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A LEXICAL-CONSTRUCTIONAL APPROACH TO LIGHT AND SOUND EMISSION VERBS¹

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ABSTRACT. *This article presents an in-depth lexical-constructional analysis of the verb classes of light and sound emission verbs (e.g. flash, rumble). The present research studies the integration of these verbal classes in the causative-inchoative alternation, the resultative, the intransitive motion and the conative constructions. This study has been carried out from the perspective of the Lexical Constructional Model (LCM), as put forward by Ruiz de Mendoza and Mairal (2008, 2011). The LCM has developed a set of internal and external constraints that define the conditions for lexical-constructional integration or subsumption. Internal constraints are based on the compatibility of predicates and constructions, while external constraints involve cognitive mechanisms like high-level metaphor and metonymy. Thus, the use of the sound emission verb buzz in the causative construction (I buzzed the bell) is licensed by the high-level metonymy DIRECT/IMMEDIATE RESULT (i.e. SOUND PRODUCTION) FOR DIRECT/IMMEDIATE ACTION.*

KEY WORDS. *Causative-inchoative alternation, resultative construction, intransitive motion construction, conative construction, Lexical Constructional Model, internal and external constraints.*

RESUMEN. *Este artículo presenta un detallado análisis léxico-construccional de las clases verbales de emisión de luz y sonido (por ej. destellar, retumbar). El presente trabajo estudia la integración de estas clases verbales en la alternancia causativa-incoativa, la construcción resultativa, la construcción intransitiva de movimiento y la construcción conativa. Este estudio se ha llevado a cabo en el marco del Modelo Léxico Construccional (MLC), propuesto por Ruiz de Mendoza y Mairal (2008, 2011). El MLC ha desarrollado una serie de restricciones internas y externas que definen las condiciones para la integración léxico-construccional o subsunción. Las restricciones internas están basadas en la compatibilidad entre los predicados y las construcciones mientras que las restricciones externas suponen mecanismos cognitivos como la metáfora o metonimia de alto nivel. De este modo, la posibilidad de usar el verbo de emisión de sonido sonar en la construcción causativa (Yo hice sonar el timbre) está motivada por la metonimia de alto nivel RESULTADO DIRECTO/INMEDIATO (PRODUCCIÓN DE SONIDO) POR ACCIÓN DIRECTA/INMEDIATA.*

PALABRAS CLAVE. *Alternancia causativa-incoativa, construcción resultativa, construcción de movimiento intransitivo, construcción conativa, Modelo Léxico Construccional, restricciones internas y externas.*

1. INTRODUCTION

The main goal of this paper is to study the lexical-constructional integration of *light* and *sound emission* verbs into three main constructions, namely the *causative-inchoative* alternation (*I flashed the lights/The lights flashed; I rang the bell/The bell rang*), the *resultative* construction (*I rumbled the gate shut*) and the *intransitive motion* construction (*The lights flashed across the sky, Coins clanked into the box*). In addition, this research briefly explores the occurrence of light and sound emission verbs with the *conative* construction (*I flashed the lights at her; I splashed water at him*).

The causative-inchoative alternation has been widely studied by grammarians but not so much in connection to verbs of light and sound emission. Cortés Rodríguez (2007, 2009) has pointed to the growing interest in the inchoative construction but nothing is said about the constraints that motivate the fusion of verbs of light and sound emission with this construction. His earlier research paper on the topic (Cortés and González Orta 2006) deals with Old English sound emission verbs and only from a functionalist perspective. Moreover, Levin's (1993) taxonomic work is far from complete when it comes to the discussion of the distributional range of these verbs. That is why I will argue that verbs of light and sound emission display a much richer variety of configurations than it has been claimed. Neither the resultative nor the intransitive motion construction of this verbal class is mentioned in Levin's (1993) or Faber and Mairal's (1999) lexematics-oriented taxonomies. Also, Levin's (1993) taxonomic classification provides us with too broad generalizations regarding the constructional realization of light and sound emission verbs. It is true that at an earlier stage of her work (Levin 1993: 31) she does mention which verbs of emission participate in the causative-inchoative alternation and which do not. So, I will offer a more uniform proposal for these two verbal classes and I will enrich her list of light and sound emission verbs displaying such alternation. The scarcity of linguistic literature devoted to these two verbal classes makes them worth investigating. To shed light on the kinds of constructional realization for these verb classes, I will rely on the classification put forward by Levin (1993) and Levin and Rappaport (1995), complemented by Faber and Mairal's (1999) compendium of lexical domains, plus the explanatory tools provided by Goldberg and Jackendoff (2004) and the Lexical Constructional Model (LCM henceforth; Ruiz de Mendoza and Mairal 2008, 2011).

For the present exploration, I have adopted, in consonance with the usage-based character of the LCM, a corpus-based approach. This study will be based on Levin's (1993) list of one hundred and forty verbs (one hundred nineteen for sound emission verbs and twenty one for light emission verbs). It is evident that sound emission verbs outnumber verbs of light emission. Levin and Rappaport (1994: 68) and Rothmayr (2009: 167) argue that this striking disproportion is motivated by the fact that there is a greater number of objects that emit sounds under manipulation by an external cause.

Following Faber and Mairal (1999: 261) I have grouped verbs of light emission into two main categories, one which gathers all the verbs denoting a steady (stable) light

and another one which comprises the verbs of unsteady (unstable) light. My goal was to see to what extent Faber and Mairal's (1999) classification of verbs of stable/unstable light is accurate enough to determine the compatibility of light emission verbs with certain constructions.

The examples in this paper have been extracted from both computerized and non-computerized sources. The non-computerized sources that I have consulted are dictionaries and the existing literature on the matter. By computerized sources of data I make reference to examples obtained from the original edition of The British National Corpus (BNC henceforth), The Corpus of Contemporary American English (COCA henceforth), and Webcorp.

