assembly as a possibility within the model, we are now in a position to account for the fact that a speaker, when unable to find the right word(s) himself, may open the search and assembly processes to the other interlocutors.

Not all emerging programmes are displayed and checked internally. It may happen, for example, that we are relatively unaware of our thoughts, meaning that programmes are allowed to decay from STM without further ado, having been replaced by superseding programmes. Also, as with sudden exclamations, warning shouts, phatic greetings, and emotional denials, programmes can be executed by the articulatory apparatus almost automatically, without our conscious awareness of their passage through the system. Even in these cases, however, we can imagine that a programme could suddenly be halted, as when we are about to disagree vehemently with our interlocutor and then think better of it. In this case our experience is that the sound image of the aborted message can be recalled, this being further intuitive evidence that programmes are subject to an automatic dump to STM before surfacing to consciousness.

Finally, as many writers have noted (e.g. Bolinger, 1975: 413), articulated utterances automatically become input to the system for speech processing, returning through the ears and the bones of the face as images of what has just been said. This is what makes post-articulatory monitoring possible. Checks can be made for appropriateness, lexical accuracy, pronunciation, etc., and if the utterance is found wanting, another programme can be assembled and sent to take its place, perhaps with an accompanying note of apology. Alternatively, articulated programmes, well-formed or not, may be simply let go, with the control centres turning attention to other matters, such as the reception of an incoming string.

In summary, six basic loops are depicted in the model. In an idling, daydreaming state represented in the upper-left-hand corner of the chart (A-B-C-A), emerging programmes are simply dumped to STM and left to decay, without any conscious awareness of their presence in the system. In *displayed internal speech* (A-B-E-C-A), a more conscious form of daydreaming, assembled programmes are retrieved from STM, held in display, and then left to decay, or perhaps tacked on to another emerging programme. (E-F-G-H-E) constitutes a *repeat loop*. Introspection suggests that any given string cannot be displayed for long, and any lengthy examination must involve numerous repetitions. In *pre-monitored internal speech* displayed strings are checked against internal patterns, in a presumably subliminal process (we are aware of the results of the test but not the testing procedure itself). Having undergone inspection, programmes can be repaired, executed by the articulatory organs, or left to decay. In *post-monitored external speech* (A-B-C-D-E...), messages are sent (having perhaps been pre-monitored) and then inspected, with the possible summoning of a superseding string. In *unmonitored external speech* (A-B-C-D-A), assembled programmes are executed and the resulting after-image left to decay from STM without inspection, as the control centre turns to other matters, such as the assembly and articulation of a following programme.[9]

7. *Inferencing and Other Reception Strategies*

As noted earlier, one criticism of Krashen's 'Monitor Model' is that it fails to take into account the role that monitoring plays in the reception of language. A link between production and reception is already implied in the suggestion that language users receive their own utterances both when programmes first rise to consciousness and after (or during) the process of articulation. Following Massaro (1975), we hypothesise that in both cases the programme is dumped to STM, where it is subject to monitoring operations and can be checked against internal patterns and rules. If a discrepancy is found, in both cases there is the possibility of assembling and executing a new, superseding programme.

Now, incoming utterances produced by other language users also pass through STM, where they are subject to similar operations. The speaker makes a guess as to what someone says and checks whether it feels correct or appropriate. The checking is against recollections of what has gone before in the conversation and presumably against abstract syntactic, semantic and pragmatic rules, lexical items, knowledge of the world etc. stored in some form in LTM. Whether the grammatical part of this checking procedure is continuous, or only used when there is a problem, is unknown (v. Schlesinger 1968; Tarone 1974). Either way, however, it is not hard to imagine cases where the 'checking by matching' procedure might yield a discrepancy.

