SOME THOUGHTS ON LEXICASE

Being a review article of
The Case for Lexicase: An Outline of Lexicase Grammatical Theory
by STANLEY STAROSTA. London: Pinter. 1988. Pp xii, 273

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1. Introduction

The Case for Lexicase is the first comprehensive account of a theory of grammar that goes back to 1970. Developed by Starosta and his students at the University of Hawaii it has been used in ten dissertations and over sixty articles. My first experience of Lexicase was from a series of lectures given by Starosta while on an extended visit to Monash in 1973. Since that time I have followed the development of the theory closely through the literature, via copious correspondence (now conducted via e-mail), and by personal visits to Starosta's eyrie. Blake (1983) represents an attempt to describe fragments of Kalkatungu in a somewhat unorthodox variant of Lexicase.

Of the various models of grammar that have appeared since 1957 Lexicase is one of the few that has any real claim to being generative since it is one of the few that is formal and explicit. Like many of the theories that grew up in reaction to Chomsky's early versions of Transformational Grammar (1957, 1965), Lexicase is non-transformational. Starosta takes the view that TG is too powerful and that a more constrained theory that can account for the same domain represents a stronger claim about the nature of language.

Oversimplifying a little, one could say that Lexicase holds out the prospect of accounting for grammar in terms of a lexicon in which words are marked with an indication of what they govern. Verbs govern nouns, adpositions, adverbs and other verbs, while nouns govern adjectives and determiners. A lexicon of this type will generate constructions, the largest construction being a sentence which usually has a finite verb as its head. But although a lexicon of words with valencies would be descriptively adequate in Chomsky's sense (1965:24), it would not contain any significant generalisations. A Lexicase grammar in fact consists of all the redundancies that can be extracted from the lexicon plus the lexicon itself which of course remains as the repository for the unpredictable residue.

2. Structural considerations

Sentence structures in Lexicase are relatively simple and shallow since all constructions must have a lexical head. This constraint means that there can be no rule of the type S(entence) —*i* N(oun) P(hrase) + V(erb) P(hrase) since S is not a lexical head. Rather the verb is taken as the head of a sentence with nouns, prepositions, adverbs, conjunctions and other verbs as dependents. This means that there is no **VP** and that the subject is a direct dependent of the verb. Figure 1 illustrates the structure of the sentence ***On hot days I put the butter in the ice-chest.***

put
[+V]

on   days   I   butter   in   ice-
[+P]   [+N]   [+N]   [+N]   [+P]   chest
                                          [+N]

hot   the   the
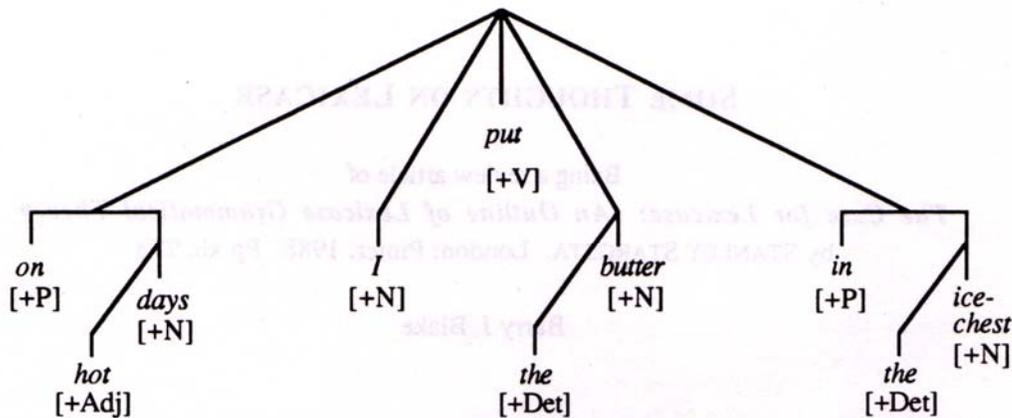[+Adj]   [+Det]   [+Det]

FIGURE 1

The tree is drawn according to conventions designed to retain the distinction between heads (obligatory) and dependents (optional). Heads are shown below vertical lines and dependents at the ends of longer oblique lines. Prepositional phrases are taken to be exocentric constructions with two heads, and a horizontal line is used to join the heads. Note that in the system phrasal nodes are redundant and can be omitted.

It has been recognized for some time that there is some redundancy between phrase structure rules and subcategorization information provided for words (particularly verbs) in the lexicon. If constructions are limited to those with lexical heads, then information provided in the lexicon about the categories of dependent a word can have, plus their position, marking and relation, will be sufficient to generate constructions. A sentence will be a construction with an independent predicate (usually a finite verb) whose valency requirements are fulfilled and those of its dependents, grand-dependents and so on.

Before exemplifying these redundancy rules I will describe Starosta's conception of government since this is relevant to the rules. Lexicase distinguishes *cap-command (cap <* Latin *caput* 'head') and plain command. A word cap-commands the lexical heads of its dependent sisters and it commands (plain command) its dependent sisters and their dependent sisters (108-9).