This article is structured as follows. Section 2 introduces the reader to the concept of *construction* and to how this notion is conceived within the LCM. In the last part of this section, I present the *internal* and *external constraints* that are relevant for the unification process between light and sound emission verbs and argument structure constructions. Section 3 provides a bird's-eye view of the salient semantico-syntactic properties of the causative-inchoative pattern, the resultative, the intransitive motion and the conative constructions. Section 4 centers on my analysis of light emission verbs in the causative-inchoative alternation by emphasizing the crucial role played by world-knowledge information encapsulated in an internal predicate variable in shaping the causative construction. Section 5 explains why light emission verbs cannot appear in the resultative construction and what makes this verbal class compatible with the intransitive motion construction. In section 6, I will show that sound emission verbs are licensed to participate in the causative construction by the high-level metonymy DIRECT/IMMEDIATE RESULT FOR DIRECT/IMMEDIATE ACTION. In section 7 my main focus is on the factors that either license or block out sound emission verbs with the resultative and the intransitive motion constructions. The final section summarizes all the findings of the present research.

2. CONSTRUCTIONS WITHIN THE LCM

The notion of construction has been a topic of great interest that has generated an impressive amount of literature. Schönefeld (2006) offers a complete outline of the different perspectives and developments of this concept. Goldberg (1995) first defined a construction as a "form-meaning correspondence" where the meaning of the construction cannot be predicted from the sole interpretation of its component parts. Following Langacker (2005: 139-143), who treated as constructions highly frequent configurations which are compositional, Goldberg (2006) expanded the definition of a construction by abandoning the non-predictability requirement. For the LCM constructions are form-meaning pairings of the kind proposed in the various versions of *Construction Grammar* (CxG; González-García and Butler 2006). The LCM recognizes several types of constructions, among them *argument structure constructions*, which are the result of abstracting away elements that are common to

lower-level verbal configurations. For example, the ditransitive construction relates to *give*-type verbs such as *give*, *send*, *sell*, etc. The LCM is a usage-based model of language that provides meaning characterizations at four different levels: the level of argument structure (level 1), the level of implicational constructions (level 2), the level of illocutionary constructions (level 3), and the level of discourse constructions (level 4). The LCM complements and refines the Golbergian account according to which only constructions predict the overall meaning of a sentence by coercing the lexical meaning of a predicate to fit all constructional requirements. In contrast, the LCM regards lexical-constructional integration or *subsumption* as a cognitive process that is constrained by either internal or external principles while it strikes a balance between the roles of lexical and constructional constructs. The internal constraints involve those licensing or blocking factors that depend on lexical class ascription, lexical-constructional compatibility, and either predicate or internal variable conditioning of external variables.

In the remainder of this section I present those internal and external constraints that will be employed later in my analysis. The *Event Identification Condition* stipulates that the subevents specified by the lexical template and by the constructional template must match. Compare the conative construction *John hit at the fence* with **John petted at the dog*. In the first one the incorporation of the verb *hit* into the conative construction is licensed by the existence of both a motion and a contact subevent, whereas in the second example the verb *pet* is an activity predicate involving only a contact subevent. The *Internal Variable Conditioning* is widely attested in my analysis. The world-knowledge information associated with an internal predicate variable places restrictions on the nature of both the predicate and constructional arguments. A clear example is supplied by the use of the verb *drive* to instantiate the resultative construction. The meaning of this verb tends to denote a loss of control for the object, thus predicting the nature of the Z element, which can only express a negative mental state as in *drive someone mad/crazy/insane/nuts*, etc.

On the other hand, the external constraints refer to high-level metaphoric and metonymic operations. The high-level metaphor A COMMUNICATIVE ACTION IS AN EFFECTUAL ACTION licenses the incorporation of the verb *snarl* into the caused-motion construction (cf. *The gangster snarled me into the poker room*). Lastly, the analytical apparatus of the LCM also comprises high-level metonymies originally formulated by Ruiz de Mendoza and Pérez (2001) such as INSTRUMENT FOR ACTION (e.g. *John shipped Thomas a package*) or OBJECT FOR ACTION (e.g. *He began [drinking/canning/selling] the beer*).

3. TYPES OF CONSTRUCTIONS AND THEIR PROPERTIES

Before examining the constraints that regulate the unification process between predicates and constructions, I will first give an outline of previous research on the causative-inchoative alternation, and the resultative and the intransitive motion constructions. Thus, the causative-inchoative alternation is made up of a transitive variant

[S/NP1 V OBJ/NP2] (e.g. *The wind opened the window*) and an intransitive variant [S/NP2 V] (e.g. *The window opened*). The former is regarded as a causative configuration that describes the bringing-about of a change of state whereas the latter is an inchoative characterization that depicts a change of state and that lacks the agent/causer. It is well known that in this alternation the direct object of the transitive variant becomes the subject of the intransitive variant. It is also necessary to mention that in this paper Levin's (1993) syntactic alternations will not be simply treated as the outcome of different syntactic projections of one verbal predicate, but as the result of the principled interaction between a verbal predicate and at least two self-standing constructions (cf. Ruiz de Mendoza and Mairal 2011).