One example of this would be the case of a second language learner, who may frequently find himself having to process incoming language containing unfamiliar lexical items (to such a degree that he may not even be able to hazard a guess as to where the word boundaries are) or which appears to be based on unfamiliar rules of assembly. In situations such as these, the listener has a number of options open to him. These include: (a) doing nothing, and ignoring the fact that he is not able to analyse or interpret the utterance, (b) reconstructing the utterance (i.e. rewording or reinterpreting it) and (c) altering his view of the language itself. He could also request external help and ask the speaker to repeat the relevant part of the utterance (as a means of gaining additional processing time), to rephrase it (in the hope that the new utterance could be more easily processed), or to explain it.

In other words, the user can attempt to process unfamiliar material either internally, or with the aid of an external source. Drawing on internal information such as syntactic context, knowledge of the world and linguistic information about the same or other languages, the user can hypothesise new patterns to account for unfamiliar data. This processing strategy, called "inferencing", has been described as playing an important role in the acquisition of language (Carton 1971; Bialystok and Fröhlich 1977; Bialystok 1978).

Guessing words and meanings while listening and reading (v. Goodman 1967 and numerous later articles) is obviously closely linked to guessing rules and meanings after it has become clear that something is unknown. For example, one may spend time using available cues to work out an apparently unknown word, only to find at the end that it has in fact been met somewhere before. It would seem to be difficult to define inferencing solely on the basis of an item or pattern being completely unknown. Carton (1971) does not develop this point. It might be possible to claim that inferencing begins where 'normal' guessing stops and the listener thinks about altering his view of the language, but this too is

hard to substantiate, as one may ultimately choose to simply regard X as an idiosyncracy or a performance error and not in the event alter one's view of the language.Perhaps the best solution is to consider inferencing as an extended form of normal psycholinguistic guessing.

It is clear that many aspects of inferencing are unconscious. One makes assumptions as to meaning and appropriateness based on cues of which one is only dimly, if at all, aware. Also, it is not uncommon to realise consciously "Oh, he must have said XYZ" several minutes after listening to the actual signal. Whether inferencing can be initiated both voluntarily and involuntarily is another difficult problem, which none of the articles cited consider. As adult second language learners are often acutely aware of their inadequacies, it is obvious that much of their inferencing will be voluntary. But how much inferencing is voluntary for small children learning their first language? Since there is such a large overlap between inferencing and 'normal' guessing, and since much 'normal' guessing is self-evidently involuntary, it seems only reasonable to postulate that inferencing can be involuntary as well.

This brings us to the relationship between (voluntary and involuntary) linguistic monitoring and inferencing. We might note to begin with, that many of the processes involved in linguistic monitoring are central to inferencing. Inferencing, like monitoring, involves checking incoming signals with respect to internal knowledge of the language and how it is used. It may be that a model internal representation is built for comparison purposes (Tarone 1974). Be that as it may, inferencing involves checking procedures, accepting and rejecting, and even editing (since a listener may reject one hypothesis about some of the words in the signal he has heard and look for other possible wordings). Once a hypothesis about the wording has been made, the string can be displayed and repeated internally any number of times (unlike the image of the 'raw' signal, which fades fast). We may also note that monitoring, like inferencing, can involve the use of both linguistic and extra-linguistic cues. For example, a speaker or listener who is trying to check a programme for appropriacy needs to search for situational cues. A speaker or listener who is trying to decide whether *runs* is grammatical needs to look for the clues provided by the subject. It would therefore seem that inferencing and monitoring, particularly but not exclusively, voluntary post-monitoring, overlap to a considerable degree. This is what our model, Figure 2, predicts (the 'decode' box leads back to the monitoring loops). It now becomes quite natural to envisage a second language learner inferencing about an utterance which contains something apparently unknown, deciding the speaker must in fact have made a mistake, and after editing the original wording, pointing out the error to the speaker.

