GRAMMATICALLY RELEVANT ONTOLOGICAL CATEGORIES UNDERLIE MANNER/RESULT COMPLEMENTARITY*

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1 Manner Result Complementarity

Discussion of what has come to be called Manner/Result Complementarity (MRC) began with an observation from an extended study of the English verb lexicon. The observation is succinctly expressed in the following quote:

(1) "…there do not seem to be verbs in English that lexicalize both manner/means and result/direction components." Levin and Rappaport Hovav (LRH) (1991:147)

The generalization is manifest in the following three intuitively defined semantic classes of verbs. Each such class can be further subdivided into a class of verbs which express a type of result but no manner (a), and a class of verbs which express manner but no result (b).

(2) MOTION:

a. Direction (type of result): *arrive, come, go, rise, fall, approach, increase, near,…*

b. Manner: *run, jump, roll, rock, spin, jog, dance, taxi,…*

(3) CHANGE OF STATE:

a. Result: *break, clean, clear, empty, remove,…*

b. Manner: *hit, bash, scour, rub, scrub, pour,…*

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(4) SPEECH:

a. Result: *say, propose, declare, proclaim, admit,…*

b. Manner: *whisper, bellow, yell, murmur, scream,…*

Note that MRC as expressed in (1) above is an observation about the content of the semantic components encoded in the verb. This is important to bear in mind, since more recent formulations of MRC differ crucially in this regard, as will be discussed below (in §3).

The generalization expressed in (1) may be the result of extra-grammatical factors – in which case it may be just a statistical tendency, as argued by several researchers such as Goldberg (2010), Beavers and Koontz-Garboden (2012), and Ramchand (2014) – or it may reflect something deep about the architecture of language. If we assume the former, we will expect to find some verbs, even if not many, which encode both manner and result. We may then seek to find an explanation for the tendency of certain types of meaning (manner alone and result alone) but not others (manner and result) to get lexicalized. If we assume the latter, we will not expect to find such verbs, and purported counterexamples to the generalization should be explained away (see, for example, LRH, 2013, 2014 for a discussion of such purported counterexamples). Furthermore, we will then elevate the observation concerning MRC to a hypothesis, and seek to figure out what it reflects and how it can be derived.

It is important, then, to make clear whether we use the term MRC to refer to an observed phenomenon or to a specific hypothesis about what gives rise to the phenomenon. If we take MRC to refer to a hypothesis, it is also important to provide the notions of manner and result with clear semantic explications, in order to be able to evaluate potential counterexamples in a systematic and informed way. In this paper I adopt MRC as a grammatically relevant hypothesis and explore its possible formulations, as well as ways to derive it. An extended analysis of a purported counterexample then serves as a test case to see whether assuming the specific formulation of MRC adopted here provides us with any insight about the structure of the lexicon and the lexicon-grammar interface.

This paper is structured as follows. §1 provides the appropriate theoretical context for the discussion in the rest of the paper. It also presents how I understand the semantic underpinnings of the notions of manner and result, and then shows how I suggest MRC should be derived. §2 consists of the extended case study of a purported counterexample. It illustrates how carefully isolating the semantic contribution of root from the contribution of additional structure built around the root leads to the conclusion that the counterexample does not, when properly analyzed, violate MRC. §3 briefly discusses an alternative view of MRC, which I call ‘the relational view’, and which crucially assumes that MRC is not about the semantic content of verbs/roots. §4 concludes the paper.

1.1 MRC in the Context of Root and Event Structure Analyses

Certain assumptions common to most current frameworks of argument realization seem to present a serious challenge to the attempt to derive MRC from principles of grammar. These assumptions underlie what might be called a "bi-partite" view of event/verb semantics. First I lay out the assumptions and then I explain why they seem to present a challenge to deriving MRC from principles of grammar.

It is assumed that what has traditionally been attributed to the meaning of a verb can be separated into a *structural component of meaning* – henceforth, *event structure* – and an

idiosyncratic component of meaning – commonly referred to as *the root*. Event structure is typically taken to encode the skeletal structure of linguistically significant event types. Abstracting away from the different proposals for the expression of this component of meaning, it is generally assumed that it has a syntax with embedding relations and clear categorical distinctions. It is also typically assumed that event structure is directly related to grammatical generalizations. Roots are taken to express the semantic content of what is specific to families of words with a shared morphological basis. For example, the root √SWEET is what is common to the adjective *sweet* and to the transitive and intransitive forms of the verb *sweeten*, as well as any verb based on them. Roots are integrated into event structure by filling or modifying positions in event structure. Classes of words with the roots integrated into the same positions in the same event structures are distinguished by the semantic content of their roots.[1] For example, the verbs *warm*, *cool*, *sweeten*, *enlarge*, and *darken* all share the same causative change of state event structure and the respective roots √WARM, √COOL, √SWEET, √LARGE, and √DARK are all integrated into the same event structure position, which expresses the fact that each verb specifies a different state in a causative change of state. It is further often assumed that rules and principles of grammar do not directly make reference to the semantic content of roots.

In early work (LRH, 2006), it was not clear whether MRC should be taken to be a constraint on verb meaning or on root meaning. In English, where the distinction between word and root is not systematically manifest, the answer to this question was not originally obvious. However, as Rappaport Hovav and Levin (RHL) (2010) pointed out, the structure of verbs in other languages clearly points to MRC not being a constraint on verb meaning, but rather on the components which comprise the lexical content of verb meaning, viz., the root. For example, in Lakhota, (as described in Foley and Van Valin, 1984:40–45), many verb stems describe states which are permanent results of actions, such as *–blečha* 'be shattered (said of brittle material)', while there is a set of prefixes describing manner or means, such as *ya–* 'with the mouth' and *na–* 'with the foot or leg'. Prefixes and stems combine to form verbs, as in *yablečha* 'break or cut with the teeth' or *nablečha* 'break by kicking or stepping on'. These verbs encode both manner and result but they are all bi-morphemic.

Combining the assumptions that (i) rules and principles of grammar do not make reference to the content of roots, and (ii) MRC is about the semantic content of roots, we may ask: How MRC could be derived from anything remotely grammatical?