Since the present study also deals with different instantiations of the resultative construction, it is essential to provide the reader with a brief theoretical overview on this type of construction too. It is commonly accepted that the resultative construction is a type of transitivity pattern which specifies the outcome of a change of state, property or location undergone by a person or an entity. The resultative configuration has received the attention of scholars working within various theoretical frameworks: formalism (e.g. Hoekstra 1988; Levin 1993), functionalism (e.g. Halliday 1967) and a number of constructionist approaches to language (cf. Boas 2002, 2003, 2005; Broccias 2003, 2004; Goldberg and Jackendoff 2004; Iwata 2006). According to Goldberg (1995), the resultative construction displays the semantics X CAUSES Y TO BECOME Z, where Z denotes the result argument, which may be realized either by an adjective phrase (AP) or by a preposition phrase (PP). Goldberg (1995) also claims that this construction is characterized by the following properties:

- i. The subject argument has to be an animate agent.
- ii. The object argument has to be patient (undergoes change of state).
- iii. The verb has to encode direct causation.
- iv. The resultative adjective has to designate the endpoint of a scale (binary adjectives).
- v. The resultative adjective cannot be deverbal.

Ruiz de Mendoza and Luzondo (2011) propose two basic schemas underlying any resultative construction, namely A>B, where the object undergoes a transcendent change (e.g. *The witch turned the prince into a frog*), and A>A' or the "canonical resultative construction", in which the object gains a new property but does not experience a major change of state (e.g. *She clanged the door shut behind her*). In this paper I will discuss only the examples that fall into the second category since light emission and sound emission verbs cannot codify a transcendent change.

Another type of resultative construction that will be brought into consideration is the intransitive motion construction (e.g. *The bottle floated into the cave*), also called *intransitive path resultative* (cf. Goldberg and Jackendoff 2004). This construction

displays the semantics X MOVES Y, where Y denotes the path of motion followed by X. Goldberg (1995) does not discuss this construction in detail but she points out that it relates to the caused-motion construction via a subpart inheritance link, according to which the intransitive motion construction draws partial structure from the caused-motion construction. In this construction there is no external cause for the motion of the X element.

In this section one last mention should be made of the conative alternation, which is briefly dealt with in this study. The very name of this transitivity alternation, which comes from the Latin word *conor/conari* ‘to try’, gives a hint about its scope. Levin (1993: 6) claims that in the conative alternation there is “no entailment that the action denoted by the verb was completed”. A sentence like *Sue cut at the bread* only means “Sue tried to cut the bread”. So, the conative alternation is felicitous with verbs that are ambiguous as to whether a particular goal is attained. A verb like *pull*, which does not entail that the entity the force is directed at moves, is perfectly compatible with the conative alternation as can be seen in *The baby pulled at the hanging flex of the iron left on the ironing board, *and the iron fell on his head*. The same happens with the verb *wave*, which describes the action of raising one’s arm and moving one’s hand from side to side in order to draw someone’s attention. This verb does not presuppose that the person the action is directed at has noticed our gesture (cf. *She waved at him, but he didn’t even notice*). Perek and Lemmens (2010) show that both Levin (1993) and Goldberg (1995) display a similar treatment for this kind of alternation. Levin (1993) equates conative alternation with ‘attempted action’ whereas Goldberg (1995) analyzes it in terms of ‘intended result’. However, none of these two perspectives provide a fully-fledged account of all alternating verbs.

4. THE CAUSATIVE-INCHOATIVE ALTERNATION WITH LIGHT EMISSION VERBS

As pointed out in the introduction, Levin’s (1993) list of light emission verbs contains twenty-one verbs that I have grouped into two main categories following Faber and Mairal (1999):

- 1) Verbs that denote a steady (stable) light (e.g. *beam, burn, blaze, glare, gleam, glow, incandesce, shine*) and
- 2) Verbs that describe an unsteady (unstable) light (e.g. *blink, flare, flash, flame, flicker, glimmer, glint, glisten, glitter, scintillate, shimmer, sparkle, twinkle*).

All verbs of light emission are allowed to take part in the inchoative construction since most of these verbs can be classified as internally caused verbs. According to Levin and Rappaport (1995), intransitive verbs describing an internally caused eventuality do not display a causative construction for it is believed that “some property inherent to the argument of the verb is responsible for bringing about the eventuality” (Levin and Rappaport 1995: 91). Contrary to internally caused verbs, externally caused

verbs “imply the existence of an *external cause* with immediate control over bringing about the eventuality described by the verb: an agent, an instrument, a natural force, or a circumstance” (Levin and Rappaport 1995: 92). Consider the contrasting pair *The jewel sparkled*/**The jeweler sparkled the jewel*. The inchoative pattern is possible because it depicts a process with only one role, an undergoer (the jewel). Before examining the causative pattern, I shall mention two of Levin and Rappaport’s (1995: 135, 146, 153) linking rules, which seem relevant for the discussion:

- 1) The argument of a verb that denotes the immediate cause of the eventuality described by that verb is its external argument (i.e. subject).
- 2) The argument of a verb that corresponds to the entity undergoing the directed change described by that verb is its direct internal argument (i.e. direct object).

In this light, the causative pattern (**The jeweler sparkled the jewel*) is deemed ungrammatical because the verb *sparkle* has an immediate causer (namely *the jewel*), which is a more immediate cause of the sparkling event than the jeweler. Also, it is not possible to have two immediate causes for a single event. However, the sentences *The jeweler made the jewel sparkle* or *The jeweler caused the jewel to sparkle* are correct since we have two verbs, both of which have their respective immediate causes realized as their subjects. The felicitous use of the verb *sparkle* in the *made/cause to* construction may also be accounted for by a temporal separation between the cause event and the effect event (cf. Fodor 1970)². One may think that the verb *sparkle* cannot act as a lexical causative (**The jeweler sparkled the jewel*) because there is a time lapse between the removal of dirt or residues from the surface of the gemstone and the sparkling effect of the jewel. In line with Fodor’s (1970) proposal, Katz makes a distinction between *direct* and *indirect causation*. As an example of indirect causation he makes use of a Wild West anecdote in which a gunsmith selling guns to an outlaw may be connected to someone’s death (e.g. the sheriff is shot later on by that outlaw). As can be seen, the two events (the sale of the crime weapon and the sheriff’s death) are too remote in time to be linked by means of a lexical causative (*?The gunsmith killed the sheriff*). Lakoff (1987: 55) also argues that “the more direct the causation, the closer the morphemes expressing the cause and the result” (cf. also Lakoff and Johnson 1980: Ch. 20; Haiman 1983). Another explanation could be offered by a sentence like *The jewel sparkled in the sunlight*. From this sentence it can be inferred that the sparkle is in fact produced by the gemstone in contact with natural light. The jewel has the capacity to reflect the sunlight on its surface.