8. *Monitoring, Inferencing and the Language Learner*

A major concern in the literature on second language acquisition has been the identification of individual differences in learning strategies, attitudes, and sources of motivation which might help to account for varying rates of success. Recent attempts to characterize the "successful language learner" have often touched on factors related to both monitoring and inferencing. In

her list of seven characteristics of the "good language learner", Rubin (1975) includes a willingness to make guesses, attention to form, attention to meaning, and monitoring both of oneself and of others. Stern (1975) includes self-monitoring, inferencing and a "constant search for meaning" in his list of ten "good learner" attributes. Naiman et al. (1978) include monitoring in a reduced list of five key strategies, maintaining that good language learners constantly revise their second language systems by monitoring the target language and constantly testing their inferences. Findley (1978) focuses on the importance of risk-taking, implying a connection with both inferencing and monitoring: "The teacher who stresses 'correct before speaking' rather than 'error-making while learning' is", he suggests, "one who negates the value of (a) critical process in language learning" (p. 73). Monitoring has also been seen as potentially interfering with successful learning. Stafford and Covitt (1978) found that some learners are hampered by their attempts to monitor second language performance on the basis of conscious grammatical rules. Bialystok (1978) refers to the possibility of "excessive monitoring" detering performance in oral communication.

These and similar observations of our own lead us to make the following speculations concerning the relationship between (voluntary and involuntary) monitoring and inferencing in regard to second language acquisition:

1. Monitoring is a general and pervasive linguistic phenomenon characteristic of all language users.

   Essentially the same system of voluntary and subliminal monitoring that allows native speakers to detect and possibly correct slips of the tongue also allows second language learners to detect and possibly correct their errors. Monitoring on the basis of conscious grammatical rules is only one kind of monitoring and to focus, as do Krashen and his associates, on monitoring as the conscious application of formal rules is to ignore much that is of clear interest to language learning research.

2. Monitoring is a necessary condition for language acquisition.

   Language acquisition (learning) implies, among other things, structural change in linguistic patterns and rules in the user's long term memory. These changes result in part from the detection of discrepancies between existing patterns and rules on the one hand, and programmes held in short term memory (originating from the user or some other speaker) on the other. Without the opportunity to make such detections, and without the willingness to put extra effort into doing so, language learning cannot take place. We are therefore hypothesising rather tentatively that voluntary not just subliminal monitoring is an essential component of language learning.

3. Individual differences in language learning result in part from differences in the intensity and form of the monitoring process.

   Although lower-level, neurolinguistic monitoring is largely unconscious and involuntary, higher-level monitoring is subject to voluntary control. The user has the option of focusing attention on any one of several different levels (discoursal,

syntactic, lexical, phonetic etc.) of analysis at a given time, but it may be relatively more difficult to operate on more than one level at the same time. Individual tendencies to operate habitually on one or another level may help to account for individual learning differences. A further tentative hypothesis is that training in voluntary monitoring in a second language will improve the learner's subliminal monitoring (this accords with Krashen's (1979) analogy of learning a second language with learning to play tennis).

4. Post-monitoring is more effective than pre-monitoring as a language acquisition device.

Since post-monitoring requires a programme to be articulated, a post-monitoring speaker will necessarily contribute more to a conversation, be involved more in an attempt to communicate and be forced to take more risks than a pre-monitoring one. Post-monitoring seems to lead to the interactive learning via negotiation described by Bruner, Ferguson, Hatch, Snow and others, while pre-monitoring does not.

5. Inferencing is closely related to monitoring, and is an equally necessary condition for language learning.

As stated above, monitoring makes possible the detection of discrepancies between what is received and abstract patterns and rules stored in long term memory. When the discrepancy involves the inability to find an internal pattern or rule to account for what the user thinks he has heard, the inferencing function can hypothesise a new rule or pattern to fill the gap. Individual differences in the ability or willingness to inference may help to account for individual learning differences. If much inferencing is voluntary, presumably it is trainable. Transfer of training effects between monitoring and inferencing, if any, are undocumented.

Taken together, these speculations suggest that the successful language acquirer (learner) will: (a) make effective use of feedback loops to check external manifestations of the language system against internal representations, (b) make every attempt to remove discrepancies when these are detected (by editing and inferencing) and (c) be willing to take risks, both in terms of articulating programmes that may not be perfectly formed, and in terms of making guesses about the patterns underlying unfamiliar strings. Learners who seldom use feedback, who ignore discrepancies and who are unwilling to take risks will be less successful.

