Remarks on Denominal Verbs

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1 Plato's problem in lexical semantics

Word meaning confronts us, as acutely as anything in syntax, with what Chomsky has called Plato's problem.[1] We know far more about the meaning of almost any word than we could have learned just from our exposure to uses of it. Communication would be unbearably laborious if we did not share with other speakers the ability to generalize the meanings of words in the right ways. As Fodor (1981) notes in arguing for the innateness of lexical semantics, the most we might plausibly have *learned* about meaning of the verb *paint* is that it means something like "to cover with paint". Even if we have only seen this done with a brush, we have no hesitation in applying the verb correctly to novel techniques of painting, such as rolling, spraying, or dipping. But when a vat of paint explodes in a paint factory, covering everyone with paint, or when Velázquez dips his brush in a pot of burnt sienna, we know that the sentences in [1] would not be legitimate reports of what happened.

(1)   a. #The explosion painted the workers red.

        b. #Velázquez painted his brush.

Denominal verbs such as *saddle* and *corral*, discussed by Hale and Keyser (this volume), dramatically illustrate the same point.

(2)   a. Bill saddled the horse.

        b. Bill corralled the horse.

No expertise in horsemanship is needed to know that [2a] means that Bill put a saddle on the horse, and that [2b] means that he put the horse into a corral. That is, *saddle* is correctly assigned to the class of LOCATUM VERBS, and *corral* to the class of LOCATION VERBS. Moreover, it is understood that these activities are done in a certain way. For example, [2a] does not felicitously describe putting a saddle into a basket on the horse's back, or putting it on the wrong part of

the horse's anatomy. And [2b] implies that the horse is alive; compare [3a] and [3b]:

(3)   a. We put the dead horse in the corral.

        b. #We corralled the dead horse.

In so far as such knowledge goes beyond empirical experience, there must be general principles that guide our acquisition and use of word meanings. They must be rich enough to tell us what a given denominal "putting" verb means, including not only whether the underlying noun denotes the thing put or the place where it is put, but also in what ways the verb can be extended to novel situations.

Fodor and Hale & Keyser offer quite different accounts of the nature and origins of this sort of lexical knowledge. Fodor argues pointblank that because the meaning of a verb like *paint* couldn't be learned, it must be innate; his final conclusion is that all word meanings are innate. This leads to a truly paradoxical conclusion: evolution (or a far-sighted Creator?) has somehow equipped us with a pre-wired biological endowment that not only includes the meanings of words that refer to recent technological developments but anticipates all future ones as well.

H&K implicitly reject this radical form of lexical nativism, and seem to adopt the less surprising position that word meanings arise from the interaction of linguistic predispositions with empirical experience. This follows from their view that universal grammar specifies not word meanings themselves but rather principles constraining their construction. Of course, if these principles are to solve Fodor's problem, they must be rich enough to support the acquisition from relatively sparse experience of the kind of detailed knowledge that we have about the meaning of a verb like *paint*; as I shall argue, they should project that meaning from correspondingly underspecified lexical semantic representations. At the same time, they must be consistent with universals of lexical semantics and with the richness and detail of natural languages' vocabularies. In line with the classic program of generative grammar, we can formulate them as conditions on semantic representations which impose significant restrictions on "possible words", in such a way as to narrow down the search space of the learner to make the acquisition task possible.

The key feature of Hale & Keyser's theory of lexical semantics is that word meanings are couched in the vocabulary of syntax, and — this is the astonishing new claim that takes it well beyond the old generative semantics program — that their properties follow from constraints which hold on syntactic categories. In fact, in their view meanings of words are represented by syntactic structures conforming to X̄-theory (though with some additional lexicon-specific constraints), and the internal syntax of words ("L-syntax") is related to their clausal syntax by syntactic principles. So resolutely syntax-centered is H&K's approach that it

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seems to have no use either for conceptual knowledge or for autonomous semantic principles of any sort. H&K never actually deny the existence of either, but (to the detriment of their analysis, as we shall see) they systematically ignore every opportunity of using them to account for word meaning.

It is instructive to compare H&K's approach with the one pursued in Bierwisch (1967, 1983, 1986, Bierwisch and Schreuder 1992) and Wunderlich (MS). Like H&K, B&W reject the bluntly holistic conception of word meaning adopted by Fodor in favor of a decomposition into primitive elements which combine according to fixed combinatorial rules. Where they part company with H&K is in negotiating word meaning in the semantics. Like H&K, B&W consider word meanings to be propositional structures built from a fixed vocabulary of primitive constants and variables, but they allocate these structures to a special level of Semantic Form, which articulates conceptual knowledge in terms of linguistically determined invariants. This postulated level is distinct from, but interacts with, conceptual knowledge on the one hand, and with syntactic structure on the other. A lexical item is represented at Semantic Form by an expression in which Th-roles are represented by lambda-abstractors over the variables in the function denoted by the predicate. The semantic role of the variable over which the lambda operator abstracts determines the semantic content of the resulting Th-role, and the variable's depth of embedding in Semantic Form determines the Th-role's rank in the Th-hierarchy. For example, three Th-roles are projected in the Semantic Form of the verb *paint*:[2]

(4)   *paint:* $\lambda z \lambda y \lambda x$ [CAUSE $(x,$ (HAVE-ON $(y,\ z)$)) & PAINT (z)]

Thus, on B&W's theory, word meanings are jointly constrained by principles governing two different systems of mental representation, conceptual knowledge and Semantic Form, and the relation between word meanings and clausal syntax is governed by the principles which project argument structure and event structure from Semantic Form. This latter aspect of B&W's approach of course formalizes the traditional assumption, set aside in early generative work, but long since honorably rehabilitated, that the syntactic properties of lexical items are in large measure predictable from their meaning. Recent studies reconfirming it include the semantic theory of aspect and "affectedness" (Tenny 1987, Krifka 1989, Piñon 1994), the semantic account of middles (Condoravdi 1989), the semantic theory of *re-* (Wechsler 1989), and the semantic theory of complement selection (Dor 1993). H&K's approach questions this tradition and offers pure syntax in its place.

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[2]The Semantic Form of nouns and verbs includes in addition a referential argument, which is bound by a functional category (C, I in the case of verbs, D in the case of nouns). The referential argument of a verb, omitted from [4], is an event. CAUSE stands for a predicate which denotes, above and beyond simple causation, the direct and continuous participation of the Agent in the event. This point is not relevant for now, but its consequences will become apparent below. See Wunderlich (MS.) for detailed discussion of the argument structure of causative verbs.

By explicitly providing a level of conceptual representation relevant to lexical meaning, B&W's account, unlike H&K's, makes available the beginnings of an answer to Fodor's puzzle. Let us suppose that the meaning of lexical items is constrained by the following principle:

(5)   a. Denominal causative verbs refer to generically intentional activities.

       b. Simple predicates refer to single events (and consequently, simple causatives refer to direct causation).