At first sight, it is possible to think that verbs denoting an unsteady light (i.e. that cannot be controlled) must be ruled out from the causative pattern since only verbs that allow for controlled light emission are acceptable in the transitive pattern. But this is not the case since verbs like *flash* or *flicker*, which denote an unsteady type of light, can display a causative pattern (cf. *He flashed the lights*). In contrast, verbs describing a steady light, such as *glare* or *glow* are infelicitous in the causative construction (cf. **I glared the headlights*).

Rothmayr (2009) claims that most verbs of light emission do not take part in the causative (agentive) construction because the subjects of these verbs do not allow for their light emission to be brought about by people. The analysis in this paper clearly supports this claim since the eventuality described by verbs of light emission is mainly caused by a natural force rather than a human agent as in the utterances provided below:

- (1) *Then the heavy cloud began to break up and the pearly rays of the morning sun beamed down on a spume-streaked sea that glistened in shades of emerald and jade.* (H7W 4255 BNC)
- (2) *David and Alice collected their chairs, blankets, and booze, and when the lightning flashed, David imagined his wife lit up [...].* (2010-FIC-Bk:MrPeanut COCA)
- (3) *Stars glittered with the brilliance of jewels against a velvet backcloth.* (HA6 1545 BNC)
- (4) *The flame flared red then yellow and sulphurous smoke rose.* (2010-FIC-Bk:LucyNovel COCA)

In these examples the light emission event is caused by natural forces: the sun in (1); lightning in (2); the stars in (3); the fire in (4). In example (1), the sea does not represent a source of natural light since the glistening event is caused by the contact of the sunlight with the surface of the water. Therefore, intransitive light emission verbs can express, on the one hand, a light produced by a natural source (e.g. sun, lightning, fire, stars) which cannot be controlled by human beings and, on the other hand, a light produced by an entity whose surface is in contact with a source of light: a jewel (e.g. *sparkle*, *glint*); a lake (e.g. *shimmer*); a stream (e.g. *glint*); shoes (e.g. *shine*). Levin and Rappaport (1995) have drawn their internal cause generalization from examples similar to those enumerated in (1)-(4), but they have overlooked this second case, which needs further discussion. Compare (5a), (5b), and (5c):

- (5) a. *The sea shimmered in the sunlight.*
 b. *The sun shimmered onto the sea.*
 c. **The sun shimmered the sea.*

The verb *shimmer* requires a situation in which the concepts of agency and causation are shared by two elements, namely the sun and the sea. The sun is an external causer, which cannot function in the absence of an enabling factor or internal causer (the sea in (5a)), as illustrated in (5b) and (5c). Thus, the sea and the sun are co-causal factors of the shimmering event, which disallows the expression of the sea as a mere patient in (5c). The linguistic coding of both causal factors is reflected in the formal distance that separates the verb from the object (cf. (5a) and (5b)).

Levin (1993) states that verbs such as *incandesce* and *scintillate*, which are not so frequent in English, display a more restricted syntactic behavior than the rest of the light emission verbs. Thus, they can only participate in the inchoative construction: *We watched contentedly as our campfire scintillated in the darkness* (*Merriam Webster Online Dictionary*); *And then the stars, grand lighthouses of the Heavens, in their turn incandesce* (*Wordnik Online Dictionary*). These two verbs can be subsumed into the category of internally caused verbs since the light emitter is in both cases a natural source (the campfire and the stars) which escapes human control. Levin's (1993) list of light emission verbs could be further expanded to include seven other verbs: *coruscate* (e.g. *The high ceiling of clouds coruscate with lightning*; *Wordnik Online Dictionary*), *fluoresce* (e.g. *I just do my research to understand why jellyfish luminesce, and why that protein fluoresce*; *Wordnik Online Dictionary*), *glisten* (e.g. *The dew glistened in the soft light of the early morning*; *Merriam Webster Online Dictionary*), *luminesce*, *luster* (e.g. *Her pearl necklace lustered softly in the candlelight of the restaurant*; *Merriam Webster Online Dictionary*), *spangle* (e.g. *In typical Las Vegas fashion, the showgirls' sequined costumes spangled gloriously*; *Merriam Webster Online Dictionary*), and *wink* (e.g. *The airplane's landing lights winked on and off*; *Merriam Webster Online Dictionary*). All these verbs can appear in the inchoative construction and their light can have an internal cause (e.g. *coruscate*, *luminesce*, and *fluoresce*) or can be produced by an entity whose surface makes contact with a source of light (e.g. *glisten*, *luster*, and *spangle*). The intransitive use of the verbs *luminesce* and *fluoresce* can be justified by the bioluminescence phenomenon, which is the ability of some animals living in the deep sea/ocean or on land to emit their own light in order to protect themselves against predators, to lure their potential preys or to communicate (e.g. glowworms, flashlight fish, jellyfish, fireflies, some mushrooms, etc.). In the case of the verb *wink* the light emitter can be either a source of natural light (cf. *The stars winked in the night sky*; *Merriam Webster Online Dictionary*) or an artificial source of light as exemplified above. When the light is emitted by an electrical device that can be directly manipulated, the verb *wink* can be found in the causative construction (e.g. *On any range, press the "D. HOLD" key over 2 seconds to light the back light, press it again for more than 2 seconds to wink the light*)⁴.