While these conclusions are not unlike those reached by other authors, they differ with respect to the increased degree of flexibility assigned to the monitoring process, the essential interaction we see between monitoring and inferencing and the distinction between pre-monitoring and post-monitoring.

We would also like to venture a step beyond those authors who would be content simply to identify relevant attributes of the individual learner. As suggested in the introduction to this paper, interactive models of language learning are likely to hold greater explanatory power, and be of greater pedagogical value than models which view the individual 'psycholinguistic system' in isolation from other systems. This line of thought has at least three major implications. First, it means that individual learning strategies

are more profitably seen as flexible responses to changing social environments than as fixed individual attributes. Second, it means that while the capacity to monitor and inference is seated in the individual system, individual systems can work together in concert, with the result that monitoring and inferencing become group activities. Third, from a pedagogical point of view, interactive models underline the importance of the learning environment, suggesting that one of the classroom language teacher's first concerns is the development of learning groups for which effective learning strategies are group norms.

We plan to pursue these topics in future articles. For the time being we note that at least two types of description are required as starting points: (a) a proper framework for examining classrooms (and not simply categorising pupil-talk and teacher-talk) and (b) a way of describing interactive monitoring and inferencing in the context of small groups. We conclude with an example of this latter activity, transcribed from the same discussion cited earlier. The topic is now 'fear of heights':

A: I...I...I...I don't know what would I... what I would feel if I am standing on a... a mansion...

B: Skyline... lighter... sky what?

C: Skyscraper.

B: Skyscraper.

A: Skyscraper.

NOTES

1. We realise that this is rather an ideal statement, as work in speech production is far from being reconciled (or even linked with in many cases) work in speech perception. Witness the non-overlapping nature of two recent reviews: Macneilage (1979) on production and Studdert-Kennedy (1979) on perception.

2. There are a number of other possible explanations for this sequence. One likely one is that the Cantonese written form/ sái tahng/ comes into her mind right from the start. This form means to drive or steer a small craft. Thus the syntax is English but the choice of *drive* results from having learned the term as a translation equivalent for /sái/. She therefore assembles *we were driving some...* and then searches for *canoe*, wanting to be more specific in English than she would normally be in Cantonese. By the time she finds *canoe*, the original string has gone and she reassembles the utterance. This time she consciously translates/ sái tahng/ verbatim as *driving canoe*. Having uttered *driving canoe*, she realises something is wrong, and the term *canoeing*, which she learned as a possible translation equivalent for /sái tahng/ comes to mind. *Canoeing* can be easily substituted for *driving canoe*. Whatever the real answer is, a complex series of mental operations still seems to be involved.

3. It is, of course, just possible that we are witnessing the result of the learner having variable rules (v. Dickerson 1975) or even competing rules (Wang 1969, Chen 1972 and others have shown this is possible at a phonological level).

4. Most phoneticians who work in this area, however, seem to avoid the term *monitoring* and talk of *feedback by open/closed loops* instead (eg. Abbs and Eilenberg 1976; Macneilage 1979).

5. What we mean by the expression 'monitoring a conversation' is the sort of devious plotting and planning about how to control the turntaking procedure or how to get one up on the other person, highlighted respectively by Duncan and his associates and, say, Schegloff (1969) on the question of telephone conversations. This sort of monitoring is firmly grounded in Discourse Analysis. It is wider than purely linguistic monitoring, though linguistic monitoring could and presumably generally does, form a part of it.

6. The experiments by Abbs and his associates have shown conclusively that gamma loop feedback control systems are operative in lip and jaw control, but as both Abbs and Eilenberg (1976) and Macneilage (1979) warn, these findings cannot necessarily be generalised to other parts of the vocal tract, despite the earnest hopes of some workers (eg. Dalton and Hardcastle 1977).

7. As this model is based on the analogy of a computer program, we feel it is appropriate to switch for a moment to the vocabulary of computer science. Readers preferring other analogies may like to make silent internal lexical substitutions!