If *paint* accords with [5], then not any activity of "causing to be covered with paint" is a painting activity; it must in addition qualify as the kind of event which is normally done with the purpose of directly bringing about that state. Therefore, an explosion, which cannot act intentionally at all (except by metaphorical animation), is in no position to "paint" anything. And dipping a brush or roller into a pot to cover it with paint is not "painting" the brush or roller, since that kind of thing is not done with the intention of bringing it into a "painted" state.

This does not mean that such causative verbs are always interpreted as intentional. On the contrary, practically any generically intentional type of activity can also be carried out in various unintentional ways (accidentally, while sleepwalking, etc.), and verbs of causation can freely refer to these unintentional versions of generically intentional activities. For example, in the course of painting the wall I might unintentionally paint the light switch. In addition, lexicalized conventions of personification allow particular kinds of non-intentional agents to be assimilated to intentional ones (an explosion can paint the sky red). These conventions appear to be largely language-specific: in English (but not in German) a disease can *kill* people, and in German (but not in English) a book can *want* to be understood as a contribution to semantics.

The requirement that underived causatives express direct causation is not straightforward either. Taken literally, it would entail that one cannot "paint" a house indirectly by engaging a painter to do it. While most people would probably use the word in accord with this restriction, there is no question that the boundaries of direct causations are fuzzy. What does it take to *build a house*? Doing all the work by yourself? Active participation in the construction? Interested supervision? Paying for it? Here direct causation is commonly extended at least part way up this scale, as if an instrumentalization of the actual builders were arrogantly sanctioned by language itself. Significantly, this is a language-specific fact of usage, not true of the Finnish synonym, for example.[3]

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[3]This is the theme of Brecht's poem *Fragen eines lesenden Arbeiters*:

Wer baute das siebentorige Theben?
In den Büchern stehen die Namen von Königen.
Haben die Könige die Felsbrocken herbeigeschleppt?

The principles of conceptual interpretation should thus be regarded as default rules, which govern the interpretation of a lexical item *unless other knowledge specifically precludes it*.

To summarize the point so far: conceptual knowledge is essential to the formation of lexical meaning. This is necessary to explain how speakers unerringly assign a denominal "putting" verb to the locatum or location class. The relevant constraints on the meanings of verbs could not be derived from purely combinatorial properties of the primitives of compositional semantics — for H&K, the lexicosyntactic categories from which word-internal propositional structure is built. If this is so, then we must conclude that even H&K will not be able to avoid bringing extralinguistic conceptual knowledge into their theory.

The second main difference between the two approaches is that for H&K the representations defining word meanings are composed of lexicosyntactic categories — for example, *Noun, Verb, Complement, Specifier* — and for B&W they are composed of semantic categories. In this respect they represent different schools of semantics. H&K follow the "meaning-is-syntactic" line staked out most emphatically by Hornstein (1984), and embraced in varying forms by many other workers associated with Chomsky. B&W's work on the other hand draws on two other traditions: formal semantics, where it partly converges with independently developed related proposals by Dowty (1991), and "cognitive" semantics, where it offers an alternative to approaches such as Jackendoff's (see e.g. the work on spatial terms initiated in Bierwisch 1967 and summarized in Bierwisch and Lang 1989). On this score, the recognition of Semantic Form as a linguistic level of representation distinct from conceptual knowledge is probably the most important difference between B&W's approach and Jackendoff's. The integration of formal and cognitive semantics is the hallmark of B&W's approach and its chief methodological contribution.

For H&K, a basic argument in favor of the analysis of word meaning as L-syntax is that it explains why the number of Th-roles is small. This follows, they say, because Th-roles are configurationally defined as positions in L-syntax, and the lexicon projects a limited number of syntactic structures. However, any such limitations on Th-roles can equally well be accounted for by the restricted number of basic semantic predicates in lexical decomposition. In any case, this whole line of argumentation is premature because it has not been established that the number of Th-roles really is all that small to begin with. More likely, the half-dozen usual suspects are just the most common roles. More fine-grained studies of lexical semantics have invariably turned up additional Th-roles which, it seems, cannot be shoehorned into the standard list. These include the Th-roles of symmetric predicates (*resemble*), inclusion relationships (*contain*), and

"Who built seven-gated Thebes?
The books list the names of kings.
Was it the kings who dragged the boulders there?"

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social relations (*marry*). In any case, H&K don't even begin to show that even the Th-roles which they do recognize are in fact reducible to configurational positions.

I propose to focus on the lexical semantic aspect of H&K's approach here, comparing it with that of B&W. Taking my cue from H&K, I will concentrate on systematic properties of whole classes of verbs, specifically on the category of denominal verbs, rather than pursuing an in-depth analysis of individual verbs. Though for H&K this class includes many verbs such as *laugh* that are not morphologically derived from nouns, let us begin with the two types of incontrovertibly denominal "putting" verbs already seen in [2], which are among H&K's paradigm cases. In the next section I discuss H&K's treatment of their semantics, and defend an alternative account which makes use of several key assumptions of the B&W framework. The main point there is that H&K's L-syntactic structures themselves would require a semantic interpretation making crucial reference to conceptual knowledge. In section 3 I suggest a solution to the problem of apparent semantic discrepancies between verbs and the nouns they are derived from. I also argue that morphological relations are to be taken much more seriously than H&K do, and that contrary to what they claim, nonderived verbs exist. Finally, in section 4 I examine transitivity alternations and come to the conclusion that abandoning L-syntax altogether in favor of a semantic approach allows a more unified account of the conditions under which the arguments of a verb are omissible.

2   Locatum vs. location verbs

In [6] and [7] I provide a representative list of locatum and location verbs, based on Levin (1993) but modified by culling out a few dubious or misclassified items[4] and expanding it with some additional ones:

(6)   *Locatum verbs:*
aluminum, arch, arm, asphalt, bait, bandage, bar, begrime, blanket, blindfold, board, bread, brick, bridle, bronze, butter, buttonhole, cap, caption, carpet, caulk, chrome, (#chromium), cloak, clothe, cloud, color, coat, cork, crown, curtain, diaper, ditch, dot, drug, fence, flag, flour, forest, frame, fuel, gag, garland, garter, gas, gild, glaze, glove, graffiti, grass (down), gravel, grease, groove, halter, harness, heel, hem, hole, index, ink, jacket, label, leash, leather, leaven, letter, lipstick, malt, mantle, mask, mulch, muzzle, nickel, oil, ornament, pad, panel, paper, parquet, partition, patch, pattern, pepper, perfume, pitch, plank, plaster, pomade, poster, postmark, powder, putty, question mark, robe, roof, rosin, root,

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[4]For example, *polish* is surely not a locatum verb, since it means "to rub something smooth or shiny", with or without applying polish to it.