Now, let us analyze what makes light emission verbs compatible with the causative construction. Consider the following instances:

- (6) *Mom beamed the flashlight over the rocks halfway up the hill.* (2000-News-Denver COCA)
- (7) *Grace blinked the porchlight twice when they pulled up in front of the house [...].* (1997-FIC-AntiochRey COCA)
- (8) *He reached down and dialled in a violet filter, then rapidly flashed the lamp [...].* (2004-FIC-Analog COCA)

- (9) *As he spoke, the door of the shop opened and a gust of wind flickered the candles.* (2009-FIC-FantasySciFi COCA)
- (10) *Thorvald handed Roger the container, then shined the light onto the text [...].* (2006-FIC-Analog COCA)
- (11) *Jazzbeaux held up her ungloved hand, knuckles out, and shimmered the red metal stars implanted in her knucks.* (CH0 876 BNC)

As evidenced by examples (6)-(11) the only light emission verbs that combine with a causative construction are *beam*, *blink*, *flash*, *flicker*, *shine*, and *shimmer*. In the case of the verbs *beam*, *blink*, *flash*, and *shine*, the light emitter is an electrical device controlled by a human agent. In utterance (9) it is the wind (an inanimate agent) that acts upon the candlelight (non-electrical light emitter) and makes it flicker. *Shimmer* is another verb that disrupts the pattern mentioned above. In example (11), a shiny object (*metal stars*) is used as an instrument of producing light. All these examples display an agentive adjunct (*Mom*, *Grace*, *he*, *Thorvald*, *Jazzbeaux*) whereas in (9) the wind functions as a causal adjunct. The wind is not a volitional controller but only a fortuitous cause of the action expressed by the verb *flicker*. Examples (9) and (11) run counter to both Levin and Rappaport's (1994) and Rothmayr's (2009) claim according to which the only way verbs of light emission could be used in the causative configuration is to use electrical devices as instruments of producing light. Nevertheless, there are many light emission verbs that describe light produced by an electric device, such as *glare* (headlights), *blaze* (headlights), *burn* (lamp), or *glow* (light bulb) but they cannot participate in the causative construction (cf. **I glowed the light bulb*). Both Levin and Rappaport (1994) and Rothmayr (2009) agree that the causative pattern is felicitous only when there is direct manipulation of the light emitter by an external cause, in this case a human agent. Let us consider the utterance *You'd better slow down, that car was flashing its lights at you* (*Cambridge Online Dictionary*). In this example the conative use of the preposition *at* suggests that the action of flashing the lights is directed at someone which clearly indicates the presence of a human agent (the driver) who manipulates the lights of a car by pressing a certain button. The conative construction in English introduces the verbal complement with *at*. The preposition *at* is used with verbs that involve intentionally directing attention at an object (e.g. *He looked at me*, *He laughed at me*) or directing the action towards an object without having physical impact on it (e.g. *He hit at the wall* = he directed his hitting action towards the wall but did not reach it, i.e. he attempted to hit the wall). In our case, a sentence like (...) **that car was flashing at its lights (...)* would be illogical because the causative pattern (*That car was flashing its lights*) requires direct manipulation of the light emitter for the light to be produced. The example mentioned above can be treated as a case of what Ruiz de Mendoza and González (2011) have called a *constructional amalgam* whereby a causative representation – resulting from subsuming the verb *flash* into the causative construction- is integrated into the conative construction. The reason for this is grounded in the fact that some actions can have two

kinds of objects: one (e.g. the light) acts as the scope of the action (flashing) and the other acts as the goal of the action (e.g. the object at which the flash is directed). But what makes a verb like *glare* reject the causative configuration (cf. **I glared the headlights straight into her eyes*)? I contend that the compatibility of light emission verbs with the causative construction also depends on the type of light different objects produce. The verb *glare* expresses an intense, blinding type of light, thus suggesting that it cannot be easily controlled. The same holds true for the verb *blaze*, which cannot fit into the causative pattern (cf. **The huge truck blazed its headlights at us*) due to the fact that it depicts a very strong and disagreeable light. Also, traffic regulations stipulate that car drivers must not use main beam headlights (high beams) since these lights would dazzle or cause discomfort to other road users (car drivers, pedestrians, cyclists or horse riders). Thus, this situation (glaring/blazing the headlights) could only be caused accidentally, which makes these verbs incompatible with both the conative and the caused-motion construction, both of which require the agent's intentionality. In the case of the verb *glow* intense light is associated with great heat, which would make impossible the direct manipulation of the electrical device (cf. **I glowed the light bulb*). The glowing light is produced by the heating of a metal filament wire to a high temperature inside a glass bulb. Another explanation for the ungrammaticality of the causative construction resides in the fact that the electrical current, which travels by feed-through terminals or wires, is the key factor in the glowing event. Summing up, the subsumption of the verbs *glare*, *blaze*, and *glow* into the causative, the conative and the caused-motion constructions is blocked out by Internal Variable Conditioning. Our world knowledge tells us that people do not usually direct an intense or a disagreeable light at someone else (cf. **I glared the headlights at her*) or that great heat emanated by a light bulb prevents a person from touching it (cf. **I glowed the light bulb*). Levin (1993: 31) claims that there are only four verbs of light emission that can happen in the causative-inchoative alternation, namely *beam*, *blink*, *flash*, and *shine*. In this section it has been pointed out, on the basis of corpus data, that the verbs *flicker* and *shimmer* can also fuse with the causative construction.