Cap-command defines the domain of lexical subcategorization. Contextual features are marked on the lexical heads of constructions and refer only to the lexical heads of sister constructions. In (1) the verb *put* cap-commands *on, days, I, butter, in* and *ice-chest,* but not *hot* and the two definite articles. *Days* cap-commands its dependent sister *hot,* and *butter* and *ice-chest* cap-command their respective articles. Prepositional phrases are considered exocentric constructions with a lexical head (the preposition) which cap-commands the lexical head (the noun) of its phrasal co-head. Thus in figure 1 *on* cap-commands *days* and *in* cap-commands *ice-chest.*

Prepositional phrases (PP) are taken to be exocentric on the grounds that the verb governs both the preposition and the head of the NP within the prepositional phrase. In German, for instance, there are oppositions like the following:

(1) a. *Hans lauft auf dem Berge* (dative)
         John runs on the mountain

     b. *Hans laüft auf den Berg* (accusative)
         John runs to the mountain

If the prepositional phrase is taken to be endocentric with the preposition as head, then the verb cannot cap-command the noun that is the head of an NP within a PP. A governor can cap- command its sisters but not its nieces.

The endocentric analysis of PPs with the preposition (or postposition) as head, which incidentally is accepted without argument in the informal literature of cross-language comparison, allows for the possibility of intransitive and transitive prepositions. This brings out the parallelism between the prepositions like *behind (He waited behind the door* - transitive preposition) and adverbs *(He waited behind* - intransitive preposition). Moreover, it facilitates the description of 'stranded prepositions'. There is a parallel between stranded prepositions and verbs that have lost their objects via 'movement' (the inverted commas are in deference to Lexicase which does not allow movement):

(2) a. *which   I   shall not put   up   with*
      b. *which   I   shall not   tolerate*

The government illustrated in (1) can be interpreted in terms of homophonous prepositions, one governing the dative and the other governing the accusative. This means that the verb governs only its dependent sister and the preposition likewise, and it obviates the need to posit exocentric PPs. Starosta recognises this analysis as an alternative (200), but so far he has not adopted it.

Traditional subordinating conjunctions are taken to be prepositions that govern verbs. So an adverbial phrase of time like *Before he left, (he said goodbye)* is interpreted as an exocentric prepositional phrase with *before* and *left* as its heads (cf. Huddleston 1984:338-34 1, 390).

Given the constraint that every construction must have a lexical head, there can be no VP in Lexicase. As can be seen from figure 1 the subject is in the same structural relationship to the verb as the object or indeed any complement or adjunct is. The verb governs its subject unlike in Chomskyan grammars. The concept of the VP is not strongly motivated and no justification for it appeared in Chomsky's early work (1957, *1965),* save for the assertion that only the VP is relevant to the subcategorization of the verb *(1965:99).* Implicit in this is the belief that the subject is common to all verbs, but it could be pointed **Out** that in ergative languages not all subjects are marked alike, the subject of most 2-place verbs being marked differently from the subject of 1-place verbs and a minority of 2-place verbs. Ergative languages apart, the positing of a VP introduces awkward problems. Starosta notes that subject and verb are generally related in terms of subcategorization, agreement, government and selection yet the presence of a VP prevents the verb from being a direct governor of the subject (21). Chomsky in his Government and Binding theory (1981) has to posit an abstract INFLectional node 'to do all the things to the subject that the verb would have done, if it were the head of the sentence' (16):

> Positing a VP in the GB framework forces the loss of generalizations at every turn (Starosta 1977; Starosta 1985). Anyone who cares to can verify this claim by (a) going carefully through Chomsky's 'Lectures on Government and Binding' (Chomsky 1981), including the footnotes, and making a list of the conventions, constraints, principles, and constituents, including the INFL node, which owe their existence solely to the NP-VP split and could be eliminated without it; and then (b) counting the number of generalizations for which an exception must be stated solely because the subject is not the sister of the verb. Almost all of these onerous difficulties vanish when the S-VP distinction is eliminated and the subject becomes the sister of the verb (17).

The elimination of VP in a one-level grammar denies the possibility of a VP at some underlying level and obviates the need for reconciling such a VP with surface structures of languages that obviously lack such a constituent through being VSO (e.g. the Celtic languages) or having grammatically free word order (e.g. many Australian languages). In Lexicase all languages are 'non-configurational'.

The absence of a VP means that all complements and adjuncts are in the same structural relation to the verb. However, degrees of cohesion can be distinguished by reference to whether a dependent is subcategorizing or not. This is taken up below.

And now for the Redundancy Rules. In a lexicon of English, every lexical item marked as [+ pronoun] will contain a contextual feature [-[+Det]] indicating that it cannot occur with a Determiner. This generalization can be extracted as a Redundancy Rule (40).

(3)   [+ prnn] ⟶ [-[+ Det]]

To clarify the notation in a rule like (3) it is useful to make a comparison with a rule that refers to the position of a dependent in relation to its governor:

(4)   [+N] ⟶ [- _____ [+Det]]

(4) states that a noun cannot be followed by a determiner (as a dependent sister). The absence of the dash in (3) means that no position is specified. (3) says that a pronoun cannot have a determiner as dependent sister either fore or aft. (With reference to (3) it is worth noting in passing that in many languages the same form class serves as determiner and as a subtype of pronoun).