rut, saddle, salt, salve, sand, seed, sequin, shawl, shelve, shingle, shoe,
shutter, signpost, silver, slate, slipcover, soap, sod, sole, soot, spice, stain,
star, starch, stopper, stress, string, stucco, sugar, suit, sulphur, tag, tar,
tarmac, tassel, thatch, thread, ticket, tile, tube, turf, vault, veil, veneer,
vent, wallpaper, water, wax, whitewash, wreathe, yoke, zipcode

(7) *Location verbs:*
archive, bag, bank, barrel, bed, bench, berth, billet, bin, bottle, box,
cage, can, case, cellar, coop, corral, crate, ditch, dock, drydock, encase,
enthrone, entomb, file, fork, front-page, garage, grain, greenhouse, groove,
ground, hangar, house, ice, imprison, index, invaginate, jail, jar, jug, ken-
nel, land, lot, net, package, pasture, peg, pen, pillory, pocket, pot, reel,
sheathe, shelter, shelve, shoulder, skewer, snare, spindle, spit, spool, sta-
ble, string, table, terrace, thread, tin, trap, tree, tub, tube, warehouse

According to H&K, locatum verbs and location verbs involve two distinct
semantic relations of location, which they respectively call *terminal coincidence*
and *central coincidence* (the latter glossed as "close association or contact"),
and which they identify with the abstract prepositions P_1 and P_2 in their L-
syntactic representations:

(8)

Location verb   Locatum verb
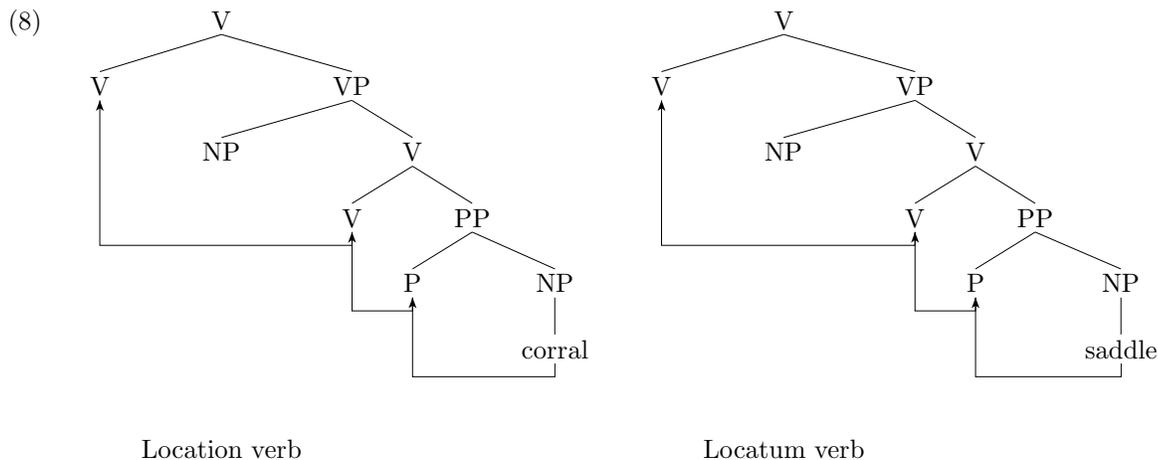
Let us note in passing that a number of syntactic objections to this approach,
of a type familiar from the much earlier discussion of generative semantics, still
remain unanswered. For H&K there are no verbs without internal arguments —
but what rules out their existence? Why are there never any stranded modifiers
(e.g. [9a])? Why does the incorporated N never saturate a Th-role — that is,
why is it *always* possible to add a syntactic expression which corresponds to the

putatively incorporated one, as in [9b]?[5]

(9)   a. *We saddled her horse Western.

        b. We saddled her horse with a Western saddle.

These questions will have to be answered if the L-syntactic approach to word meaning is to be workable. I will give H&K these syntactic points for free here, and proceed to the lexical semantics.

H&K argue that if these lexical representations are assumed, then purely syntactic principles will block denominal verbs such as *bush, house* from being assigned the unwanted meanings "to put something on a bush", "to put something on a house". Putative derivations such as *I gave the bush some fertilizer → *I bushed some fertilizer*, or *I gave the house a coat of paint → #I housed a coat of paint* violate a syntactic principle that prohibits the incorporation of indirect objects.[6]

What H&K do not explain is why these very same nonexistent verbs could not be derived from the other source that their theory provides. The derivations *I put some fertilizer on the bush → #I bushed some fertilizer*, *I put a coat of paint on the house → #I housed a coat of paint* are syntactically unexceptionable. After all, they are identical with the ones that H&K themselves propose for location verbs like *corral*. But in the case of the verbs in question they must be blocked somehow, for they assign the wrong meanings to them.

To block the use of *bush* and *house* in this other, unwanted sense, H&K's theory would have to preclude the relation between fertilizer and bush, and between house and paint, from qualifying as an instance of "central coincidence" (that is, "close association or contact"). Why it would not qualify is not clear, since there is surely a "close association or contact" between these things (the contact between house and paint could hardly be closer). So either the semantic content of the abstract prepositions P_1 and P_2 needs sharpening, or there is an additional element of conceptual knowledge at work. It is the latter alternative that I wish to advocate here. I shall now argue that even H&K would have to adopt something like it, a modification which would bring their theory one step closer to B&W's.

As argued in section 1, there must be some way to reliably identify which of the two locative relations a given denominal verb expresses. Speakers of English at once assign the appropriate meaning to any of the denominal verbs in [6] and [7], even if they happen not to have heard it before. It is not an idiosyncratic rule of English that is at work here. In German, for example, the vast majority of denominal verbs are made by overt prefixation or suffixation, rather

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[5]In another context I hope to discuss H&K's treatment of double-object constructions and the dative alternation, which I believe to be unsafisfactory.

[6]By analogous reasoning, H&K propose that the reason *#the calf cowed* could not mean what *the cow calved* in fact means is that subjects may not be incorporated.

than by zero derivation,[7] and many English denominal verbs must be expressed by paraphrases.[8] Yet, where both German and English have a corresponding denominal verb, its meaning is virtually always the same in both languages. Moreover, speakers coerced to interpret neologisms assign the expected meanings to them.

From the perspective of the B&W approach, we can derive the interpretations of denominal "putting" verbs by the following general principle referring to conceptual knowledge:

(10) If an action is named after a thing, it involves a canonical use of the thing.