8. We do not wish to get embroiled in the argument over how memory processes operate, and whether Craik and Lockhart's (1972) model is or is not psychologically valid (v. Baddeley 1978). We have isolated short-term memory and long-term memory simply for ease of representation. Having short-term memory as an entity allows our model to be more or less compatible with the speech perception models of Massaro (1975) and Oden and Massaro (1978). Any attempt to read a text and use cues from two minutes earlier to help explain the words being focused on illustrates that complex processes operate between short and long-term systems.

9. We share Baddeley's (1978) misgivings about linear models of human information processing, but feel that the present model does at least allow us to describe what we feel are the major mental states and decisions involved in linguistic monitoring. One problem with the model is that the decision to repeat the display seems (by introspection) to be an independent one, which can be made at any point. It will be noted at the same time that we have avoided all reference to a cline of subvocalisation which may accompany linguistic monitoring. For the moment, it can simply be assumed that a positive decision to monitor is accompanied by a decision about the intended degree of accompanying subvocalisation. The actual degree of subvocalisation, or at least its acoustic and physical manifestation, will, of course be a function of other factors, like task difficulty, as well.

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ADDENDUM

Goodman, K.S. 1967. Reading: a psycholinguistic guessing game. *Journal of the Reading Specialist*, 4: 126-135.

Professional Activities by the Language Centre and Centre Staff:

The Language Centre was one of the sponsoring organizations for the Symposium on Language and Education held in Hong Kong in May 1979. H.F. Simon, Honorary Professor February - May 1980, together with B.K.Y. T'sou and S.H.N. Cheung, organised at the Centre a series of nine lectures and one workshop on the structure of Chinese from April to May, 1980. (A report on these gatherings may be found in 語文雜誌 (Language Forum) No. 5 p. 33-36 1980.8) In conjunction with the International Reading Association the Language Centre organized a workshop on Reading in Hong Kong at Robert Black College on July 28-29, 1980.

M. Chan became an official examiner in Mandarin for the Hong Kong General Chamber of Commerce.

S.H.N. Cheung accepted an invitation to be a member of the dissertation committee for a Ph.D. candidate in the Department of Oriental Languages at the University of California, Berkeley.

A.Y.Y. Fok accepted an invitation to be a consultant for the phonetics syllabus in the in-service course for speech therapists, organised by the Special Education Unit, Education Department, Hong Kong in 1979 and presented a paper 'The Testing of Listening Proficiency at Tertiary Level' at the RELC Seminar on Language Testing and Assessment, Singapore, April 1980.

N.S.H. Lee presented a paper at the Inner London Education Authority's Weekend Conference (Worthing) on Multi-Ethnic Education, and gave an invited lecture to Cert. Ed. students at the Kingston Polytechnic on Teaching Chinese Children in England in May 1978. She also presented a paper entitled: "Storying: A Methodological Approach to Bilingual Education" at the TESOL Conference in San Francisco, March 1979.

Y.P. Lee presented a paper: 'The Evaluation and Measurement of Communicative Competence without Necessary Reference to A-priori Theoretical Models - The Case for Direct Language Test' at the RELC Seminar on Language Testing and Assessment, Singapore, April 1980.

R. Lord was a keynote speaker at the Symposium on Language and Education in Hong Kong, in May 1979. He continues to serve on the Working Party on English, Education Department, Hong Kong, and until his leave, was the chairman of the Steering Committee for the 1980 Summer Symposium on Reading in Hong Kong, jointly sponsored by the Language Centre, HKU and the International Reading Association. While on long leave from 7 January - 30 May, 1980, he was appointed a Visiting Fellow at the Department of English and Comparative Literary Studies, University of Warwick.

G.D. Low spoke on 'ESP Materials Design Workshop/Training session' for the Civil Service Training Course, and gave two seminars/Workshops on 'Simulation and Communication Games' and a lecture entitled 'Learning Theory' for the English Teaching staff of the British Council, Hong Kong. He presented a paper entitled: 'ESP, Grey Areas and the Sixth Form' at the Symposium on Language and Education in Hong Kong in May 1979, and did a background paper entitled: 'What is an official syllabus? Some Basic Issues.' for the Hong Kong Education Department 1-day workshop on the redesign of the Hong Kong Primary ELT syllabus. He also became a member of the working group on Technical English in Hong Kong of the Education Department English Language Adviser's Working Party on English.