5. LIGHT EMISSION VERBS AND THE RESULTATIVE AND THE INTRANSITIVE MOTION CONSTRUCTIONS

This section first addresses the issue of the non-participation of light emission verbs in the resultative construction (cf. **I flashed the lights red* vs. *The lights flashed red*) and then examines the principles that license the incorporation of this verbal class into the intransitive motion construction. The adjective *red* in *The lights flashed red* is not a result of the flash of lights, but it is the color that the lights took anyway (the lights can also *glow/glimmer*, etc. *red*). This sentence could also be paraphrased *The lights, which were red, flashed* because the adjective *red* functions only as a predicative complement. So, the sentence **I flashed the lights red* is unacceptable because the verb describing the action (the flashing of lights) does not precede the event of lights turning

red. The light flashing and becoming red happen simultaneously. Nevertheless, some light emission verbs can appear in the intransitive motion construction (X MOVES Y). Let us take into account the example *The craft blazed out into space*. Goldberg and Jackendoff's (2004) notions of *constructional* and *verbal subevents* are very useful to explain such intransitive motion configurations or, as Goldberg and Jackendoff (2004) call them, path resultatives. The meaning of an utterance contains two separable subevents: a verbal subevent, determined by the verb of the sentence and a constructional subevent, determined by the construction. The verbal subevent is the means by which the constructional subevent can happen; it can also be said that the scenario depicted by the verb is prior to the one described by the schematic construction. In the previous sentence the verbal subevent (*blaze*) functions as the means of the subject's motion. Any rocket fuel is composed of fuel and oxidizer. The explosion that launches the spaceship into space is produced by a burst of heat added to the fuel and the subsequent introduction of the oxidizer. Following Talmy (1996), it is possible to state that the example *The craft blazed out into space* describes an *open path event*³ with windowing over the final part of the trajectory of the moving entity (*into space*) and initial and medial gapping (i.e. nothing is said about the starting point of the trajectory which is the launch pad nor about the motion of the spaceship through the air). Nonetheless, it is perfectly acceptable to construe a sentence that provides maximal windowing over the whole of the conceptually complete path (cf. *The craft blazed out from the launch pad through the air into space*) since the verbal subevent describes the means by which the motion event takes place. Also, the integration of the light emission verb *blaze* into the intransitive motion construction can be explained by means of the CAUSE (OF MOTION) FOR EFFECT (MOTION) metonymy whereby the blazing event makes possible the motion event.

To conclude, the PP slot of the intransitive motion construction can vary depending on which part of the light trajectory is profiled: 1) the initial part, which sometimes can coincide with the source of light (e.g. *The sunlight blazed from the sky*, *Fire blazed from the sun*); 2) the medial part of the path followed by the light (e.g. *The lights blazed through space*, *The lights blinked across the sky*); 3) the final part or the destination of the light (e.g. *The lightning flared into my face*).

6. THE CAUSATIVE-INCHOATIVE ALTERNATION WITH SOUND EMISSION VERBS

As in the case of light emission verbs, all verbs of sound emission take part in the inchoative construction since most of them fall into the category of internally caused verbs. Again, one of the reasons which disallows the presence of sound emission verbs in the causative construction is that the sound emitter is not of human nature. Thus, the sound emission could be produced either by an animal or a natural force as in the examples reproduced in (12)-(15):

- (12) *The dog growled, showing sharp white teeth, and the boy shivered.* (BN1-W_fict_prose COCA)
- (13) *But the elephants went gaily dancing and trumpeting away over the mountains [...].* (FUB-W_fict_prose COCA)
- (14) *The wind wailed in the chimney.* (Longman dictionary online)
- (15) *Thunder crashed and boomed outside.* (G0E-W_fict_prose COCA)

These examples illustrate that the sound emitter can be an animal as in (12) and (13) or a natural force as in (14) and (15). Other verbs that denote sounds emitted either by animals or nature are: *bubble* (water), *chatter* (birds), *gurgle* (brook), *hiss* (snakes), *howl* (wolves), *patter* (rain), *purr* (cat), *squawk* (birds), *trill* (birds), *whine* (dogs), etc.

Additionally, some sound emission verbs can describe involuntary sounds that come from inside our body such as *sneeze*, *hiccup*, *belch*, *burp*, *rumble* (stomach). The case of the verb *burp* is very interesting since it can denote both an uncontrollable sound (*The baby burped*) and a controlled noise as in *I burped the baby*. The first sentence clearly supports Piñón's (2001) claim according to which "a causative-inchoative verb can be construed inchoatively if the type of event denoted is not necessarily caused by an agent". Chierchia's (2004) 'by-self' test can also be successfully applied (*The baby burped by itself/himself*) where the 'by-self' phrase plays the role of a modifier of an underlying cause indicating that it is the sole cause of the event. Nevertheless, a sentence like *?The bell buzzed by itself* may sound very odd since the buzz of a bell is normally associated with a human agent (cf. Internal Variable Conditioning). The second sentence (*I burped the baby*) is perfectly acceptable since it involves direct manipulation (i.e. placing the child in a position conducive to gas expulsion and then lightly rubbing or gently hitting its lower back so that air comes out of its stomach). This explanation is in line with both Levin and Rappaport's (1994) and Rothmayr's (2009) view according to which the causative pattern is felicitous only when there is direct manipulation of the sound emitter by an external cause, in this case a human agent. I also claim that the use of this verb in the causative construction can be accounted for by the high-level metonymy DIRECT/IMMEDIATE RESULT (i.e. SOUND PRODUCTION) FOR DIRECT/IMMEDIATE ACTION, which acts as a licensing factor. Thus, the causative construction *I buzzed the bell* could be paraphrased as *I pressed the bell button* (ACTION) and *the bell buzzed* (RESULT). The English language has economically merged the sound production and the action into one single lexical item, viz. the verb *buzz*. This phenomenon could also be explained by means of one of the sub-principles of Givón's *iconicity principle* (1985: 207) according to which "the more stereotypical an object, instrument or manner adverb is as information, the less likely it is to be given independent coding expression, and the more likely it is to be incorporated into the verb". In our case, the action of pressing the bell button is predictable from the sound emission event and is thus incorporated into the verb *buzz*.