Consider first how [10] constrains the meaning of other classes of denominal verbs. For denominal verbs with instrumental meaning, it says that the verb denotes a canonical (conventional, generic) use of the noun as an instrument. For this reason, *to tape* means "to apply or use tape" in any way whatever that is consistent with this restriction, for example, to fasten, tie, bind, cover, support, record, or measure with tape; but it cannot refer to ad hoc uses of tape: e.g. using a roll of tape as a paperweight is not "taping" the papers, using a piece of tape to strangle someone is not "taping" that person, etc. Within its proper confines it is productive: when videotape was developed, it instantly became possible to speak of "taping a movie". Note that the claim is that all meanings of denominal verbs reflect canonical uses of the things denoted by the noun, not conversely that all canonical uses of the things denoted by the noun are reflected in the meanings of denominal verbs. For example, *to water* may mean to irrigate with, to dilute with, or to supply with water, but not to extinguish (a fire) with water.

The meanings of locatum and location verbs are therefore fixed by [10] as follows:

(11)   a. Locatum verbs: putting x in y is a canonical use of x.

       b. Location verbs: putting x in y is a canonical use of y.

Therefore, the reason we do not "bush fertilizer" or "house paint" is that it is not a canonical use of bushes to put fertilizer on them, and it is not a canonical use of houses to put paint on them (whereas it is of course a canonical use of fertilizer to put it on bushes, and a canonical use of paint to put it on houses).[9]

To say that the action represents a canonical use of the incorporated noun is not the same thing as saying that it involves putting something into its typical

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[7]Among the few zero-derived locatum verbs are *salzen* 'salt', *ölen* 'oil', *salben* 'anoint', *teeren* 'tar'; I was unable to find any zero-derived location verbs at all. The most popular suffix is *-ieren*, e.g. *asphaltieren* 'asphalt' (locatum), *archivieren* 'archive' (location). Prefixes include *ver-* and *be-* for locatum verbs, e.g. *vergolden* 'gild', *besanden* 'sand', and *ein-* for location verbs, e.g. *eindosen* 'can', *einkellern* 'cellar'.

[8]E.g. *mit Augenbinde versehen* 'blindfold', *mit Brettern bedecken* 'board', *mit Ziegelsteinen pflastern* 'brick'.

[9]Apparent exceptions to the proposed generalization would be *beach* and *land*.

or canonical location. The latter condition does not hold for either class of denominal "putting" verb. It is entirely natural to speak of *flagging a table* or *imprisoning a politician*, even if tables and prisons are not necessarily typical or canonical locations for flags and politicians, respectively. The essential condition is that the flag be used for its canonical purpose of symbolizing or signaling something (not, for example, to cover, wipe, or polish something), and that the prison be used for its canonical purpose of penal incarceration (not, for example, as temporary housing):

(12) a. #The table was filthy, but we flagged it clean and shiny.

   b. #The motels were full, but the authorities managed to imprison all the victims of the flood.

   c. #Because there was no room in the inn, Joseph and Mary stabled the infant Jesus.

The fact that novel verbs are reliably understood, and that speakers' judgments about the felicity of extended usages are shared, demonstrates the productivity of these principles. Even when the verb is entirely lacking in the language, it can still be interpreted correctly when presented as a hypothetical item because [16] and [10] are active interpretive mechanisms.

It is no surprise, then, that if an object has *both* canonical uses — to be put on something and to have something put on it — the denominal verb formed from it has both meanings:

(13) a. *shelve* (1) "to provide something with shelves", (2) "to put something on shelves"

   b. *ice* (1) "to put ice on something", (2) "to put something on ice"

   c. *index* (1) "to provide something with an index", (2) "to put something on (into) an index"

   d. *string* (1) "put strings on", (2) "put on strings"

   e. *tube* (1) "to put tubes in something", (2) "to fill something into tubes"

   f. *thread* (1) "to put thread on/in/through something" (e.g. to thread a needle), (2) "to put something on thread" (e.g. to thread wire with beads)

And with *two* such multi-purpose nouns we can switch the locatum with the location:

(14) a. John baited the hook. John hooked the bait.

   b. John indexed the archive. John archived the index.

   c. John papered the shelves. John shelved the papers.

Following a suggestion by Bierwisch, I assume that the order of Th-roles is a reflection of their semantic depth. I also posit a constraint comparable to H&K's syntactic constraints on incorporation, or to Baker's ECP, which I formulate in [15]:

(15) Only the lowest (most deeply embedded) Th-role can be "incorporated", i.e. expressed by the noun of a denominal verb.

It follows that the difference between locatum verbs and location verbs cannot simply be a matter of reversing the located thing with the location in argument structure. This then provides a formal piece of motivation for recognizing two relations of location, corresponding to H&K's P_1 (*terminal coincidence*) and P_2 (*central coincidence*). They are here distinguished as BE-ON (or BE-IN, BE-AT, etc.) versus HAVE (or HAVE-ON, HAVE-IN, etc.), and identified with pure location and possession, respectively.

Accordingly, locatum verbs and location verbs have the following representations at Semantic Form:

(16)   a. Locatum: $\lambda z \lambda y \lambda x$ [CAUSE (x, (HAVE-ON (y, z))) & SADDLE (z)]

   b. Location: $\lambda z \lambda y \lambda x$ [CAUSE (x, (BE-IN (y, z))) & CORRAL (z)]

That these are indeed two different semantic/thematic relationships, one denoting pure location, the other involving a "have" (generalized possessive) relation, is empirically confirmed by contrasts such as these:

(17)   a. BE-ON: *The top shelf has a book on. *The floor has Fred on. *The front page has an interesting item on. *The corral has a horse in. *The book is on already. *Fred is on already.

   b. HAVE: The horse has a saddle on. The house has a paint of coat on. John has shoes on. The saddle is on already. The paint is on already.

In Finnish, the BE-ON relation is expressed by adessive case ([18a]), whereas the HAVE-ON relation patterns with internal location (inessive case, [18b]):[10]

(18)   a. Mylly on ylähyllyllä
      grinder is   top-shelf-Adess

      "The grinder is on (lit. 'at') the top shelf"

      Uutinen on etusivulla
      news item is   front-page-Adess

      "The news item is on (lit. 'at') the front page"

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[10]Unmarked Nominative/Accusative case and Singular number are not specified in the glosses.

Matti on lattialla
Matti is floor-Adess

"Matti is on (lit. 'at') the floor"

b. Satula on hevose-n selä-ssä
saddle is horse-Gen back-Iness

"The saddle is on (lit. 'in') the horse's back"

Mati-lla on sormus sorme-ssa
Matti-Adess is ring finger-Iness

Matti is wearing a ring (lit. "Matti has a ring in his finger")

Minu-lla on kengä-t jala-ssa
I-Adess is shoe-Nom/AccPl foot-Iness

"I'm wearing shoes" (lit. "I have shoes in the foot")

Seinässä on maali-a
wall-Iness is paint-Part

"The wall has paint on it" (lit. "There is paint in the house")

Talossa on katto
house-Iness is roof

"The house has a roof" (lit. "There is a roof in the house")

To summarize our conclusions so far: BE-ON and HAVE (or P_1 and P_2) represent two semantically distinct relations, whose respective spheres of use are fixed by principle [10]. L-syntactic structures do not characterize all the relevant aspect of meaning: they themselves would need to be semantically interpreted. A distinction analogous to Semantic Form and Conceptual Structure would have to be made within H&K's approach as well.