C.A. Miao was an invited participant in the Annual Research Conference of Chinese Epigraphy at the Sun Yat-sen University, from 30 November to 6 December 1979.

D.M. Morrison conducted a workshop and presented a paper on small-group learning at the Symposium on Language and Education in Hong Kong.

H. Tagawa, visiting Professor in Japanese, attended the International Conference on Japanese Language Education, held in Tokyo in December 1978. He presented a short report entitled "The Teaching of Japanese in the Language Centre of Hong Kong University".

N.L. Tse Cheng took part in a TVB Focus discussion on the use of Chinese in Hong Kong.

B.K.Y. T'sou gave two lectures in Taipei on English grammar and on Syntactic change in Chinese in June 1978 under the joint sponsorship of Academia Sinica, National Taiwan University and National Taiwan Normal University, and in August presented a paper at the Conference on "Chinese Language: A Psychological Approach", organised by the Psychology Association of China in Taipei. In October, he presented a paper entitled "A sociolinguistic analysis of the logographic writing system of Chinese" at the XI International Conference on Sino-Tibetan Languages and linguistics in Tucson, Arizona, where he also chaired a session on Chinese syntax. He gave a paper entitled: "Some sociolinguistic evidence for matrilineal society in early Chinese civiliation" at the Xth International Congress of Anthropological and Ethnological Sciences in New Delhi in December 1978. In early 1979, he spent three months at the Cultural Learning Institute, East-West Center, Honolulu, participating in a project on English as an International and Intra-national language, and gave lectures on general linguistics and on English syntax at the Institute and at the University. In April he participated (through UNESCO sponsorship) in the Regional Seminar on Bilingualism, SEAMEO Regional Language Centre, Singapore, and was consultant to the Interagency Workshop on Bilingualism and

Bilingual Education in Singapore and participated in two TV panels (one English, one Chinese) on Bilingualism and language in Multi-lingual Society. He was a feature speaker on trends in Sociolinguistics at the 1979 Asian and Pacific Conference on Linguistics and Language Teaching, Taipei, in August 1979, and in October he gave public lectures on Chinese Linguistics and English Syntax at the University of Melbourne and at the Australian National University. He also participated in October in the XII International Conference on Sino-Tibetan Languages and Linguistics, Paris and delivered a paper: 'Transitional Triglossia: A Model for Sociolinguistic Realignment', and in the Second International Conference on Austro-Asiatic Languages and Linguistics, Elsinore, Denmark. While in Europe, he gave invited lectures on Sociolinguistics and on English grammar at Universitaire Faculteiten Sint-Aloysius, Belgium, the Vrijie Universiteit Brussel, and the Department of Linguistics, University of Amsterdam. He has served as a member of the coordinating Committee for English, Hong Kong Examination Authority, Hong Kong Government. Together with N.H. Tsuiji and S. Egerod he edited *the Liangguang Language Bulletin* 兩廣語言通訊 , and with G.D. Low he edited *Transform: A Newsletter in English Language Teaching* jointly produced by Longman (Far East) Ltd and the Centre. He also acted as the external examiner for a Master's Degree candidate at the Chinese University of Hong Kong and for another candidate at the University of Singapore in 1979.

G. Wiersma, was elected the Secretary of the Steering Committee for the 1980 summer Symposium on Reading in Hong Kong, jointly sponsored by the Language Centre, HKU and the International Reading Association.

S. Yamamoto, Visiting Lecturer in Japanese, read a paper entitled 'On a Classification of Japanese Verbs' at the meeting of Hong Kong Association of Japanese in 1979.

J. Yang was appointed examiner in Cantonese for the Advanced Examination and Higher Examination in Cantonese (Civil Service Commission) at the Ministry of Defence Chinese Language School in Hong Kong in 1978 and in 1979.