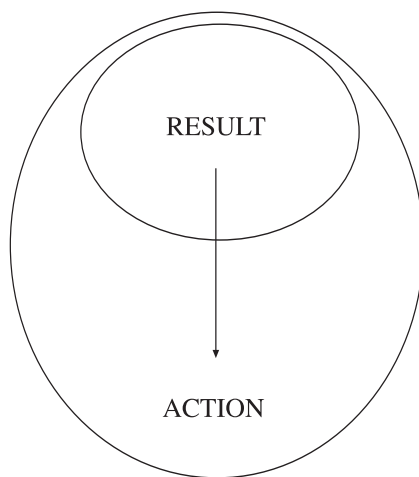


Figure 1. *The RESULT FOR ACTION metonymy in I buzzed the bell.*

So, the only way verbs of sound emission could be used in the causative configuration is to use devices or objects as instruments of producing sound. All sound emission verbs that take part in the causative pattern belong to the CONTACT frame (e.g. *He banged the door, Jerry jingled/jangled his car keys*). Cortés and González Orta (2006) also support that there is an area of overlap between sound emission verbs and contact verbs. In the case of the verbs *clash* and *clank* the conceptual domain of SOUND is inextricably intertwined with that of CONTACT as demonstrated by the presence of a *together* or *against* phrase:

- (16) *The glass in her right hand still clashed against her teeth.* (FP0-W_fict_prose COCA)
- (17) *Whenever their team scored a goal, they leapt up and down clanking their beer cans together.* (Cambridge Online Dictionary)

Examples (16)-(17) highlight that the sound could not have been produced in the absence of contact between two or more entities (the glass and the teeth in (16) and the beer cans in (17)). As can be noticed, when the entities that come into contact are identical the preposition *together* is preferred, whereas when the entities are different the preposition *against* is used. Also, in the case of the preposition *together* the sound produced is volitional whilst in the case of *against* the sound may be accidental.

Furthermore, Levin's (1993: 31) list of sound emission verbs involved in the causative-inchoative alternation should be enriched with the following verbs: *beat, chink, clank, clink, crack, explode, pop, rattle, snap, splash, swish, toll, and toot*. Some of these sound emission verbs can also appear in the conative construction thus denoting

an action accompanied by sound which is directed at someone (e.g. *He blared the horn at her, He hooted his horn at her, He splashed water at her, He squeaked the toy at her*, etc.). Just like in the case of light emission verbs, the sound emission verb cannot be separated from the direct object by means of the preposition *at* (cf. **I buzzed at the bell*) since the sound comes from the direct manipulation of an object. In some cases the formal distance between the sound emission verb and the direct object results in a change of meaning. The example *He banged the door* implies that the speaker either opened or closed the door with a sudden loud noise whereas the sentence *He banged at the door* implies that the speaker is standing in front of a closed door and that he is hitting it because he may want to come into the house.

But what happens when there is no direct manipulation of the sound emitter? Then, the causative pattern is only possible in the presence of a directional phrase as in *I squealed the tires going around a corner* or *She swished her skirt as she walked*. In the first example the verb *squeal* must combine with a motion verb (*go*) and a PP slot indicating the idea of figurative motion since the production of this sound would not be possible without someone controlling the car in such a way that the tires will squeal.

I would also like to discuss briefly the property of intentionality which is essential in the case of the causative construction as in *Don't clatter the dishes- you'll wake the baby up* (*Cambridge Online Dictionary*). In the inchoative construction the agent is not realized at the linguistic level as if the action were carried out in the absence of the agent. The addition of an adverbial time clause to the inchoative construction (e.g. *The saucepans clashed as he piled them into the sink* - *Cambridge Online Dictionary*; *The floorboards creaked as she walked across the room* - *Longman Online Dictionary*) makes it clear that the sound event in the main clause is caused by the action of the agent in the *as* clause (the piling or the walking event). It is more than obvious that an agent is directly manipulating the saucepans or is walking on the wooden floor but the clashing or the creaking sounds may not be produced purposely.

7. SOUND EMISSION VERBS AND THE RESULTATIVE AND THE INTRANSITIVE MOTION CONSTRUCTIONS

In this section I aim to synthesize some of the main reasons for the participation of several sound emission verbs in the resultative construction and another subtype of resultative configuration, namely the intransitive motion construction. Contrary to light emission verbs, which reject the resultative configuration, sound emission verbs can take part in it. I believe that this is so because it is possible to associate causal actions more easily with sounds than with lights. Thus, a verb like *rumble* is compatible with the resultative construction as exemplified by *I was a pro this time, turning around in the office rest room to rumble the wooden door shut from its hidden slot in the frame [...]*⁵. In this sentence the exact outcome must be made explicit (cf. **I rumbled the gate*) since the verb *rumble* denotes a state and it can only participate in the resultative construction through a subcategorial conversion process that is licensed by the high-level metaphor

STATES ARE EFFECTUAL ACTIONS (Ruiz de Mendoza and Mairal 2007). Experiential grounding makes this metaphor possible: the mind conflates the rumbling noise with the gate moving to either an opened or a closed position. On the other hand, a verb like *yell* needs a “fake” reflexive object in order to appear in the resultative construction (e.g. **He yelled hoarse* vs. *He yelled himself hoarse*). In this example the presence of the fake object could be accounted for by the fact that the resultative adjective *hoarse* can only affect the animate instigator who performed the action described by the verb (cf. **He yelled Tom hoarse*). I shall also postulate another high-level metaphor, namely AN ACTIVITY IS AN EFFECTUAL ACTION, as a factor that allows this verb to occur in the resultative construction. Nevertheless, it is possible to conceive the activity predicate *yell* as being able to express a certain degree of object-directed intentionality as in *He yelled his son into submission*. In this caused-motion construction (X CAUSES Y TO MOVE Z) the state of obedience is viewed as a location on the basis of the metaphor STATES ARE LOCATIONS.