The following Redundancy Rule could be extracted from the lexicon of a verb-final language (64).

(5)   [+V] ⟶ ⎡ +([+N])   ⎤ a.
              ⎢ - ——— [+N]   ⎥ b.
              ⎣   ⎦

(5a) states that verbs can have nouns as dependents. It does not limit the number of nouns nor indicate their position relative to the verb. (5b) indicates that noun dependents cannot follow the governing verb. If the number of dependents is to be limited to one, then a rule like (6) needs to be added which states that a verb cannot have two (or more) noun dependents.

(6)   [+V] ⟶ [-[+N][+N]]

Notational devices embody theoretical claims and the notation used in these rules effectively takes unlimited, unordered dependents to be the unmarked situation. This is probably the case for the nominal, adpositional and adverbial dependents of verbs and for the adjective dependents of nouns (at least as far as the absence of a limit is concerned). It is probably true too of verb dependents of verbs (consider purpose clause adjuncts, for instance, in languages where, in the absence of adpositions, such clauses are direct dependents of governing verbs). It is probably not true of determiner dependents of nouns, though English can have more than one, albeit strictly ordered with respect to their governing noun and to one another *(e.g.for all her many faults)*.

Rules like *(5)* deal only in grammatical categories. As we shall see below there are constraints on grammatical relations to be considered including the 'one per sent principle' which stipulates that there can be only one instance of each case relation (grammatical relation) per clause.

Derivation plays an important part in Lexicase. A good deal of sentence relatedness is accounted for by valency changing derivations such as passive, antipassive, causative, anticausative and so on. The following is an example of a non-controversial type of derivation, namely the derivation of manner adverbials in English from adjectives (e.g. *slowly* from *slow).*

$$(7) \quad \begin{bmatrix} +\text{Adj} \\ +\text{qlty} \\ \alpha F_i \end{bmatrix} \longrightarrow \begin{bmatrix} +\text{Adv} \\ +\text{mnnr} \\ \alpha F_i \end{bmatrix}$$

$$] \quad \longrightarrow \quad \text{li}]$$

The notation F represents the features that identify a particular lexical item and which remain constant under derivation. The symbol a has its familiar role indicating that what is plus remains plus and what is minus remains minus.

The rule is normally assumed to apply in the direction from phonologically less marked to more marked, though other kinds of markedness considerations could enter in as well, reflecting an intuition that when people make up new words, they usually add something to an item already present in their lexicons. However, a D[erivational] R[ule] is an analogical pattern, and analogies are intrinsically nondirectional. Thus it is in principle possible for any DR to operate in either direction, and when a DR is used in the marked-to-unmarked direction, it is referred to as BACK-FORMATION. Sometimes when one affix replaces another, for example [aX] —* [Xb] the appropriate direction may be difficult or impossible to determine non-arbitrarily (91).

3.   **Roles and relations**

Lexicase recognizes case relations, case forms, case markers and two macroroles *actor* and *undergoer* (114). Starosta rejects the notion of a set of semantic role types such as *agent, experiencer* **and** *patient* which remain constant under paraphrase and between translational equivalents across languages. As Starosta points out, if these roles remain constant under paraphrase (including translation) they are not based on language but represent an attempt to classify an objective universe (116). Not surprisingly there has been little agreement between linguists in arnving at an objective classification. Role types are pedagogically convenient, but to imagine that there is a language independent, fully articulated classification of the universe is naive. Languages encode conceptions of the world and a situation can be conceived of in more than one way. As is widely recognized, attempts to keep roles constant across paraphrases result in paradoxes. If one takes B to have the role of locative in *A is on the right of B,* then one could take A to be locative in *B is on the left of A.* However, these sentences are paraphrases in the sense they can both be used to describe the same Situation and under the 'constant role' hypothesis A and B should have the same role in both sentences (117).

Lexicase has an inventory of five case relations: Patient (PAT), Agent (AGT), Locus (LOC), Correspondent (COR) and Means (MNS). The last three have inner and outer functions; 'inner' equates with subcategorized (126).

At this point it will be convenient to use Dixon's (1972) 'pre-theoretical' system for describing the nuclear participants of one-place and two-place transitive verbs: S is intransitive subject, A the agent of a transitive verb and 0 the patient of a transitive verb. The Lexicase Patient embraces S and 0 and is co-extensive with the absolute of Relational Grammar (Perimutter ed. 1983). Agent is A and equates with the ergative of Relational Grammar. Locus covers all local orientations *(in, on, over, through, to, from),* the inner Locus

covering the orientation of the Patient *(He fell into the vat, I put it in the glove-box)* and the outer Locus the orientation of the action, event or state *(In Australia, half the population drinks beer. The other half are women.)* Art inner Correspondent is the 'entity perceived as being in correspondence with the Patient' and an outer Correspondent as 'the perceived external frame or point of reference for the action, event, or state as a whole' (126).