I suggest that the answer to this question is related to the answer to a second question which naturally arises in the context of a bi-partite approach to verb/event semantics. It is well-known that different *types* of roots appear in different event structure positions (RHL, 1998; Harley, 2005; Ramchand, 2008; a.o.), and hence in different syntactic environments. What determines the distribution of roots in an event structure representation? What determines the 'linking' between the two components of meaning?

Broadly speaking, there are two approaches to this question, each of which is instantiated in a range of theories, which otherwise differ in many details of implementation. I will call the first approach *the free distribution approach*. It is adopted by Borer (2003, 2005), Acquaviva (2008, 2014), and Mateu and Acedo-Matellán (2012). On this view, roots are by their very nature a-categorical. Any root can in principle appear in any syntactic position. Syntactic and many semantic properties of words based on the root are determined by the functional structure in the

[1] This is something of a simplification for the purpose of the issues discussed in this paper. The individuation of roots is a complex issue, which this article cannot do justice to. See the papers in Doron (2014) for discussion.

immediate syntactic environment of the root. The same root can then assume a variety of semantic interpretations and syntactic properties as it varies in the functional structure surrounding it. Clashes between the semantic content of root and functional structure are ruled out at the Conceptual-Intentional (CI) interface. This approach can be contrasted with what I call *the grammatically relevant ontological categories (GROC) approach*, adopted in various forms and differing widely in many issues of implementation by RHL (1998), Reinhart (2002), Ramchand (2014), and Alexiadou, Anagnastopoulou, and Schäfer (AAS) (2015), among others. Roots are inherently categorized with grammatically relevant ontological features which serve as the interface between full conceptual content and grammar, and determine basic syntactic distribution. In (5) I illustrate examples of the ontological categories that are assumed by different theories to distinguish between different kinds of roots for the purpose of determining distribution in event/syntactic structure.

(5) RHL (1998): manner, instrument, container, internally/externally caused state,…

Reinhart (2002): [±c(ause)], [±m(ental state)]

AAS (2015): agentive, internally/externally/nonspecified caused state

Ramchand (2014): cause, change, scalar change/nonscalar change, result of change,…

There is an intuitive justification for both the free distribution approach and the GROC approach. From the dawn of generative grammar, words (terminal elements) were provided with subcategorization features restricting the syntactic environment in which they can appear in order to capture the observation that verbs (and other heads) are picky about their syntactic environments. But although verbs make demands on their syntactic environment, most verbs can appear in a much wider range of environments than originally thought. In fact, the phenomenon of 'variable behavior verbs' (LRH, 1995, 2005) has been shown to be rather pervasive (as stressed by Borer, 2003, 2005). This has led to the idea that roots can be inserted freely into syntactic environments (Borer 2003, 2005; Acquaviva, 2008, 2014). However, the distribution of verbs in syntactic contexts is not completely free and still defies any simple formulation. The free distribution approach stresses the ability of verbs to appear in a wide range of syntactic environments, and relies on the (in)compatibility between the semantics of roots and the semantics encoded in functional projections to limit the distribution. But as far as I know, no one has ever developed a method for explicating the way these clashes limit the distribution of roots in syntactic context. The GROC approach, as I understand it, does not determine once and for all the syntactic contexts in which a root can appear. It does determine an abstract characterization of the syntactic context that a root can appear in, based on its ontological type. For example, in RHL (1998), we suggested that certain roots are always event modifiers while others are arguments of primitive predicates, as discussed in the next section. This still leaves a fair amount of leeway for individual roots to be integrated into varying syntactic contexts.

I suggest that manner and result, when properly understood, should be taken to be GROCs which categorize roots giving rise to verbs. In the next section I show how this can be linked to deriving MRC.

1.2 Grammatically Relevant Ontological Categories and MRC

RHL (2010) make an initial attempt to derive MRC from a GROC-type approach. They make reference to the Canonical Realization Rules (CRRs) of RHL (1998), which provide a 'basic'

pairing between roots and event structures. The idea is that information lexically encoded in the root must be given syntactic expression. (6) illustrates a subset of the CRRs. I no longer agree with the specifics of the rules but I think the basic intuition is sound.[2]

(6) CANONICAL REALIZATION RULES (RHL, 1998)[3]

a. manner → [x $ACT_{<MANNER>}$]
(e.g., *jog, run, creak, whistle,…*)

b. internally caused state → [x <*STATE*>]
(e.g., *bloom, blossom, decay, flower, rot, rust, sprout,…*)

c. externally caused state → [[x ACT] CAUSE [y BECOME <*RESULT-STATE*>]]
(e.g., *break, dry, harden, melt, open,…*)

In addition, RHL formulate the following Lexicalization Constraint:

(7) THE LEXICALIZATION CONSTRAINT
A root can only be associated with one primitive predicate in an event schema, as either an argument or a modifier. (RHL, 2010:25)

It is worth pointing out that if event structures *are* syntactic structures, as assumed in many current theories, and roots are morphological objects, the lexicalization constraint follows rather trivially (cf. Mateu and Acedo-Matellán, 2012). A root can only be merged in one syntactic position. If we assume that manner and result are GROCs, and also assume that roots are morphological objects, MRC derives from the assumption that a root can belong to one such GROC.

1.3 Semantic Grounding of 'Manner' and 'Result'

Of course, if we want to subject the MRC hypothesis to scrutiny, we need to be able to evaluate potential counterexamples. This can only be done if the categories 'manner' and 'result' are semantically explicated in a satisfactory fashion.[4]

Rappaport Hovav (2008) and RHL (2010) suggest equating the notion of result with scalar change, and the notion of manner – with non-scalar change. The notion of scalar vs. non-scalar change was introduced as an aspectual property of verbs (Beavers, 2008; Rappaport Hovav, 2008), and it is also argued to be relevant to argument realization (Rappaport Hovav, 2008). It does not follow, though, that it is also relevant for MRC, especially if the latter applies to roots, not verbs. This suggestion, then, deserves more careful attention.

It should be pointed out that if MRC is manifest in roots, then the notion of result cannot be equated with scalar *change*, since it is clear that for verbs like *narrow* and *cool*, and many others

[2] For example, I no longer think that causative alternation verbs like those in (c) are lexically associated with an external argument (Rappaport Hovav, 2014b).