3 True and apparent denominal verbs

Some locatum verbs and location verbs retain the full force of the corresponding noun, others compromise it in one way or another. The examples in [19] represent verbs where the place or thing-put must be in the extension of the related noun:

(19) a. *Location verbs:*
        to box a present in a gift box (#in a brown paper bag)
        to cage a frog (#in a terrarium)
        to greenhouse orchids (#on a windowsill)
        to pocket change in one's coat pocket (#handbag)

b. *Locatum verbs:*
to fence an area with barbed wire (#with a mine strip)
to oil a hinge (#with graphite)
to star a sentence (#with a question mark)
to crown someone with laurels (#with a hat, #with a medal)

The additional syntactic adjunct or object is acceptable just in case the thing denoted by the incorporated noun can be said to be an instance of it, or to consist of it, as in *The box was a gift box/#a brown paper bag, the fence was made of barbed wire/#mines.*

In another class of verbs the nominal meaning is to varying degrees attenuated, or "bleached":

(20)   a. *Location verbs:*
to shelve a book on a windowsill
to land a hydroplane on water
to dump garbage by the roadside
to ditch a car in a vacant lot
to skewer someone on a sword

   b. *Locatum verbs:*
to paint an inflamed throat with iodine
to butter a piece of toast with margarine
to dust a pan with flour
to blanket an area with advertising

As the examples illustrate, even our friends *shelve* and *paint* belong here. Windowsills are not strictly speaking shelves, nor is iodine really paint; still less is water land, or margarine butter. How can we square the data in [20] with a denominal analysis?

H&K formalize this bleaching of denominal verbs' lexical content as a series of synchronic syntactic operations on argument structure:

(21)   a. Incorporate PP

   b. Add an "adverbial increment"

   c. Delete the PP's index, leaving the adverbial increment

Their analysis of *shelve*, for example, involves making the incorporated noun *shelf* inaccessible by index deletion and transferring the residue of its lexical content to the adverbial increment; they gloss *shelve* as "to put something (on a shelf or shelf-like place) in a 'shelving' manner".

A closer look at the problematic cases in [20] shows that the degree of "bleaching" among them varies considerably. There seems to be two very different kinds of bleaching, with *shelve* and *paint* representing the mild case, and *dump* and *ditch* the extreme.

Shelve is one of the abovementioned ambiguous verbs which function both as location verbs and as locatum verbs:

(22)   shelf   "thin flat narrow horizontal elevated surface"

     shelve₁ (location verb) $\lambda z \lambda y \lambda x$ [CAUSE (x, HAVE (y, z)) & SHELF (z)]

     shelve₂ (locatum verb) $\lambda z \lambda y \lambda x$ [CAUSE (x, BE-ON (y, z)) & SHELF (z)]

Like many location and locatum verbs, *shelve* is subject to additional restrictions which are not directly represented in [22]. H&K observe that if something is shelved (in the location sense) it must be a solid object. Also, it must be put there for keeping or storage. Attaching a sticker or screwing a bracket on a shelf does not amount to "shelving" the sticker or bracket, and putting a fresh coat of paint on a shelf is not "shelving" the paint. If necessary, such restrictions could be included in the lexical entry as sortal conditions on the roles. For example, we could elaborate the entry for *shelve₂* with the specification: SOLID OBJECT (y). However, in most instances I am aware of, such restrictions seem to follow from the principle [10] already proposed, under plausible assumptions about conceptual knowledge. For example, we can assume that speakers' world knowledge includes the information that shelves are intended for storing objects, and that, simply because they are flat horizontal surfaces, the objects stored on them must be solid (rather than liquid, for example). The restrictions on *shelve₂* are then consequences of [10], so that the lexical entry can be kept in the simple form that was given in [22].

With this in mind, let us ask whether the meaning of the incorporated nominal is really wholly inaccessible in *shelve* and *paint*, and that a new component of meaning has been added as an "adverbial increment" in its place. Consider first *shelve*. If we assume that the nominal component of meaning has been replaced by an adverbial increment, denoting, say, manner of motion, it is hard to see how the meaning of the verb could be coherently characterized. How could we explain that — as H&K themselves point out — the location must be, if not exactly a shelf, then at least a very shelf-like thing? One can *shelve* a book on a windowsill, but one can hardly do so in a paper bag or in a suitcase. If *shelf* is a "thin flat narrow horizontal elevated surface" (see [22]), then the only way in which a windowsill fails to qualify as a "shelf" is that it is not "thin". And "thinness" is a negotiable component of the meaning of *shelf* in other related expressions as well, such as *continental shelf*. So the denominal analysis of the verb *shelve* in [22] requires only a minimal modification, such as [23]:

(23)   *shelve:* $\lambda z \lambda y \lambda x$ [CAUSE (x, BE-ON (y, z)) & SHELF-LIKE-THING (z)]

Similarly, the verb *paint* can refer to the application of any paint-like substance, for example, to painting a throat with iodine. No particular "adverbial increment" seems to be added here either. The extended kind of painting can

be done in all the ways the ordinary kind can, including brushing, swabbing, or spraying. Nor is the content of the incorporated noun erased: when we spread paste on wallpaper, or spray a plant with water, we do it "in a painting manner", yet we are certainly not "painting" these things. So *paint* is not simply a manner-of-motion verb. Again, the appropriate analysis will be to invoke an extended meaning of the noun, which as before is available in other expressions as well, e.g. *throat paint*. The following minimal modification of the analysis in [4] seems indicated, therefore:

(24) *paint:* $\lambda z \lambda y \lambda x$ [CAUSE $(x,$ HAVE-ON (y, z)) & PAINT-LIKE-SUBSTANCE (z)]

A very different kind of bleaching is seen in verbs like *dump* and *ditch*. Here the force of the nominal is scarcely felt. Not only does the place where something is dumped or ditched not have to be a dump or ditch, it need not even be dump-like or ditch-like in any physical respect whatever. The location is not specified by the verb any more than it it is with underived verbs such as *discard* or *jettison*. Explaining the meaning of *dump* and *ditch* by a minimal semantic extension of the corresponding noun seems out of the question. There is in fact no evidence for a denominal analysis of these verbs at all, and a reanalysis of the type suggested by H&K for *shelve* does seem appropriate. Morphologically, noun and verb could still be analyzed as related, but the relationship would be a matter of a derivation from a common root.