(8) *John would walk a mile for a cigarette*
     PAT   -trns   COR   COR
                                    inner   outer

(9) *Please spare me your sarcasm for Pete's sake*
            +trns   PAT   COR   for   COR
                            inner   outer

An inner Means is 'the perceived immediate affector or effector of the Patient' and outer Means is 'the means by which the action, state, or event as a whole is perceived as being realized'

(10) *Mary fought with alligators with her bare hands*
      PAT -trns   MNS   MNS
                         inner   outer

(11) *Max loaded the truck with hay with a pitchfork*
      AGT +trns   PAT   MNS   MNS
                                inner   outer

Starosta does not include a sentence of the type *He hit the dog with a stick.* One would assume from the definition that *stick* would be inner Means.

It is difficult to get used to these case relations particularly where they are not demarcated by some form of marking. Locus is usually expressed by a number of prepositions or postpositions and/or by cases such as locative, allative, ablative or pergressive. It is the common component of these adpositions or cases, and the unity of the Locus case relation can usually be shown by reference to the fact that any local adposition or case can satisfy the valence of a verb like *put.* Means does not appear to be too controversial insofar as one can judge from the skimpy exemplification provided, but the other three relations are problematical. In ergative languages the Patient (S,O) is demarcated by case, almost always the zero case, and the Agent (A) is picked out by the ergative case. This case may also cover other grammatical functions, but the Agent can usually be distinguished from these other functions on syntactic grounds. However, in an accusative language the marking unites *S* and A (the subject) and picks out 0, i.e. it unites part of Starosta's Patient (viz. S) with his Agent (A) and isolates the remaining part of his Patient (0). As we shall see below, Starosta establishes a macrorole of Actor which covers S plus A so it could be said that in an accusative language the nominative marks Actor.

Starosta sees the Patient as the 'perceptual center' of the clause (123) and proposes a PATIENT CENTRALITY hypothesis (124):

> … every verb has a Patient in its case frame. This assumption is the pivotal element in the whole case and complementation analysis. As will be seen over and over again in the remainder of this chapter, it is the focal point of perspective, the point of reference for distinguishing inner and outer case relations and infinitival complements, the criterion for distinguishing and characterizing accusative and ergative case-marking types, and the foundation for characterizing verbal derivation processes with maximum generality.

Lexicase is not alone in positing a universal S+O Patient. As Starosta points out, Halliday's MEDIUM is approximately the same as the Lexicase Patient (see Halliday 1985:146), although the MEDIUM covers the patient object in double object constructions whereas Patient covers the object with the first claim to being the direct object on grammatical grounds (see *(9)* above). Although S encodes what are from an objective point of view both actors and patients, both Halliday and Starosta note that entities in S function undergo the process or action, even those that are also actors. This provides a semantic basis for S-i-C), but the fact remains that in most languages the Patient is not apparent from any form of marking.

With Correspondent the worrisome point is that this relation embraces noun phrases marked by prepositions such as *of* and *for* as well as various unmarked noun phrases. Again the proposed relation Cuts across the distinctions made by the marking and it is not clear what unity the proposed relation has.

As mentioned earlier, sentence relatedness is mostly captured through derivation, particularly through verbal derivation. Consider the following pair of German sentences which could both refer to the same situation (172).

(12) *a.* *Sie   luden Heu   azj den Los   twagen*
      AGT   PAT   LOC
      They loaded hay on the truck

      b. *Sie beluden den Losiwagen   mit Heu*
      AGT   PAT   MNS
      They loaded the truck with hay

These two sentences have the same set of participants and in many models of grammar each participant would be allotted a single objective rule that would hold over the two paraphrases. Starosta takes these two to represent different perspectives and allots the grammatical relations as shown. The relationship between the two sentences is captured lexically. *Laden* appears with one valency and the derived verb *beladen* with another. Valency correspondences can cover as few as a single pair of lexical items or they can cover all words of a certain class. Regularities can be picked out by derivational rules which can increase, decrease or permute valencies. Starosta makes heavy use of zero derivation in English deriving, for instance, intransitive *drink* from transitive *drink*. He points out that it is a frequent characteristic of derivation that the meaning of the stem does not always carry over in derivation. Intransitive *give,* for instance, refers only to giving to charity as in the time-honoured reply to the door knocker: *We gave at the office.* (In fact signs reading *We gave* have been manufactured at various times to obviate the need for any verbal reply.)

Starosta's interpretation of the passive is interesting. The relationship between the two constructions is captured in terms of derivation, the passive participle being considered a derived form of the verb with its own case frame. (13a,b) show the case relations assigned to an English active/passive pair (68, 117).