[3] In these rules, the constant is indicated in capital italics and placed between angled brackets. Argument constants appear in the appropriate argument positions and modifiers – as subscripts to the relevant predicate.

[4] I cannot do complete justice to this complex issue. I believe that there are a number of different notions of manner that can be relevant to various issues, but not all of them are relevant to MRC. See Rappaport Hovav (2015a). I intend to elaborate on this in forthcoming work.

like them, the root does not encode change, assuming that these verbs share a root with the homophonous adjectives.

(8) a. narrow_A, cool_A = scalar property

b. narrow_V, cool_V = scalar change[5]

However, Rappaport Hovav (2014a) shows that the semantic basis of two major classes of scalar change verbs (change of state and directed motion) is a stative attribute, which can be multi-valued or not. A scalar change, then, is either a transition into a state, or a change in the value of a multi-valued state. Assuming that the result root encodes something closer to the meaning of the adjectives in this class (as the overt derivation of verbs like *sweeten* suggests), we can say that a result root is a root that is interpreted as a predicate of a state. This is similar to what is assumed in various works (Kratzer, 2000; Embick, 2009; AAS, 2015; a.o) that take roots of change of state verbs to be the predicate of a Small Clause which attributes a state to an individual, and which combines with *v* to introduce the notion of change. The term 'result', then, turns out to be a real misnomer, since there is no sense in which a root such as √COOL should be considered a result inherently. It is only in a particular syntactic context that it gets interpreted as a result.[6]

If result roots are predicates of states, it is reasonable to assume that manner roots are those that cannot be interpreted as predicates of states. I take them to be basically predicates of events. MRC, then, is taken to mean that a root can have only one GROC and that, crucially, a root which is a predicate of states cannot simultaneously be a predicate of events.[7]

The virtue of this kind of approach can best be illustrated by the range of phenomena it helps explain. The major part of this article, §2, is devoted to an extended case study of a single purported counterexample to MRC, understood as a condition on the truth-conditional content of roots. I will show that once we do the fine-grained analysis necessary for distinguishing between the contribution of the root on the one hand, and the contribution of syntactic structure built around the root as well as other contextual factors on the other, the counterexample which is the focus of the section turns out actually to support MRC as a constraint on truth-conditional content.

[5] This is not entirely accurate. In the context of *v*, scalar properties always involve a notion of 'difference in value'. See Deo, Francez, and Koontz-Garboden (2013).

[6] In fact, there are states, in particular certain types of psychological states, which do not participate in the causative alternation. These states, such as *love*, *hate*, and *fear*, comply with MRC, but are never taken to express results.

[7] Of course there are events which embed states – many accomplishments, for example. It is, however, rather striking that there are precious few mono-morphemic verbs which are inherently accomplishments (Rappaport Hovav, 2008). This seems to indicate that roots name the minimal elements of event structure, in the spirit of MRC.

2 Manner of Killing Verbs: A Case Study

2.1 *Drown* as a Manner of Killing Verb

Beavers and Koontz-Garboden (BKG) (2012) argue against the interpretation of MRC as a generalization about the truth-conditional content of verbs.[8] Manner-of-killing verbs (MKVs) figure prominently in their critique. The list of verbs they use to illustrate their point is given in (9).

(9) *crucify, drown, electrocute, guillotine, hang*

BKG argue that these verbs entail death (a kind of result) and a manner of bringing about the death. However, BKG do not systematically distinguish between roots and verbs. If MRC is a constraint on what is encoded in roots, as I have been assuming, then certain of these verbs will be irrelevant to testing MRC. In particular, *crucify* and *electrocute* are overtly morphologically complex, and *guillotine* is denominal, which makes it morphologically derived as well, albeit without any overt morphology. Ideally, an analysis in the case of the first two verbs would determine the contribution of each morpheme to the meaning of the verb, and in the case of the latter, the contribution of the nominal root and the derivation of the verb. I leave this analysis for another opportunity (but see Rappaport Hovav, 2015a, 2015b). In what follows, I focus on *drown*.[9]

If MRC is about what is encoded in the root, it is important to distinguish between *drown* as a root and *drown* as an MKV. In fact, all the examples which BKG explore involve *drown* in its use as an MKV. If, as we will see in the following sections, not all uses of the root √DROWN involve a manner of killing, it is of interest to figure out what the contribution of the root is and how the MKV based on the root is built. It is generally a complex task to determine what meaning to attribute to a root and what to attribute to the processes which derive the verb built on that root. Therefore, in the next section I underscore some general methodological points which will turn out to be relevant to the appropriate analysis of *drown*, having to do with distinguishing the contribution of the root from the contribution of syntactic context.

2.2 Some Important Methodological Preliminaries

First, whenever possible, I try to isolate an invariant component of meaning, common to a wide variety of uses of a verb (RHL, 2010; LRH, 2013; Rappaport Hovav, 2014a) and attribute it to the root. Second, it must be acknowledged that the inferences drawn from the use of a verb in particular sentences come from many different sources, in addition to what is lexically encoded in the root, including the nature of a DP filling a particular argument position (such as its animacy), the particular mode of argument realization (i.e., the variant of an argument alternation a verb appears in), and the tense or aspect that a verb appears in, among others. Therefore, these different sources of meaning must be teased apart. Third, if the different factors are appropriately identified, it should be possible to construct an analysis which is to a large degree compositional

[8] In fact, BKG argue that there is a constraint on roots being associated with only one event structure position, but they suggest that roots themselves can encode truth-conditional content, including both manner and result.

[9] As will be clear from what follows, the appropriate analysis of *drown* is no small matter. I assume that with sufficient attention, a similar account can be derived for *hang* (which I assume will turn out to be a predicate of states, like *drown*), though I do not undertake this task here.

– in some cases, completely compositional. An analysis is most convincing if it is possible to show that with the semantic content lexically encoded in the root appropriately characterized, many other properties of verbs built on the root can be derived from independently established general processes of word-building. Fourth, I avoid positing polysemy to the extent possible. This should be a side-effect of pushing compositionality as far as possible. Finally, I adhere to monotonicity of meaning (RHL, 1998; Koontz-Garboden, 2009) and avoid positing representations which lead to the removal of lexically encoded components of meaning in the derivation of particular uses of the verb.