Publications by Members of Staff

Cheung, S.H.N. The Use of Verse in the Dun-Huang *Bian-Wen*, *Journal of Chinese Linguistics*, Vol. 8, p. 149-162. 1980.

Fok Chan, A.Y.Y. Speech sounds and tones in Cantonese, in R. Lord (ed.) *Hong Kong Language Papers*, p. 150-157. Hong Kong University Press. 1979.

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———— Sound symbolism and some socio-and historical linguistic implications of linguistic diversity in Sino-Tibetan languages *Cahiers de Linguistique Asia Orientale*, No. 3, p. 67-76. 1978.

———— Some preliminary observations in aphasia in a Chinese bilingual *Acta Psychologia Taiwanica*, No. 20, p. 57-64. 1978.

———— 意圖、意義與翻譯 (Intention, meaning and translation) *Bulletin of the Hong Kong Translation Society*, No. 16, p. 1.10-12. 1978 Reprinted in *Renditions Monthly*, No. 5 (Taipei, May 1978) and in 翻譯藝術 (The Art of Translation) T.T. Hu (ed.), Taipei p. 147-149. 1979.

———— Some sociolinguistic considerations of bilingual education for Asian countries, in R. Lord and B. T'sou (ed.) *Studies in Bilingual Education*, p. 40-50, Language Centre and Heinemann Educational Books. 1979.

———— Homorganic Nasal/Stop Alternations in Cantonese *Studies in Tai and Mon-Khmer Phonetics and Phonology: In Honour of Eugenie J.A. Henderson*, (eds.) T.L. Thongkum, V. Panupong, P. Kullavanijaya and M.R. Kalaya Tingsabadh, Chulalongkorn University Press, p. 290-312. 1979.

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Yamamoto, S. Is an Autosegmental Theory Useful? (in Japanese) *English and Japanese*, Kuroshio, Tokyo. p. 323-333.

Yang, J. *Practical Dialogues in Cantonese* (supplementary course-book to *Basic Cantonese*) 196 p. Language Centre, University of Hong Kong.

Visitors to the Language Centre

Professor Hugo Baetens-Beardsmore,
The Free University of Brussels,
gave a lecture on April 17, 1980 - 'Anomie in Multilingual Societies'
Presented a seminar on April 18, 1980 - 'Assessment and English Language Skills'.

Dr. Alfred Bloom,
Coordinator, Linguistics Program,
Swarthmore College, Penngylvania, U.S.A.
Presented a seminar on July 26, 1978 - 'On the Impact of Syntax on Cognition in Chinese and English'.

Professor Michael Canale,
York University.
Presented a seminar on May 1, 1980 - 'A Communicative Approach to Second Language Teaching and Testing'.

Professor Richard Day,
Chairman, Department of English as a second language,
University of Hawaii.
Presented a seminar on August 9, 1979 - 'Hawaiian Pidgin English'.

Professor Gordon B. Downer,
Department of Chinese,
University of Leeds. January to April, 1979 (to participate in Liangguang (兩廣) Linguistics Project.)

Professor S. Egerod,
Director, Scandinavian Institute of Asian Studies,
Copenhagen, Denmark. Summer 1979 (to participate in Liangguang (兩廣) Linguistics Project.)

Professor W. de Geest,
Department of Dutch Linguistics
Universitaire Faculteiten Sint-Aloysius,
Brussels, Belgium.
Presented a seminar on May 3, 1979 - 'Trends and Types of Belgian Bilingualism'.

Mr. Hendy Hendrata,
Senior Lecturer and Coordinator of Modern Languages,
School of General Studies,
Prahan College of Advanced Education, Australia.

Mr. K. Iwatake,
Representative from the Japan Foundation.

Dr. Francis C. Johnson,
Hawaiian Curriculum Centre,
University of Hawaii.
Presented a seminar on September 13, 1978 - 'Individualising of Instructional Systems in English Language Teaching'.

Mr. T.C. Jordan,
Director, Language Centre,
Griffith University, Australia.
Presented a seminar on January 23, 1980 - 'Problems of a Communicative Syllabus in Chinese courses in Australia, and some practical solutions'.