(13) a. *John kicked the poodle into the puddle*
      [+AGT]   [+PAT]   [+LOC]

      b. *The poodle was kicked into the puddle by John*
            [+PAT]   [+LOC] [+MNS]

With such a pair the standard treatment in terms of objective roles is to assume the agent and patient carry over from the active to the passive. Starosta's assignment of case relations to the passive immediately makes it clear that case relations are not broad objective roles. If they

were, *John* would be Agent in the passive, not Means. In Relational Grammar the demoted subject is considered to be a chômeur, i.e. to belong to a relation for nominals that have lost subject or object status. In Relational Grammar the oblique marking of passive agents is not taken at face value, i.e. it is not taken as indicating an oblique relation. Starosta believes that such an interpretation falls to account for the choice of oblique marking. In Lexicase the oblique marking is taken as indicating that the demoted nominal has been reinterpreted as an oblique and properties such as peripheral position and adjunct status are interpreted as properties that reflect oblique status. It is not clear how Starosta has determined that the passive agent is Means rather than Locus. If we consider the meaning of the preposition *by* independently of the construction in question, we find it signals location *(He stood by the window)* or manner *(He succeeded by witchcraft)*. The **O.E.D.** suggests the latter sense derived from the former via ambivalent expressions such as *He read by candlelight.* If the passive agent has been reinterpreted as Means, one wonders why the by-phrase cannot be used to answer questions introduced by *how.*

(14) a. *How was he killed?*
      b. *By an arrow*
      c. **By John*

Predicates, prepositions and indeed nouns, as we shall see below, are subcategorized in terms of case relations. This valency is expressed in terms of implicational contextual features since there are various circumstances in which a an argument need not be realized by any element outside the predicate, e.g. in 'pro drop' languages, with non-finite verb forms and in languages such as Korean and Japanese where every actant, according to Starosta, is optional. An intransitive verb is marked in the lexicon as [⊃ [÷PAT]], a transitive one as [⊃ [+PAT]] [⊃ [+AGT]] and so on.

Lexicase uses the traditional notion of case form in an extended sense. A case form is a set of case markers that express a case relation, thus the traditional cases are case forms. In the traditional case system the case markers are inflectional suffixes (e.g. in Latin *-a:, -o:* and *e* are case markers expressing the ablative case), but case markers in Lexicase can be prepositions, postpositions, relator nouns, local nouns or verbs (178-9). Word order signals case relations in languages like Vietnamese and Thai, so Starosta assigns nominative case to the subject in these languages and accusative to the direct object.

Strictly speaking the grammatical relations subject and direct object play no part in Lexicase, certainly they are not recognized in the notation. It is strange then to find the following statement (181), 'Lexicase assumes that every language manifests a category which we can call "subject".' In fact Lexicase equates 'subject' with the unmarked case, nominative in a nominative-accusative language and absolutive in an ergative-absolutive language. Starosta uses the term 'nominative' rather than absolutive for the case covering S and 0 in an ergative language. This usage has its advantages, since the absolutive in an ergative-absolutive system is analogous to the nominative in an nominative-accusative system not only in that both are generally unmarked but often both share privileges such as exclusive rights to relativizability. Starosta sees accusative languages as those that give priority to the Agent over the Patient in subject selection and ergative languages as those that give the reverse priority.

In some ergative languages the cross-referencing pronominal markers on the verb operate on an S+A versus 0 basis. In such a situation the nominative category is not available to capture the nexus of S+A, and the macrorole *Actor* is employed *(154).* Actor embraces S plus A and is also useful in some languages for describing control of reflexives and word order and it is generally useful in describing the properties of imperative constructions (it is the Actor that must be second person or which can be omitted irrespective of whether the language is

ergative or accusative) (151ff). Starosta suggests that in the German sentence *Mir 1st kalt* (to:me is cold) 'I feel cold' the dative nominal is probably to be taken as an Actor as are 'Inversion' nominals generally. These are dative nominals that Relational Grammarians analyze as initial subjects since they exhibit subject-like properties such as control of number agreement or control of the subject of an infinitival clause. In a one-level theory some other means *is* needed to distinguish such datives from 'ordinary' datives and Starosta suggests that the macrorole Actor may prove an appropriate basis for generalizing over subjects and datives with subject-like properties

The phenomenon of pronominal representation in the verb being on an S+A versus 0 basis in ergative languages is of course related to the widely attested phenomenon of free pronouns operating on this basis in ergative languages. Starosta discusses one such language, Dyirbal, but his analysis seems to be inconsistent with his principles. In the traditional analysis of case systems a case is established on the basis of sets of inflections that mark a grammatical function or functions irrespective of syncretisms in particular paradigms. Consider, for instance, the following nominative and accusative forms in Latin which show syncretism for neuter nouns.

(15   nominative   accusative

Mensa	*mensam*	table	(fern.)
dominus	*dominwn*	lord	(masc.)
bellum	*bellum*	war	(neut.)
dens	*dentem*	tooth	(masc.)
corpus	*corpus*	body	(neut.)
animal	*animal*	animal	(neut.)

Starosta seems to accept this principle in his definition of case forms, but when he analyses Dyirbal (Dixon 1972), which has an ergative-absolutive case marking pattern for nouns and a nominative-accusative pattern for first and second person pronouns, he treats nouns and pronouns as completely separate (182). The case marking schema is as follows:

(16)

	noun	pronoun
intransitive subject (S)	-Ø	-Ø
agent (A)	*-nggu,* etc.	-Ø
patient (0)	-Ø	*-nya*

In a language with this pattern of marking a simple transitive clause can have one overt case marker, two overt case markers or none depending on whether nouns or pronouns are involved. Starosta equates subject with zero marking and allows for sentences with no subject (noun agent plus pronoun patient) or two subjects (pronoun agent plus noun patient). This seems a bizarre analysis and one that is unnecessary given that the relation subject is strictly not a part of Lexicase theory. In Dyirbal and in languages generally the 'subject' determined on the basis of absence of marking rarely plays a part in the syntax. In Dyirbal the absolutive figures prominently in the syntax (the head of a relative clause, for instance, must be S or 0), while in many Australian languages with similar case marking schemas it is the subject (S-i-A) that figures in Equi rules and rules of switch reference. Another Australian language, Yidiny (Dixon 1977), which Starosta also discusses, is an exception. In this language the case marking schema is the same as in Dyirbal and ellipsed nominals are interpreted as being coreferential with the Lexicase subject or nominative.