Adhering to this methodology in my analysis of *drown*, I will show that it is possible to isolate an invariant component of meaning shared by all uses of the verb which can be attributed to the root. Verbs built on the root usually involve the addition of structure which brings with it additional interpretive features. In most cases, the semantics of the resulting verbs is derived in a completely compositional fashion. In certain cases, some components of meaning must be contextually specified. Finally, and significantly in the context of the present discussion, once the invariant component of meaning is isolated and characterized, it turns out to conform to MRC as explicated above.

2.3 The Root *Drown* Does Not Lexically Encode an Action

In the next section (§2.4) I determine what the root *drown* lexically encodes and in §2.5 I determine whether this element of meaning represents a manner or a result. But before I proceed to show what the root does encode, I point to some fundamental methodological shortcomings of BKG's (2012) study and show what the root *drown* does *not* lexically encode, counter to what is suggested by BKG.

BKG accept RHL's (2010) idea that manner encodes non-scalar change. However, BKG do not attempt to figure out what the particular nature of the non-scalar change which *drown* lexicalizes is. Rather, they develop what they consider to be general diagnostics for manner and apply them to the verbs at hand. Crucially, however, BKG only use *drown* transitively, with animate subjects and objects, thus predisposing the association of the verb with intentional killing situations. Manner often (but not necessarily)[10] provides the semantic content associated with the action of an agent, and in some cases, in purporting to test for manner, BKG in fact test for general actions of an agent. Since all their examples involve sentences describing manner of killing situations which involve an action by an agent and an entailment of death, the sentences test positively for the diagnostics developed for manner. However, in order to show that *v*√DROWN *lexicalizes* a manner, it is not sufficient to point to sentences which describe a happening in the world which includes an action of an agent, but it must be shown that √DROWN provides the semantic content of this action. I show here that, in fact, √DROWN does not provide the semantic content of any action and therefore the action of an agent is not lexicalized in the root.

[10] Verbs like *roll, rock, spin, rotate,* etc. encode a non-scalar change, though they do not encode the action of an agent.

The first test developed by BKG is the imposition of selectional restrictions on the subject argument.[11] They argue that manner verbs do not allow natural forces and other inanimates as subject. However, the verb *drown* does indeed allow non-agents as subjects in the transitive variant, as illustrated in (10).

(10) Presumably one of [Basil] Clark's more imaginative underlings concocted the fiction that he had been buried up to his neck near the high tide point and left there for **the rising sea to drown him**. It did not rise high enough so that his I.R.A. captors dug him up and buried him closer to the low water mark where finally **the waters drowned him**.[12]

In the discussion of their second diagnostic, BKG argue that some changes can be directly caused without an action, as evidenced by the ability to be followed by "didn't move a muscle".

(11) Kim broke my DVD player, but didn't move a muscle – rather, when I let her borrow it, a disc was spinning in it, and she just let it run until the rotor gave out! (BKG, 2012:347 (38))

(11) is taken by BKG to indicate that since a verb such as *break* does not lexicalize a manner of action, it is compatible with ascription of causerhood to an entity which does not move a muscle. BKG claim this cannot be true of MKVs. These verbs cannot be used to describe a situation of direct causation without action:

(12) #The governor drowned/hanged the prisoner, but didn't move a muscle – rather, during the execution she just sat there, tacitly refusing to order a halt! (BKG, 2012:347 (39b))

However, there are many complicating factors which determine what can be considered direct causation. A person of authority issuing a directive can apparently be recognized as a direct cause. Drowning is not normally considered an 'official' way of putting someone to death. But there are cases of an ordered hanging expressed as direct causation:

(13) a. On her last progress, the Queen hanged a man that was caught raping a girl – after a fair trial, of course. (Chisolm, 1997:107)

b. The king hanged the guards on the gallows. (Stobaugh, 2013:60)

Now, in these cases, it is probably true that the subject argument does engage in some kind of action; issuing a decree, for example. But it is clear that the nature of this action is not lexicalized in the verb or the root. It is perhaps difficult to conjure up such a situation, but if a person of authority issued a decree to put someone to death by drowning, it would presumably be possible to use sentences analogous to (12) with *drown*, despite the BKG's judgment in (12).

The last diagnostic BKG consider has to do with the fact that changes specified in manner components are said to be complex.[13] The complexity of the change dictates the need for a non-trivial interval for evaluation (Dowty, 1979). Therefore, verbs specifying a manner should test

[11] BKG write: "if a transitive verb has a manner component in its meaning, then it imposes selectional restrictions on its subject". This is not strictly true: The verbs *spin*, *roll*, *rock*, *rotate*, etc. are manner verbs but do not impose selectional restrictions on their subjects; they allow agent, instrument, and cause subjects, and participate in the causative alternation, which does not apply to verbs that impose selectional restrictions on their subjects.

[12] http://irishistory.blogspot.co.il/2013/10/death-of-alan-lendrum-worst-atrocity-in.html

[13] Here they quote RHL (2010:32) who suggest that most non-scalar changes involve complex changes – that is, a combination of multiple changes.

positively for durativity. The durativity test they use involves the frame "It took DP y minutes to V", which distinguishes between achievements and accomplishments (Dowty, 1979:59) in that with achievements the frame can only specify the duration which had elapsed before the event described by the verb took place, while with accomplishments it can also describe the duration of time of the event described by the verb. (14) illustrates that the MKVs test positively for durativity. I will show, however, that this does not mean that they specify anything about the action of an agent.

(14) It took me five minutes to drown/hang/crucify Jim…

('during/after five minutes')
AFTER: Because I lacked the courage.
DURING: Because this is how long it takes to kill someone by holding them under water/cutting off their air/nailing them down, hoisting them up, and waiting. (BKG, 2012:348 (43))

The Google search in (15):

(15) "It took him * minutes to die"

yielded many thousands of hits, including (16), in which it is clear that the interpretation is DURING, not AFTER.

(16) The US Supreme Court is under increasing pressure to consider halting death sentences by lethal injection after a convicted Arizona killer took two hours to die.[14]

In the case of (16), the durativity can be ascribed to the fact that achievements often involve a preliminary circumstance that is not in fact describable by the verb itself (Piñón, 1997; Kearns, 2003; Rothstein, 2004). Therefore, this diagnostic does not indicate that a verb lexically specifies an action of an agent.