The move we have just made is not unprecedented. Instrumental verbs likewise include both true denominal verbs, which contain the meaning of the noun, possibly in an attenuated version, and verbs which are related to nouns via a shared root, and which do not semantically incorporate the meaning of the noun (Kiparsky 1982):

(25) True denominal instrumental verbs:

      a. #She taped the picture to the wall with pushpins.

      b. #They chained the prisoner with a rope.

      c. #Jim buttoned up his pants with a zipper.

      d. #Let's bicycle across France on our tricycles.

      e. #Screw the fixture on the wall with nails.

      f. #You have to padlock the door with a latch.

      g. #He snowplowed the sidewalk with a shovel.

      h. #The artist charcoaled the drawing with ink.

(26) Pseudo-instrumental verbs, actually denoting manner of motion:

      a. He hammered the desk with his shoe.

      b. He brushed his coat with his hand.

c. I paddled the canoe with a board.

d. String him up with a rope!

e. Can you whistle with a blade of grass?

f. The convict sawed off the bars with her dentures.

g. She anchored the ship with a rock.

h. We wedged the window open with a screwdriver.

The verbs in [26] really describe a particular kind of activity, a manner of motion, and the related nouns refer to objects whose canonical use is to perform that kind of motion or activity, suggesting a cross-categorial generalization of [10]. For example, *to hammer* means "to strike with the flat side of a heavy object", and a *hammer* is an instrument dedicated to that purpose. In contrast, verbs like *to tape, to chain, to button* (see [25]) refer to actions of applying or using the things denoted by the corresponding nouns in satisfaction of [10], as discussed above.

The distinction between denominal verbs and basic verbs which merely share their root with a noun correlates with phonological and morphological properties. Denominal verbs regularly have the same stress as the verb ([27a]), while basic verb/noun pairs may show a stress contrast as in [27b]:

(27)   a. *to páttern, to índex* (not *pattérn, indéx*, as would be expected for a basic verb, cf. *discérn, assért, adópt, expéct*)

   b. *to protést, a prótest; to permít, a pérmit*

The same is true for verbs of putting: note the contrast between *to áffix a stem with -ing* (denominal locatum verb), and *to affíx -ing to a stem* (basic).[11]

Since English shuns verb compounds (except for the type back-formed from synthetic compounds, such as *air-condition*), we predict that verbs related to plain noun compounds are derived from them, i.e. that they are denominal rather than basic, and hence that the nominal meaning is semantically retained in the verb. This appears to be correct:

(28)   a. #You have to padlock the door with a latch.

   b. #He snowplowed the sidewalk with a shovel.

   c. #She charcoaled the drawing with ink.

Another predicted morphology/semantics correlation is the following. Since only basic verbs form their past tense by strong inflection (vowel alternations), denominal verbs must show weak inflection. So morphology precludes a denominal derivation of *string/strung, sting/stung*, correctly predicting that they will pattern semantically with the *hammer* class; contrast the genuinely denominal *ink/inked, ring/ringed*:

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[11]The form with retracted stress can have the basic meaning as well; in the same way, while *prótest* has the simple verbal meaning for some speakers, the reverse is not true.

(29) a. to string up someone with a rope
         to sting with a needle

    b. #to ink a drawing with crayons
       #to ring pigeons with dye marks

On closer examination, then, the apparent bleaching effect turns out to be of two radically different kinds. The first involves an attenuation of the content of the embedded noun (typically recurring in other uses of it), with no "adverbial increment". The second involves separate lexical entries for noun and verb, with no synchronic noun-to-verb derivational relation between them (though possibly one in the opposite direction). This latter type of pseudo-denominal verb does carry a specific adverbial component of meaning, which normally denotes manner. It seems, then, that verbs can semantically incorporate nominal or adverbial meanings, but not both together.

This last observation can perhaps be generalized. To this end, I offer the following conjecture:

(30) *The lexicalization constraint*: A verb can inherently express at most one semantic role (theme, instrument, direction, manner, path...).

This constraint should of course be derivable from [15] or a suitably generalized version of it.

The lexicalization constraint could be tested most directly in languages which overtly incorporate nominal and adverbial elements. For English, it imposes a severe limitation on the meanings of verbs. Particularly interesting evidence for the lexicaliza principle comes from the phenomenon of *disjunctive meaning*. Certain verbs have a range of meaning which the conventional technology of lexical semantics does not allow to be characterized in a uniform way. Jackendoff (1985) cites the example of *climb* (translational equivalents in other languages are similar, e.g. German *steigen* and Finnish *kiivetä*):

(31) a. John climbed up the mountain.

    b. John climbed down the mountain.

    c. The train climbed up the mountain.

    d. #The train climbed down the mountain.

We can analyze the verb *climb* as containing in its conceptual representation both a manner component ("clambering motion") and a direction ("upward"), of which however [30] permits only one or the other to be lexicalized as part of its Semantic Form, not both at the same time. The use in [31b] lexicalizes the manner component, the use in [31c] lexicalizes the the direction component. Only the "worst-case" example [31d] is excluded, where *both* components have gratuitously been dropped from Semantic Form. The same "L-shaped" pattern of meaning is seen in *tow* (and once again shared with its German synonym *abschleppen*).

(32)   a. The disabled car was towed away with a rope.

      b. The injured skier was towed away with a rope.

      c. The disabled car was towed away on a flatbed truck.

      d. #The injured skier was towed away on a flatbed truck.

This patterning of meanings follows from a disjunctive lexical entry projected, in obedience to by [30], from a conceptual structure which specifies that the thing-towed is a vehicle, and that it is moved by pulling. One or the other of these elements of meaning must be present in Semantic Form, but both cannot be.

4 Transitivity alternations

It is well known that location verbs and locatum verbs are typically transitive, and do not participate in the unaccusativity alternation. Compare (33) and (34) with (35):

(33)   a. John shelved the book.

      b. #The book shelved.

(34)   a. John painted the room.

      b. #The room painted.

(35)   a. John reddened/thinned the solution.

      b. The solution reddened/thinned.

Such syntax/semantics relationships ought to be home territory for H&K. Their theory holds out the attractive prospect of treating them as relationships between two *syntactic* representations, namely the L-syntax that determines lexical meaning and standard sentence syntax, with independently motivated syntactic principles doing the explanatory work. It is a proposal of this nature that H&K develop in their account of transitivity alternations. The basic predictor for them is the category of the incorporated complement: only verbs incorporating APs (such as those in [35]) take part in the causative/inchoative alternation, verbs incorporating NPs are unergative, verbs incorporating PPs (including all location and locatum verbs, such as those in [33-34]) are invariantly transitive.

The syntactic portion of H&K's account of these putative generalizations relies on the two general syntactic principles in [36]:

(36)   a. *Principle of Full Interpretation (PFI)*: Predicates must have subjects, and subjects must have predicates.

b. *Principle of Immediacy (PI)*: subjects of internal predicates must be internal. Therefore, if a X^0 projection contains a predicate, it must contain a subject.