4.   Subcategorisation

Not surprisingly in a theory that operates with shallow structures Lexicase makes a lot of use of the inner versus outer distinction, 'inner' equating with subcategorized. Infinitival complements of predicates, for instance, are classified as inner and outer. An inner complement subcategorizes its governor (or regent as Starosta calls it), is restricted as to where it can occur in a sentence and has a missing subject coreferential with the Patient in the next higher clause, so in that sense the complement has the Patient as its scope (134).

(17) *Mary   tried   to   Δ   swim   the   river   to   impress   John*
     PAT   -trns   infin   infin
     actor   inner   outer

(18) *John   told   Mary   to   Δ   go   home   to   please   his   father*
     AGT   +trans   PAT   infin   infin

actor inner outer

With outer complements the implied subject of the infmitive is taken to be the whole dominating clause. Typically the actor of the dominating clause is pragmatically interpreted as the implied subject.

The verb *promise* appears to be an exception to the rule that it is the Patient that controls the missing subject of inner infinitival complements since in a sentence like *John promised Mary to go home* it is *John* not *Mary* that is identified as the subject of *go. Promise* appears to be a transitive verb, but Starosta, following Jackendoff (1972:216-17), takes *promise* to be intransitive.

Starosta points out that the inner/outer distinction also applies to the dependents of nouns. Consider the celebrated example *a student of linguistics with long hair* which has been advanced as evidence for a noun phrase within a noun phrase (Hornstein and Lightfoot 1981). The prepositional phrase *of linguistics* subcategorizes its head whereas *with long hair* does not. This has been interpreted *as evidence for levels of constituent structure, but Starosta notes* that if a noun like *student* is subcategorized to take complements then these complements will contrast with adjuncts that occur freely, and order restrictions will follow from a general principle that inner constituents are normally required to be closer to their governors than outer constituents (227, cf. Radford 1981 :96ff, Hudson 1984:96-98).

(19) *a   student   of   physics   with   long hair*
       [⊃ [+COR]]   [+COR]   [+MNS]

Note that the head noun is effectively the Patient in relation to the inner complement, though the notation makes no provision for this.

The following well-known examples illustrate the distinction between an inner and outer infinitival complement of a noun (229-230):

(20) a.   I   have   plans   to   leave   [the country]
$$\begin{bmatrix} +N \\ +\begin{bmatrix} +V \\ -\text{fint} \end{bmatrix} \end{bmatrix} \qquad \begin{bmatrix} +V \\ -\text{fint} \end{bmatrix}$$

     b.   *I have plans to leave* [in your safe]

Plans, in the sense of intentions, is subcategorized to take an infinitival complement but *plans,* in the sense of documents, is not.

Non-restrictive relative clauses are outer complements and restrictive relative clauses are inner. Restrictive relative clauses subcategorize nominals inasmuch as they distinguish classes that can take them (common nouns) from classes that cannot (proper nouns and pronouns) (228).

Starosta touches briefly on the Lexicase analysis of auxiliary verbs. He takes auxiliary verbs to be verbs which govern non-finite verbs (239).

(21) *John   was   [s drinking again last night I*

$$\begin{bmatrix} +V \\ +aux \\ +fint \end{bmatrix} \quad \begin{bmatrix} +V \\ -aux \\ -fint \end{bmatrix}$$

This is an analysis I endorse up to a point. It has always seemed obvious to me that the so-called auxiliary is a verb. On grammatical grounds an auxiliary is certainly a verb since it takes whatever grammatical properties real verbs' take such as being marked for tense. It is also obvious that auxiliaries govern dependent verbs. In English, for instance, the modals determine that the dependent verb will be an infinitive (sic); *have* determines the *-en* form; progressive *be* the *-ing* form, and passive *be* and passive *get* the *-en* form. However, in Lexicase a verb is always the head of a clause and there must therefore be a clause for every verb (see (21) above). In a sentence like *He may have been getting gypped* the Lexicase analysis posits five clauses with the subject of the first verb [÷V, +aux, +fint] controlling the missing subject of the other four nonfinite verbs. I find such an analysis difficult to accept. I believe that one must maintain the traditional distinction between multi-verb clauses and compound sentence constructions. Take the 'compound tenses' in the Romance languages, for instance. (22) is from French and illustrates the well known fact that proclitics representing arguments of the lexical verb precede the grammatical verb or auxiliary,

(22) *Je   la   lui   cu   donné*
      I   it   him: to   have given
      I've given it to him

In the traditional analysis *ai* and *donné* are in the one clause, but in Lexicase there would be two clauses and the object clitics would be in the 'wrong' clause.