BKG assume that *drown* lexicalizes both death and a manner of death – presumably submersion in water. The best indication that submersion in water is not a manner in the sense of the action of an agent, is the fact that *drown* has unaccusative uses, where the notion of an action is irrelevant, but there are inferences of both death and submersion in water.

(17) The boy drowned (#by strangling) (?but the paramedics got to him before he died).

Submersion is information about the patient, not the agent. Therefore, if submersion in water is lexically encoded in causative and unaccusative uses of *drown*, all diagnostics having to do with actions are irrelevant in determining the lexically encoded elements of meaning, and *drown* does not lexically encode anything about the activity of an agent.

Having shown what *drown* does NOT lexically encode, I move on to an analysis of what IS lexically encoded. We saw that in the context of MKV, *drown* is associated with inferences of submersion and death, and that submersion does not constitute the content of the action of an agent. The question we now ask is what is lexically associated with the *root*. I will show that the element of meaning that is constant across uses of *drown* is actually the component of meaning having to do with submersion, though not necessarily in water. If so, this element should be encoded in the root and the inference of death, if not encoded in the root, should be contextually

[14] https://www.wort.lu/en/international/arizona-lethal-injections-face-scrutiny-after-two-hour-us-execution-53d1ef81b9b398870804a8a0

derived or specified. We will then seek to determine whether the lexically encoded component of meaning should be categorized as a manner or a result.

2.4 The Root *Drown* Does Not Encode Death

There are many examples of *drown* being used without an inference of death; if the root encoded death, these uses would involve the removal of a lexically encoded property, incompatible with the principle of Monotonicity (RHL, 1998; Koontz-Garboden, 2009). Note that (18) involves an animate theme (a dog).

(18) The bad news is that the store has a dog wash which means that your mommy can take you there and soap you and drown you and dry you…[15]

Looking at a wider range of contexts which the root can appear in, there are many uses of *drown* which involve inanimates, in which case dying is irrelevant:

(19) X (INANIMATE) DROWNING IN Y:
cake drowning in icing; poached pears drowning in sauce; lasagna drowning in oil; a city drowning in corruption; a city drowning in beer; the world drowning in images; lettuce drowning in dressing…

There are also uses of *drown* involving an *animate* theme with no inference of death at all, but, as opposed to (18), the submersion is not in water (20). Note that in (21) the theme is not abstract, so not all cases of drowning in something other than liquid are necessarily metaphorical.

(20) X (ANIMATE) DROWNING IN Y
Y = sorrow, grief, work, information, happiness, madness, gratitude, heartache, troubles, bureaucracy, red tape, cash, patients…

(21) Natalie Portman is very very petite, and they drowned her in fabric as it was apparently her character's choice to hide her pregnancy…[16]

(22) We were drowning in compliments at the ABRSM conference.[17]

While many uses of *drown* do not involve death, we see that all of them involve some kind of submersion, literal or metaphorical.[18] I take this to be the lexically encoded content of *drown*. We now want to understand its argument structure and determine its GROC. I will show that assuming that *drown* encodes submersion will help us understand complex issues concerning its argument realization properties.

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[15] http://dogvotional.blogspot.co.il/2010/04/

[16] http://mirandatam.tumblr.com/post/155769902922/your-costume-post-about-padm%C3%A9-and-leia-was-great

[17] https://www.figurenotes.org/abrsm-conference/

[18] The purported metaphorical status of many of these examples does not further the argument that the root encodes death. Many people have the intuition that drowning and dying in water is somehow more 'basic', and that drowning in grief or in fabric are somehow metaphorical. This may indeed be so, but we have to ask what follows from this. I would claim that it is still a metaphorical extension of the notion of submersion. Note in particular that for the examples in (21) and (22), it is difficult to specify how death is metaphorically interpreted. If many examples involve a metaphorical use of submersion, our task is still to figure out what the GROC of the state of submersion is. This is the topic of the next section.

2.4 *Drown* Encodes a Locative State (Result)

I argue that the root *drown* lexically encodes a state, and, according to the proposal in §1.3 above, is a result root.[19] I will soon analyze stative uses of *drown*, but here I would like to point out that at least one standard test shows that even a non-stative verb built on the root *drown* (whose derivation will be discussed in §2.5 below) can involve an embedded state.

(23) I recall my KWA LM4 when i (sic!) first started airsoft giving me problems as well - I got fed up and removed the upper, boiled a ton of water, and **drowned it for a few minutes**, got all that glue off.[20]

In this example, the time adverbial can modify an embedded state. That is, (23) can be understood as asserting that the gadget was in a state of submersion for a few minutes.

Now, let us look more carefully at the argument structure of *drown*. As the examples above indicate, *drown* is associated with two arguments: I will call them for now the *figure* and the *medium.* When the medium is not expressed, especially when the figure is animate, the default interpretation is that the medium is liquid, usually water. In other cases, both arguments have to be expressed:

(24) a. John drowned.
(Inference: he drowned in water. There is a further inference that he died, which we will return to.)

b. John is drowning #(in work).
(out of the blue; in context, work could be recovered)

c. The lasagna drowned, was drowning *(in cheese).

d. The room is drowning *(in color.)

Interestingly, the verb shows an *argument alternation*. The medium may be realized as PP ((25a), (26a)) or as subject ((25b), (26b)); the figure is expressed either as surface subject ((25a), (26a)) or as direct object ((25b), (26b)), accordingly.

(25) a. The lettuce$_{\text{figure}}$ is drowning in dressing$_{\text{medium}}$.
(medium = PP; figure = surface subject)

b. The dressing$_{\text{medium}}$ is drowning the lettuce$_{\text{figure}}$.
(medium = subject; figure = direct object)

(26) a. The room$_{\text{figure}}$ is drowning in light$_{\text{medium}}$.
(medium = PP; figure = surface subject)

b. The light$_{\text{medium}}$ is drowning the room$_{\text{figure}}$.
(medium = subject; figure = direct object)

Unlike in (25) and (26), for most choices of arguments, one or other of the realization options is usually pragmatically odd, for reasons which at this point remain unclear and which warrant further investigation.

[19] Recall that the term 'result' is something of a misnomer here. Not every stative predicate has to be the result of some event.