In addition, they assume that the L-syntactic structures projected by the lexicon obey a number of constraints above and beyond what the standard requirements of $\bar{X}$-theory impose:

(37) a. V and P take complements, N and A do not.

b. AP and PP are predicates, therefore project subjects (specifiers), NP and VP are not predicates.

c. A is inherently a predicate.

d. P forms a predicate P$'$ with NP.

e. *Lexical integrity*: When a verb is formed by incorporation, its basic transitivity is thereby fixed.
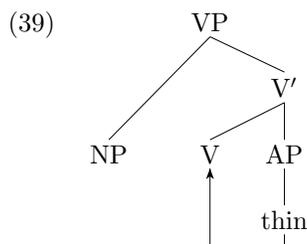
H&K claim that [36] and [37] allow a reduction of the major syntactic classes of verbs to the lexical category of the element they incorporate. By their assumption [37a], all verbs have a complement at L-structure, which can be either an NP, an AP, or a PP. The result of incorporating these three categories are respectively unergative, unaccusative/causative, and fixed transitive verbs.

The reason denominal verbs are unergative is that by [37b] the NP complements they incorporate are not predicates. Therefore, by the Principle of Full Interpretation, these verbs cannot have internal subjects. So they must have external subjects. Because a verb can have only one external subject, these verbs are intransitive, i.e. do not participate in the causative/inchoative alternation.[12] For example, the unergative verb *laugh* is L-structurally something like "make a laugh":

(38)

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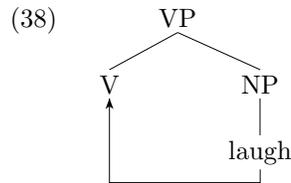
[12]By and large this is true, but the real generalization involves agentivity rather than unaccusativity. Cases like *The nurse burped the baby* have to be recorded as exceptions. (See Mencken 1960:397 for other examples of transitivized unergatives culled from authentic usage, such as *The photographs portray various stages in bathing, dressing, feeding and sleeping a new baby*.) For us, the reason unergative verbs normally don't form lexical causatives is that they already have an agent as their sole argument, so that a second, causative agent is blocked by the constraint that lexical causation is direct [5b]. The transitive use of *burp* are then not exceptions at all, for they clearly involve direct causation, with the object, typically an infant as non-volitional participant, represented as acted upon rather than an agent. The direct causation in fact involves physical contact: the time-honored method of *burping* a baby is to lay it on one's shoulder and pat it on the back.

Deadjectival verbs are unaccusative when intransitive, and form lexical causatives (the "causative/inchoative alternation"). For by [37c] the AP complement which they incorporate, consisting just of A, is inherently a predicate. By the Principle of Full Interpretation, this predicate must have a subject, and by the Principle of Immediacy, the subject must be internal, i.e. within the V-projection of which AP is a complement. Hence these verbs are unaccusative, and, if they receive an external subject, form a transitive structure with causative interpretation. H&K's L-syntax of verbs like *thin, redden, solidify* is accordingly as shown in [39]:

(39)

```
              VP
             /  \
            /    V'
           /    / \
          /    /   \
        NP    V    AP
              ↑     |
              |    thin
              ‾‾‾‾‾‾
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Finally, verbs which incorporate PP complements, including all location verbs and locatum verbs, are necessarily transitive. By [37d], P+NP forms a predicate P′, which by the Principle of Immediacy must get a specifier subject (the thing-located, or the place where the locatum is put). This subject completes the predication within the PP, so there is no predication within the containing verbal projection, which therefore must have an external subject. (This step in their reasoning is actually obscure to me. It is not clear why, just because the predicate P′ gets its subject internally to PP, the governing verbal projection couldn't have an internal subject of its own.) As for why the specifier of PP cannot raise to an external specifier position to satisfy the predication requirement, H&K suggest that this is because of the "principle of lexical integrity" which they formulate as in [37e].

Allowing internal predication in the P-projection however reproblematizes the analysis of the A-projection. Adjectives, H&K explain, "are 'fully grown' predicates inherently, and they must therefore 'get' their subject externally to their own projections" — at Spec-V if they are complements of V. Then do adjectives have complements or not, according to H&K? Yes and no. Their discussion at the end of section 2 assumes that *angry at Dole* is an adjective with a complement; which seems unexceptionable. But later they claim that adjectives have no complements (as [37a] explicitly states). They need this assumption in order to explain why the AP projection has no internal subject. For if A did combine with complements, the resulting A′ would by their other assumptions have to be a predicate, like P′, and the (putative) syntactic difference between location/locatum verbs and deadjectival verbs would be nullified. From this I conclude that the constraints on L-syntax proposed by H&K are not

only category-specific, but in part lexicon-specific, and violated in s-syntax. To that extent, their program of syntacticizing lexical semantics delivers less than promised.

As H&K point out, their syntactic account falls short for contrasts like *smear* vs. *splash*, where even they end up resorting to a semantic explanation:

(40)   a.   a. Mary smeared paint on the wall.
               b. #Paint smeared on the wall.

         b.   a. Mary splashed paint on the wall.
               b. Paint splashed on the wall.

Their semantic generalization, which seems wholly convincing as far as it goes, is that verbs like *smear* contain a manner component which modifies the action of the agent.[13]

But the class of cases which the combinatorics of L-syntax has nothing to say about and for which a semantic account is required is much larger than is apparent from H&K's discussion. It includes the host of verbs which are not morphologically derived, and for which incorporation of APs, NPs, or PPs therefore cannot be independently justified. These are unergatives such as *weep, protest, succeed*, unaccusatives such as *sink, melt, die*, and transitives such as *put, send, bring*. The contrast in [41] is analogous to that seen in [35], yet these verbs are as basic as they come.[14]

(41)   a.   a. Mary hung the plant from the hook.
               b. The plant hung from the hook.

         b.   a. Mary put the book on the shelf.
               b. #The book put on the shelf.

H&K's approach abrogates at the outset any possibility of unifying the cases in [35] with those in [40] and [41].

Let us see how the semantic approach would fare. From this perspective, a clear generalization emerges at once. The availability of the causative alternation depends on the nature of the Agent's involvement in the event. Verbs which are obligatorily transitive, such as *shelve, paint, bring, put, drag, tow, haul*, denote processes requiring the direct initiation and continuous participation of a causing Agent. When John stops painting the wall, the painting stops. This special type of direct causation is characteristic of all "verbs of

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[13]Though they articulate this insight in terms of L-syntactic structures, in this case the syntactic principles do no work and nothing is lost by recasting the account in semantic terms.

[14]If the lack of an actual noun or adjective from which they could be derived cuts no ice with you, consider the morphological evidence. Analyzing verbs like *hang, sink, put, send, bring* as derived would mean giving up the exceptionless generalization that derived verbs have regular (level 2) inflection (Kiparsky 1982).

accompanied motion" (Levin 1993:136).[15] The Agent is also obligatory with verbs like *push, kick, press*, because the essential element of the action they denote is again a specific motion or activity of the Agent, which must initiate the event and continue for its entire duration. When John stops pushing the cart, the pushing stops, even though the cart may continue to move. (Whether the thing-pushed moves and reaches a destination is a matter of an independent aspectual dimension of meaning, which in a language like Finnish determines the case marking of the object.) This class of verbs includes among others what Levin (1993:137) dubs "verbs of exerting force". But the Agent can be omitted with verbs like *redden, thin, hang, roll, slide, sink*, for they denote processes which can be initiated without the participation of a causing Agent (e.g. *The sky is reddening, Fred's hair is thinning, The branch is hanging*), and which, once initiated, can continue without it (when John lets go of the cart, he stops rolling the cart, but the rolling event continues as long as the cart is in motion).

Deadjectival verbs of the causative/unaccusative class are sometimes paraphrased with the comparative of the incorporated adjective (e.g. *to thin* is glossed as "(to cause) to become thinner"). Or they are treated as inchoatives, i.e. as having an element meaning "begin" in the semantic decomposition (e.g. "(to cause) to begin to become thin"). Both these analyses capture the fact that these verbs imply that a process (such as thinning) begins, but does not necessarily get completed. *John thinned the paint this morning, but it's still quite thick* is not necessarily a contradiction.[16] Adopting the inchoative analysis, I propose the representation [42a] for (transitive) *thin*; contrast the causative *paint*, which is built on a non-inchoative process:

(42) a. *thin*: $\lambda y \lambda x$ [CAUSE $(x,$ BEGIN (BECOME (THIN y)))]

  b. *paint*: $\lambda z \lambda y \lambda x$ [CAUSE $(x,$ HAVE-ON (y, z)) & PAINT (z)]

The generalization so far is that the agent of a transitive can be omitted only off an inchoative base.

This much already lets us recapture the unified explanation of transitivity alternations that eluded H&K: all the data in [35], [40], and [41] follow from a single semantic property. The relevant difference between *smear* and *splash* and between *put* and *hang* is the same as that between *shelve* and *redden*. The verb *smear* denotes a process requiring the initiation and continuous participation of a causing Agent, the verb *splash* does not. There is no smearing without a smearer whose action initiates the event and is coterminous with it (just as there is no bringing, shelving, or painting without a bringer, shelver, and painter whose action initiates the event and is coterminous with it). Splashing events,

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[15]For illuminating discussion of the semantic basis of some relevant verb classes from a similar perspective, see now also Haspelmath 1993, Ehrich 1994, and Kaufmann 1994.

[16]In Finnish, the non-contradictory reading would have the object in the partitive case. A contradiction would result if the object were made accusative, which would mark the aspectual information that the thinning process was completed (as in *John thinned the paint out*).

on the other hand, like thinning events and and reddening events, can continue on their own after they have been initiated by an Agent, and even take place entirely without an initiating Agent (*Water is splashing onto the deck*). In terms of Semantic Form, *splash, thin, redden,* and *hang* are built on inchoatives, and can therefore alternate with intransitives, *smear, paint, put* and *shelve* are not.

The upshot is that the major classes of verbs reflect conceptual categories, rather than L-syntactic ones. Ontologically, the "self-sustaining" events referred to by unaccusative verbs differ from those referred to by other classes of verbs in the modal sphere: while in point of physical fact, such an event could be initiated and maintained by some causal Agent, it need not be, whereas a self-sustaining event must be.[17]

The semantic account can be further generalized to the contrast between the omissibility of the *object* in verbs like *push*, as opposed to its obligatory presence in verbs like *roll* and *bring* (Ehrich 1994). Verbs of the *push* class allow omission of their Theme argument (e.g. the thing-pushed) because they do not specify how it participates in the event; contrast (43a) with (43b,c):

(43)　　a. John pushed the cart, but it didn't move.

　　　　b. #John rolled the cart, but it didn't move.

　　　　c. #John brought the cart, but it didn't move.

Thus the distinction between mere initiation of an event (causatives/inchoatives) and causation of a change (fixed transitives) is just a special case of a more comprehensive distinction which applies also to other Th-roles than Agents. Let us say that an argument of a predicate is *constitutive* if it must participate in the entire event in a particular way (in the case at hand, by moving). The constitutive arguments of *bring* are both bringer and thing-brought, for there is bringing only while both move. In *push*, the pusher is constitutive, but not the thing-pushed (which need not move, or be affected in any other way). In *roll*, it is the thing-rolled which is the constitutive argument, not the roller (who need only initiate the event).

This suggests the condition [44], from which the distribution of implicit arguments in [45] follows.

(44)　Constitutive arguments are not omissible.

(45)　　a.　John brought the cart.　#John brought.　#The cart brought.
　　　　b.　John pushed the cart.　　John pushed.　#The cart pushed.
　　　　c.　John rolled the cart.　　#John rolled.[18]　　The cart rolled.

The predictions of the syntactic account and the semantic account of the causative alternation can be contrasted in cases where denominal verbs denote

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[17]I owe this point to Christopher Piñon; see Ch. 1 of Piñon 1994 for development of the idea that events exist in the modal sphere.

a process which does not require continuous causation, and in cases where deadjectival verbs denote a process which does require continuous causation. The syntactic account then predicts that the transitivity alternations should go with the syntactic category of the incorporated element, whereas the semantic account predicts that the transitivity alternations should go with the semantics of the verb. The evidence here clearly favors the semantic account. On the one hand, denominal verbs do participate in the causative/inchoative alternation if they denote events which can proceed on their own *(caramelize, short-circuit, carbonize, gasify, weather)*. This is also true for location verbs, such as those denoting mechanical processes which are understood as capable of proceeding on their own *(reel, spool, stack, pile (up))*, and the positioning of self-propelled vehicles *(dock, berth, land)* or of persons *(bed, billet, lodge)*. On the other hand, many deadjectival transitives do not participate in the causative alternation because they denote an event understood as requiring continuous causation by an Agent *(italicize, visualize, legalize)*.[19] It turns out that whenever the morphological/syntactic criterion implied by H&K's theory diverges from the semantic criterion implied by the alternative proposed here, the facts always go with the semantics.

In their eagerness to syntacticize word meanings, H&K have ignored the obvious semantic generalizations about the major verb classes. The B&W-style semantic approach I have advocated here makes available a principled basis for such generalizations. The tentative formulation [44] is offered here as an example of how a semantic approach might deal with the specific lexical alternations studied by H&K. Its main interest is that it unifies at a stroke the "causative/inchoative alternation" and the "unexpressed object alternation" by means of a generalization which in addition subsumes the one H&K themselves suggest for the *spray/splash* verbs.

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[19]However, it is probably not the case that *all* fixed transitives involve such constitutive Agents, cf. such verbs as *activate, free, blind, embitter, embolden*. Note also that many fixed transitives do participate in the middle construction, but that is a different matter.

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