In Italian with certain modal verbs not traditionally regarded as auxiliaries there is the option of clitics representing objects of a dependent infinitive preceding the governing verb. One can say either (23a) or (23b):

(23) *a.   Posso   vederlo*
            can:I   see:it
            I can see it

      b.   Lo   posso   vedere
            it   can:I   see
            I can see it

(23b) is not an example of a compound tense but rather an example of what looks like two clauses, *posso* being the main clause verb and *vedere* the dependent infinitive. Only the position of the clitic *lo* representing the object of *vedere* gives any hint that the clauses might be in some sense amalgamated. One might be tempted to suggest that the clitic has moved as in an English sentence like *That I want to see,* but there is evidence for some kind of amalgamation that cannot be attributed to any kind of raising. In Italian, verbs, so the traditional description goes, form their perfect tenses with *avere* 'to have' or *essere* 'to be'.

Transitive verbs conjugate with *avere,* reflexive verbs with *essere.* Some intransitive verbs, particularly verbs of motion, take *essere* while the remainder take *avere.*

(24) *Marial'ha comprato (avere)*
       Maria bought it

(25) *Maria e Mirna si sono incontrate (essere)*
       Maria and Mirna met (themselves are met)

(26) *Maria è partita (essere)*
       Maria (has) left

(27) *Maria ha dor,nito (avere)*
       Maria slept

With *potere* 'to be able', *dovere* 'must' and *volere* 'to wish' the auxiliary *avere* is used, but interestingly enough *essere* can be used if one of these verbs governs an *essere-talcing* verb.

(28) a.   *Luigi ha voluto partire (avere)*
            Luigi wanted to leave

      b.   *Luigi ê voluto partire (essere)*
            Luigi wanted to leave

Where *potere, dovere* and *volere* govern a reflexive verb and the reflexive pronominal clitic precedes *potere,* etc. in a compound tense, then the auxiliary must be *essere.*

(29) a.   *Hoporuro adattarsi (avere)*
            He could adapt himself *(si* is the reflexive form)

      b.   *Si E porulo adauare (essere)*
            He could adapt himself

These facts seem to argue for some kind of amalgamation of two clauses into one. In Relational Grammar sentences like (23b), (28b) and (29b) would be analysed in terms of Clause Union which essentially involves the finite verb taking over the valency of its dependent verb. I think this notion can be captured in terms of derivation, though it means extending the Lexicase derivation system somewhat. Consider the Italian verb *potere* 'to be able' as in (23b). We want this verb to be transitive if its dependent is transitive, ditransitive if its dependent is ditransitive, and so on. Let's try this:

$$(30) \quad \begin{bmatrix} \begin{bmatrix} +V \\ \alpha F_i \end{bmatrix} \\ \begin{bmatrix} \supset PAT \\ \beta F_j \end{bmatrix} \\ \left\langle \begin{bmatrix} \supset AGT \\ \gamma F_k \end{bmatrix} \right\rangle \end{bmatrix} \rightarrow \begin{bmatrix} potere \\ +V \\ \begin{bmatrix} \supset PAT \\ \beta F_j \end{bmatrix} \\ \left\langle \begin{bmatrix} \supset AGT \\ \gamma F_k \end{bmatrix} \right\rangle \\ \begin{bmatrix} + \underline{\quad} \begin{bmatrix} +V \\ \alpha F_i \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

(30) reads as follows: For a target verb with a PAT argument (intransitive verb) or a PAT argument and an AGT argument (transitive verb) there is a verb *potere* with the same set of arguments and with the target verb as a dependent to the right. Under the normal convention

of interpretation anything that appears on the left of a rule but not the right is represented as deleted. (30) shows the target verb stripped of its complements. This is a suggested Lexicase analogue for the union predicate or predicate chômeur of Relational Grammar.

In his discussion of valency changing derivation Starosta quotes French examples of causatives where 'an Agent is added to the case frame of a .... verb' (162 and again 164). However, as is well known, the causative marker and the causativised verb do not amalgamate morphologically in French. Starosta apparently recognises an amalgamation analogous to what we get in languages like Turkish where there are morphological causatives, but he silently skirts the issue of how such an amalgamation is to be formalised. Here are examples of what is involved:

(31) a. *Il court*
          He runs

      b. *Annick lefait*
          Annick makes him run

(32) a. *II la mange*
          He eats it

      b. *Annick la luifait manger*
          Annick makes him eat it

(31b) is the causative of (31a) formed by the addition *of faire* 'to do, to make'. The S of(31a) appears as the 0 of (31b) in the form of the proclitic *le*. (32b) is the causative of (32a). The 0 of (32a) remains as 0 in (32b), but the A is reinterpreted as an indirect object realised as the proclitic *Iui*. The position of the object proclitics in front of *faire* rather than the infinitive with which they belong and the fact that there is a valency reshuffle consequent upon the introduction of a new A in examples like (32b) testify to a union, but there is no morphological amalgamation. I think the type of derivation suggested for the modal *potere* can work with *faire*