[20] http://www.airsoftcanada.com/showthread.php?t=166942

(27) a. The music drowns/is drowning the lyrics.

b. ??The lyrics are drowning/drowns in the music.

(28) a. He is drowning in debt.
(29,200 Google hits; Oct. 12, 2016)

b. Debt is drowning him.
(2 Google hits; Oct. 12, 2016)

I suggest that the argument alternation stems from the assumption that the root *drown* can be integrated into the structure of two independently established classes of locative verbs, with the thematic structure that is usually characterized as (theme, location). The two classes differ in how the location is expressed. I call the first class *Location-PP Verbs*, which appear in what I call *Pattern A*.

A. LOCATION-PP VERBS: Theme = subject (probably underlying object); Location = PP

(29) a. The vase is sitting on the desk.

b. The statue is standing in the corner.

c. The North Channel lies to the north of the Irish Sea.

d. The city sprawls along the coastline.

These verbs all specify a spatial configuration of the theme with respect to a location. When used non-agentively, the location argument is near obligatory:

(30) a. John stood (in the hall).

b. The keys are lying *(on the piano).

c. The vase is sitting *(on the piano).

d. The city is sprawling *(in every direction).

I call the second class *Location-Object Verbs*, which appear in what I call *Pattern B*.

B. LOCATION-OBJECT VERBS: Theme = subject; Location = direct object

(31) a. Snow covered the mountain. *The mountain covered./*Snow covered.

b. The fragrance suffused the room. *The room suffused./*Fragrance suffused.

c. Trash is blocking the doorway. *The doorway is blocking./*Trash is blocking.

d. The furniture is filling the room. *The furniture is filling./*The room is filling.[21]

In Pattern B, the location argument is realized as a direct object rather than in a PP, and both arguments are obligatory. We may ask why two classes of verbs with ostensibly the same thematic structure map their arguments differently onto syntactic positions. I take this to be related to the question of how the notions I have been calling *figure* and *medium* map on to the notions of theme and location. I suggest that the special property of *drown* which allows it to

[21] For some reason, the verb *fill* works a bit differently. With the addition of the particle *up*, the following is possible: *The room is filling up*. This warrants further study.

belong to both these theme-location classes is that the medium can be conceptualized either as location or as theme. More specifically, the medium can be conceptualized as *a location containing a theme* (=figure). In this case, *drown* shows the argument realization pattern of the Location-PP class (Pattern A).

(32) The poached pears$_{\text{theme = figure}}$ are drowning in sauce$_{\text{location = medium}}$.
(cf. The pears are sitting in the sauce.)

Alternatively, the medium can be conceptualized as *a theme covering a location* (=figure). In this case, *drown* shows the argument pattern of the Location-object class (Pattern B).

(33) The sauce$_{\text{theme = medium}}$ drowned the pears$_{\text{location= figure}}$.
(cf. The sauce covered the pears)

In Pattern B, the location argument is interpreted as an incremental theme (Dowty, 1991). It is independently known that incremental themes are expressed as direct objects (Dowty, 1991; Tenny, 1994).[22] That the direct object of a verb like *cover* is understood as an incremental theme is seen in the sentences in (34). (34a-b) show that the properties of the direct object determine the aspectual properties of the sentence. (34c) illustrates the object-to-event homomorphism of a verb with an incremental theme.

(34) a. Snow covered the roof in three days.

b. #Snow covered roofs in three days.

c. Snow half-covered the roof. = Snow covered half of the roof.

The Location-Object (incremental theme) Pattern is appropriate when *drown* focuses on the relation between the medium and the spatial extent of the figure (incremental theme). The degree to which the predicate holds depends on the amount of the figure covered by the medium. This can be graphically illustrated in a painting by Goya, sometimes called "The Half-drowned Dog".[23] The picture depicts a dog which is covered with some substance (unidentified in the painting). The state of being half-drowned is determined by the extent of the dog which is covered.[24]

Drown, when used statively in either pattern, is, like both *sit* and *cover*, an interval stative (Dowty, 1979), where the use of the progressive vs. simple tense is connected to the stage/individual level distinction. In (35a), the room inherently has a color which drowns it. In (35b), the lettuce happens to have the property of drowning in oil.

[22] It is terminologically confusing and rather unfortunate that in this case we have with a single instance of the verb both a theme and a location interpreted as an incremental theme.

[23] https://en.wikipedia.org/wiki/The_Dog_(Goya)

[24] It is interesting to note that the Spanish name commonly given to this painting is *Perro Semihundido*. *Semihundido* is based on a verb which does not typically translate as *drowned*, but rather as *sunken*, focusing on the spatial extent component. The verb used to describe death by submersion in water (*ahogar*) focusses more on the choking (or blockage of respiratory pathways) aspect of a drowning event. In future work I intend to discuss the relation between the semantics of roots and those of concepts. My position is that roots are underspecified for the full content of concepts.

(35) a. Is there a big bay window that drowns the room in bright sunlight?[25]

b. The lettuce is drowning in oil./Oil is drowning the lettuce.

Drown contrasts with most other theme-location verbs which allow either the A or the B pattern, but not both.[26] For example, *sprawl* accepts only the location-PP pattern (36), and *cover* accepts only the location-object pattern (37):

(36) a. The city sprawls along the coast.

b. *The coast sprawls the city.

(37) a. Snow covers the mountain.

b. *The mountain covers in snow.

c. The mountain is covered in/with snow.
(passive necessary for location as subject)

The special behavior of *drown* probably has to do with the fact that it lexicalizes not only a spatial relation between the medium and the figure, but this relation must also be considered somehow "overwhelming" or "overpowering" with respect to the figure. For example, if there are oyster crackers in a soup, one would not say that they are drowning in soup. This property is what allows the medium to be conceptualized either as a location which contains a theme or as a theme covering a location.

In both patterns, both arguments of *drown* are internal arguments. I provide two pieces of evidence that non-agentive transitive *drown* (like stative *cover*) has two internal arguments. First, it has only an adjectival passive, but not a verbal passive. It has been independently established that verbs without an external argument do not form verbal passives, but may form adjectival passives (e.g., Grimshaw, 1990). This test is relevant, of course, only for the transitive variant Pattern B, not Pattern A.