Mrs. Elke Korff,
Consul (Press and Culture),
Consulate General of Germany, Hong Kong.

Professor Kyong Shik Lee,
Head, English Department,
Hansung College, Korea.
Presented a staff workshop on July 28, 1978 - 'English influence on modern Korean poetry'.

Professor J. Lyons,
Professor of Linguistics,
University of Sussex.
Presented two seminars on January 30 and 31, 1980 - 1. 'Grammatical Meaning of English'. 2. 'Current Issues in Semantics'.

Mr. K. Okura,
Consul (Information and Culture),
Consulate General of Japan, Hong Kong.

Professor J.T. Platt,
Department of Linguistics,
Monash University, Australia.
Presented a seminar on October 18, 1979 - 'Implicational Scaling in the Assessment of Language Acquisition'.

Professor Rao Bing-cai,
Head, Linguistics Section,
Chinan University, Canton.
Presented two seminars on May 21 and 22, 1980 - 'Contrastive features of Word Formation processes in Cantonese and Mandarin'.

Professor Alexis Rygaloff,
Director, Centre de Recherches Linguistiques sur l'Asie Orientale (Ecole des Hautes Etudes en Sciences Sociales) Paris.
May - June, 1978, field work.

Mr. Hans Gunther Schmidt,
Representative,
The German Academic Exchange Service (DAAD),
Berlin, Germany.

Mr. K. Shina,
Representative,
The Japan Foundation.

Professor Harry F. Simon,
Department of East Asian Studies,
University of Melbourne, Australia.
Presented a seminar on June 20, 1978 - Sentence Structure and Discourse Tactics in Chinese'. On July 21, 1979 - 'Model for Oral Performance and the Marking Tone in the Pinyin Transcription'. Also joined the Language Centre as Honarary Professor, February - May, 1980.

Professor A. Spicer,
Pro-Vice Chancellor,
University of Essex.
Inter-University Council visitor. 10 - 23 September, 1979.
Presented a seminar on September 22, 1979 - 'Some easy ways to make language learning difficult'.

Professors D. Stampe and Patricia Donegan,
Department of Linguistics,
Ohio State University.
Presented a joint seminar on April 23, 1980 - 'The Natural Evolution of Languages'.

Professor Danny D. Steinberg,
Department of English as a Second Language,
University of Hawaii, Manoa.
Gave two lectures on June 29 and 30, 1980 - 'Research on Chinese Characters and Japanese Kana' and 'Universal Principles in the Learning of Reading', presented a seminar on June 30, 1980. 'Adults Versus Children in Second Language Learning'.

Television Broadcast, Hong Kong visited the Language Centre and interviewed Dr. B.K. T'sou in conjunction with their programme Spotlight (Romanization in Chinese) May 26, 1979.

Professor Teng Shou-Hsin,
Chairman, Asian Studies Program,
University of Massachusetts.
Presented seminars on January 26, 27, 1978 - 'Semantics and Syntax in Chinese', April 6, 1978 - 'A Comparison of the Comparative Constructions in English and Chinese', and on April 30, 1980 - 'Relative Clauses in Chinese'.

Dr. N. Tsuji,
The National Institute for the Studies of Asian and African Languages and Cultures, Tokyo.
Presented a seminar on February 8, 1979 - 'The Hunanese Connection - Voicing, Murmur and Tonal Registers in Southern Dialects'.

Professor William S.Y. Wang,
Professor of Linguistics,
University of California, Berkeley.
Through the joint sponsorship of the American Consulate General, Hong Kong.
Presented two seminars on August 29 and September 3, 1979 - 'Biological Foundations of Language' and 'Some Problems Relating to Chinese Characters'.

Dr. David Wu,
Research Associate,
Cultural Learning Institute,
East-West Centre, Hawaii.

Mr. Richard Young,
Senior Lecturer,
The British Council.
Presented a seminar on November 1, 1979 - 'Use of Realia in ELT'.