$$(33) \quad \begin{bmatrix} \begin{bmatrix} +V \\ \alpha F_i \end{bmatrix} \\ \begin{bmatrix} \supset PAT \\ \beta F_j \end{bmatrix} \\ \left\langle \begin{bmatrix} \supset AGT \\ \gamma F_k \end{bmatrix} \right\rangle \end{bmatrix} \rightarrow \begin{bmatrix} faire \\ \begin{bmatrix} \supset AGT \\ \delta F_l \end{bmatrix} \\ \begin{bmatrix} \supset PAT \\ \beta F_j \end{bmatrix} \\ \left\langle \begin{bmatrix} \supset COR \\ \gamma F_k \end{bmatrix} \right\rangle \\ \begin{bmatrix} +\underline{\quad} \begin{bmatrix} +V \\ \alpha F_i \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

 (33) states that for a particular verb with a PAT argument (intransitive verb) or a PAT argument and an AGT argument (transitive verb) there is a *verb faire* that has a certain valency related to the verb in the following way. *Faire* has an AGT that does not correspond with any argument of the target verb, a PAT that does correspond and a COR (indirect object) that corresponds with the AGT of the target verb. (33) also states *the faire* takes the target verb, shorn of its complements, as dependent to its right.

This approach to the amalgamation of predicates can be adapted to cover the remote auxiliary choice in examples like (28b) and (29b) if we assume that a property of a verb like *partire* needs to be passed up the verb chain. However, Relational Grammarians have made out a good case for saying that the choice of auxiliary in Italian and French with intransitive verbs is dependent on whether the verb has an underlying subject as surface subject or an underlying object as surface subject. Verbs like *dormire,* which take *avere,* are said to have underlying subjects while verbs like *partire,* which take *essere,* are said to have underlying objects (see various papers in Perimutter ed. 1983 and Perimutter and Rosen eds 1984, esp. Rosen 1984). In Lexicase all intransitive verbs have a PAT subject, so the Relational Grammar analysis cannot be countenanced. Starosta does not deal with this problem, though he does refer to it briefly and indicates that the distinction can probably be treated as a semantic property, and hence, I imagine, as a semantic feature (246).

5.   Finale

One of Starosta's themes, evident in *The Case for Lexicase* and in his earlier writings, is that rival theories tend to be too powerful, fragmentary, and not truly generative, i.e. not completely formal and explicit. Lexicase on the other hand is radically constrained, relatively complete, and probably the most fully formalised model of the thirty or so named varieties of theory that have appeared since 1957. The details of the formalisation have been developed over a period of seventeen years or so and tested on data from over 40 languages.

Underlying Lexicase is the notion that language is essentially a lexicon of words in which words have valencies specifying their dependents in terms of word classes. The valency specification is constrained to cover only immediate dependents. This might seem simplistic, but, on my reading, Lexicase demonstrates the great extent to which language is a list of valencies. The grammar, as noted earlier, consists of generalisations extracted from this lexicon of words.

Unbounded dependencies present a challenge to the notion of a lexicon of words with valencies restricted to immediate dependents and since unbounded dependencies are given such prominence in Chomskys Government and Binding theory, it behoves the proponents of rival theories to provide a treatment of this phenomenon. Unfortunately, Starosta declines to take up this challenge in *The Case for Lexicase* and refers the reader to some papers of one of his students, Louise Pagotto (1985a,b). A perusal of these reveals that a sentence such as the following is treated with an Argument Identification Rule as in (35) (Pagotto 1985a:51).

(34) *Who   did   you   see?*
     [+ntrg]   [⊃ [+PATI]   [+PAT]   ⎡ ⊃ [÷AG1]⎤
                                          ⎣ ⊃ [+PAT]⎦

(35) The missing .L [-Nom] is identified with t [÷N, + ntrg]

As is well known, the problem with a sentence like (34) is that part of the valency of *see* is fulfilled by an element in a higher clause. Starosta takes *do* to be the main verb, but even if one were to deny this, the problem would remain since there can be any number of lexical verbs between the *wh* element and the gap: *Who did the doctor tell the woman to go and see _? Did* in (34) is an intransitive verb whose valency requirement for a Patient is met by *you. See* is a transitive verb who valency requirements for an Agent and Patient are not met by immediate dependents. One Argument Identification Rule is required to identify the Agent with the Patient of the higher verb (cf. (17) and (18) above). (35) is another Argument Identification Rule. It identifies the Patient of *see* with the interrogative in [+ntrg] in the higher clause. The arrows in (35) refer to lower and higher clause respectively. (35) states

that the missing non-nominative in a subordinate clause is to be identified with a nominal interrogative in the matrix clause.

Devotees of other models would do well to investigate Lexicase and see to what extent significant generalisations can be made within a tightly constrained framework. Obviously a more constrained theory that can make significant generalisations represents a stronger claim about the nature of language than a more powerful theory covering the same domain. *The Case for Lexicase* covers a lot of ground in a short space and a number of intriguing analyses are introduced but not elaborated. This is a reflection of space considerations rather than of a programmatic stage of development. In fact an elaboration of most points can be found in the works of Starosta and his students, references to which are contained in the copious bibliography.

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