(38) a. …and when I'm eating lettuce I feel healthy regardless of whether that lettuce is drowned in calorific, artery-blocking sauces and dressings.[27]

b. *The lettuce is being drowned by sauce.

Second, it is possible to add an independent external argument:

(39) The chef drowned the lettuce in oil.

(39) can be the result of adding an external argument to either the transitive or the intransitive variant. This is further explicated in the next section.

I conclude, then, that the most basic use of *drown* is stative with two internal arguments. The root has two options for integration into syntactic structure. In either case, the root has two

[25] http://edmedia.tlc.sfu.ca/pre-production/

[26] Another verb which appears to function like *drown* is *soak*:

(i) My pants are soaking in warm water.

(ii) Warm water soaked my pants.

[27] http://certifikatie.blogspot.co.il/2013/03/eddie-rockets-burger-in-bowl.html

internal arguments. Other uses can be compositionally derived. This is discussed in the next section.

2.5 From Stative to (Causative) Change of State

Both Location-PP and Location-Object verbs have a stative and an inchoative (change of state: COS) interpretation in English. The availability of the different interpretations is dependent on the choice of arguments. In the following examples, I use the adverbs *slowly* and *suddenly*, or the particle *up*, in order to bring out the dynamic interpretation.

(40) a. Snow is (slowly) covering the mountain. (stative and dynamic)

b. The table cloth is covering the table. (stative only)

(41) a. John stood (up). (stative and dynamic)

b. The statue stood (*up). (stative only)

The derivation of COS verbs from stative verbs is productive and (typically) morphologically unmarked in English.

(42) a. The cataract (slowly) obstructed her vision. (stative or dynamic)

b. John (suddenly) understood the problem. (stative or dynamic)

Drown, in both patterns, is also expected to be used as a state or a COS, though certain choice of argument combinations render one interpretation more salient:[28]

(43) a. The lettuce is drowning in oil./The room is drowning in color. (state interpretation salient)

b. The city is (slowly) drowning in the lava. (state or COS)

(44) a. Lava is slowly drowning the city./Lava slowly drowned the city. (COS salient)

b. Light (?slowly) drowned the room. (state or COS)

In addition to the derivation of the COS reading from the stative reading, we can also add an agent external argument ((39) above). The addition of the external argument yields slightly different results for the two patterns. Pattern A should result in structures parallel to causativization of location-PP verbs like *sit*.

(45) a. The child sat in the corner.

b. I sat the child in the corner.

This is indeed what we find:

(46) a. The lettuce was drowning in oil.

b. The chef drowned the lettuce in oil.

For Pattern B, the addition of an external argument should yield a structure parallel to the causativization of a verb like *cover*.

[28] The factors, which render state or event interpretations more salient, still need to be clarified.

(47) a. Sugar covered the doughnuts.

b. I covered the doughnuts with sugar.

Indeed, it does:

(48) a. …but there was no flavour and the sauce drowned the meat…[29]

b. The chef drowned the meat with sauce.

c. Calvin managed to overpower his attacker and drowned the peanut butter with chocolate milk.[30]

We then have two causative uses of drown, one derived from each pattern. They are distinguished by the preposition. Since the PP is not always expressed, some sentences can have two different derivations. Figure 1 schematically shows how we derive the two causative uses of the root *drown*:

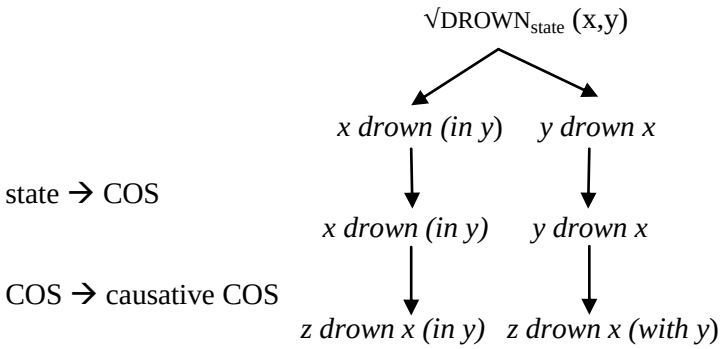

Figure 1. Deriving the two causative uses of the root *drown*

Given the analysis so far, (49a) has the same structure as (49b) with the medium argument elided. *John drowned* cannot be parallel to *Water drowned John* with the medium argument elided because Pattern B verbs do not allow the non-expression of their subject argument (*Snow covered the mountain./*The mountain covered*.). (50a) can be paraphrased by (50b) or (50c). However, (50a) is much less likely to be derived by the addition of an external argument to *Water drowned John*, because then specifying the medium argument would yield (52a), which sounds odd. However, if the medium were something less prototypical, specifying the medium in a *with* phrase sounds not bad.

(49) a. John drowned.

b. John drowned in water.

(50) a. Mary drowned John.

b. Mary caused John to drown (in water).

c. Mary caused water to drown John.

[29] https://www.tripadvisor.com.au/ShowUserReviews-g255365-d1575566-r417882923-Topolini_s_Cafe-Geraldton_Western_Australia.html

[30] http://calvinandhobbes.wikia.com/wiki/Lunch

(51) a. ?Mary drowned John with water.

b. Mary drowned John with a special solution concocted by the magician.

Under the analysis developed here, the root *drown* conforms to MRC; it provides the lexical content of a state. It can be integrated into a verb which denotes an event including an activity which leads to the coming about of the state,[31] but the lexical content of this activity is not specified by the root and is usually contextually inferred. This is just what we expect, given MRC.

If the root *drown* encodes a state of submersion, we can ask: Whence comes the inference of death in the uses of *drown* as a MKV? The fact that death is not encoded in the root, but is a strong inference – in fact close to an entailment – in certain contexts, shows that the semantics of *drown* as a MKV is not fully compositional. The worst case scenario is that there is a contextual specification for an inference of death when the theme argument of the root is animate. However, given examples such as (18) above, it is fairly clear that this inference of death, even in the context of an animate argument, is not lexically encoded directly in the root, nor is it an absolute entailment of the causative change of state verb based on the root. I suggest that the exact way in which the 'overwhelming' component of meaning is instantiated is contextually determined. When the object is animate, then the contextually derived sense of 'overwhelming' can be understood either spatially, as in (18), or, more commonly, as an inference of death. But in any event, the inference of death, which comes pretty close to being an entailment, seems to be restricted to contexts where death is at issue, i.e., not cases where a father is shampooing his child's hair. Furthermore, this inference is much weaker in many languages.

More importantly, the two lexical entailments, of submersion in a medium and death, are both states. So, even if one were to argue that death is indeed somehow encoded in the root, for example, if one were to say that there are two roots √DROWN, one with the added inference of death, then the root would encode two states, not a state and a manner.

2.6 A Final Remark on the Analysis of *Drown*

BKG provide a series of counterexamples to MRC as an empirical generalization about the truth-conditional content of verbs. In this article, I pointed out some methodological shortcomings to their discussion, and provided a detailed analysis of one counterexample. One can of course point to other potential counterexamples, but I cannot guarantee that the kind of analysis appropriate for *drown* will be appropriate for other counterexamples. The important points are that when doing the lexical semantic analysis carefully, paying attention to the points in §2.2 above, the assumption that MRC does indeed hold leads to a more perspicuous analysis of this potential counterexample.

3 Against a Relational View of MRC

Mateu and Acedo-Matellán (2012; henceforth, M&AM) provide a relational view of MRC, according to which the constraint has nothing to do with the truth-conditional content of roots.

[31] As pointed out earlier, all of BKG's tests to show that *drown* as a MKV encodes manner, in fact just show that the verb built on the root denotes an event which contains an activity, the lexical content of which is not specified by the verb.

On their analysis, roots are not inherently typed (cf. Borer, 2003, 2005; Acquaviva, 2008, 2014) and there are no constraints on the conceptual content of roots (cf. Grimshaw, 2005). Roots in principle can be integrated into syntax in any way (cf. Hoekstra, 1988), the only constraint being the semantic/pragmatic compatibility of the skeletal semantics of the syntactic structure with the conceptual content of the root, visible only at the CI-Interface.

M&AM take the notions of manner and result to be *relational notions*, defined over syntactic configurations. Roots are *interpreted* as manner or result according to the syntactic position they merge in. A root will be interpreted as expressing a result if it appears as the predicate of a small clause, and it will be interpreted as expressing a manner if it is an adjunct of *v*. In principle, any root can merge in any way. MRC comes about, according to M&AM, because a root, as a morpho-syntactic object, can appear in only one position in a syntactic representation. Thus, in any given representation, a root can express either a manner or a result, but not both. However, any given root can appear in a variety of configurations, including manner configurations and result configurations.

We can illustrate the kind of data which M&AM adduce as support for this approach. A result root like *break* can be used in what has often been taken to be a manner construction, as in (52), analogous to (53):

(52) a. He broke the hammer-head off.

b. They broke the bottle open.

(53) They banged the door open.

In (52) the particle *off* is taken to express the result, and *break* is taken to express the manner in which the result is achieved.

Another purported example of a result verb in a manner environment is (54), analogous to (55):

(54) The woman's 13-year-old, who **broke his way** out to safety, says he woke up to find his whole house on fire.[32]

(55) How Andy Murray slammed his way to the top and became a true sporting hero.[33]

On M&AM's approach, MRC is trivially true, since a root, as a morpho-syntactic object, can merge in one and only one position which will determine how it is interpreted. However, on this understanding of MRC, there does not seem to be any empirical claim to the hypothesis that can be confirmed or refuted. No diagnostic for determining whether a root is a result root or a manner root is offered.

This approach, however, does not begin to account for the generalization which gave rise to the formulation of MRC, which is about semantic (truth conditional) content, as pointed out in the introduction. It was offered as a generalization about the English verb lexicon based on inherent truth-conditional properties of mono-morphemic verbs. If verbal roots could merge freely, it is not clear how the generalization which MRC expresses could arise in the first place, since any verb root could be found in both manner and result-inducing environments.

[32] http://abc13.com/news/toddlers-thrown-from-window-to-escape-house-fire/494489/

[33] https://www.dailyo.in/sports/andy-murray-novak-djokovic-atp-world-tour-finals-wimbledon-2012-roger-federer/story/1/14169.html

If we take MRC to express a constraint on the truth-conditional content of roots, then the cases under discussion actually support, rather than refute, the hypothesis. In (56), in which *break* appears in what M&AM take to be a manner position, the truth-conditional contribution of *break* is still one of COS. The verb *break* still conforms to MRC in specifying the result (a state) of an event, but no nonscalar change (manner).

(56) a. The hammer-head broke off (#but nothing broke).
(There was a breaking; no specification of how the breaking came about)

b. The squash split open (#but there was no split in it).
(There was a splitting; no specification of how the splitting came about)

In (54), too, *break* maintains its truth-conditional content as a result, not a manner, root. It does indeed specify something about the means by which the child made his way out of his house, but the truth-conditional content of the verb specifies only that there was breaking; it says nothing about the kind of action which brought about the breaking. The kid may have kicked the windows, broke them by hitting them with a bat, etc. There is much more to be said about these examples. The *way* construction has been taken to select only unergative verbs (Marantz, 1992; LRH, 1995). If *break* maintains its truth-conditional contribution as specifying only a state, we must ask whether result roots are always unaccusative, or whether they can also be unergative. Alternatively, it may be that the *way* construction only has a tendency to select unergative verbs, but can also select unaccusative verbs as well. I leave these important questions open at this point.[34]

4 Concluding Remarks

The real purpose of this paper is less to defend MRC, than to illustrate what I take to be the right way to account for the distribution of roots in varying syntactic contexts. This approach takes seriously both the lexical semantics of roots, and the contribution of syntactic and pragmatic context. It assumes that roots come with a grammatically relevant ontological category which determines their basic grammatical distribution. In many cases, the root is associated with an invariant semantic element which can be integrated into different syntactic structures, thereby generating, along with the choice of arguments and pragmatic context, a variety of inferences which we as speakers know how to draw.

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[34] It appears to me that the *way* construction generally selects manner verbs because it is supposed to specify the kind of action which brings about or accompanies a certain COS (Goldberg, 1995). Precisely because result verbs do NOT specify any manner of action, they typically do not appear in this construction. Only in heavily contextualized environments, where the action can easily be recovered, are COS verbs compatible with this construction.

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