When dealing with the resultative construction, Talmy (1996) specifies that the verb in this construction must encode the immediate cause of the final resulting event expressed by the satellite.⁶ Let us take the utterance *She slammed the door open*. The adjective *open* describes the final resulting event whereas the verb *slam* encodes a prior causal subevent. So, the causal sequence (The door is opened) cannot be referred to with a sentence like **She grabbed the door open*, even if she may have first grabbed the door knob in order to open the door. In the LCM, this phenomenon is motivated by means of a subcase of the internal constraint Event Identification Condition, which concerns the proper identification of events. The verb *slam* here does not refer to the hitting event (cf. **I hit the door open*) but to the sound produced at the moment when the door is hit against the wall and makes it open. So, the sound production is the closest temporal subevent to the resulting event. It is necessary to add that the resultative construction also parameterizes the action carried out by the agent (e.g. the slamming sound could be produced either by closing or opening the door).

As far as the intransitive motion configuration is concerned, Goldberg and Jackendoff’s (2004) notions of constructional and verbal subevents, which have been defined in section 6, provide an adequately descriptive account for this construction. Let us consider the example *The frog plopped into the water*. Here, the verbal subevent (*plop*) merges the action performed by the subject (falling) with the sound produced by that action. The constructional subevent describes the movement of the subject along the path expressed by the PP. In the case of sound emission verbs, the verbal subevent is no longer the means whereby the constructional subevent takes place (cf. *The frog fell into the water*); on the contrary, it functions as the result of the constructional subevent, i.e. the sound of plopping is caused by the motion of the frog (cf. *The frog fell into the water with a plop*). According to Talmy’s (1996) conceptualization of an open path event, a sentence like *The frog plopped into the water* offers windowing over the final part of the trajectory of the moving entity (*into the water*) and initial and medial gapping (i.e. no information is given about the starting point of the trajectory which could be the grass

nor about the motion of the frog through the air). In fact, a sentence that codifies the starting point and the intermediate points of the trajectory at the lexical level is deemed ungrammatical (cf. **The frog plopped from the grass through the air into the water*). This example could be contrasted with an utterance like *The frog jumped from the grass through the air into the water* in which the verb *jump* provides maximal windowing over the whole path. In the LCM the difference between these two verbs can again be explained by the Internal Variable Conditioning constraint, according to which the internal predicate variables place constraints on the nature of the constructional arguments. The verb *plop* expresses a sound that is produced at the fall of a moving entity into the water. Thus, this verb is inextricably linked to the final part of the event (the fall), which constrains the choice of the constructional subevent (*into the water/*from the grass/*through the air*). Another instantiation of intransitive motion construction is offered by the utterance *The engine spluttered/thrummed into life* (*Longman Online Dictionary*). This example can be accounted for by the high-level metonymy MANNER FOR ACTION since verbs like *splutter* and *thrum* designate the way in which the action takes place. This metonymy allows us to focus on the actional component underlying the sound. In the case of *thrum* the sound results from the action of playing a guitar idly whereas in the case of *splutter* the spitting sound results from the way a machine or an engine works. The prepositional phrase *into life* indicates that a state of existence is conceptualized metaphorically in terms of the CONTAINER image-schema (Johnson 1987; Lakoff 1987, 1989)⁷. Thus, the entity that begins to exist (the engine) is conceived as entering a container.

8. CONCLUSIONS

This research paper has mainly discussed the internal and external constraints that license or block out the integration of verbs of light emission and sound emission into the causative-inchoative alternation, and the resultative, the intransitive motion and the conative constructions. From the close inspection of the distributional range of these two verbal classes the following conclusions can be drawn:

- (a) The analysis in this paper confirms Levin and Rappaport's (1995) hypothesis according to which internally caused verbs only occur in the inchoative construction (cf. *The sun beamed through the clouds- Longman Online Dictionary; We could hear the stream gurgling down in the valley- Longman Online Dictionary*) while externally caused verbs can display a causative configuration (cf. *The woman blinked the porchlight; I burped the baby*). However, Levin and Rappaport's (1995) internal cause generalization can only account for examples in which the light is produced by a natural source (e.g. sun, lightning, fire, stars) and thus cannot be controlled by human beings. The examples provided in this research show that intransitive light emission verbs can also express a light produced by a bioluminescent animal (e.g. glowworms,

fireflies, jellyfish) or by an entity whose surface is in contact with a source of light (e.g. jewel: *sparkle*, *glint*; shoes: *shine*). Examples like *The wind flickered the candle* or *He shimmered the red metal stars implanted in his knuckles* run counter to both Levin and Rappaport's (1994) and Rothmayr's (2009) contention that the only way verbs of light emission could be employed in the causative construction is to use electrical devices as instruments of producing light. Moreover, many light emission verbs that describe a light produced by an electric device (e.g. *glare*, *blaze*, *glow*) cannot take part in the causative construction (cf. **I glowed the light bulb*). The integration of a verb like *glow* into the causative configuration is blocked out through Internal Variable Conditioning, on the grounds that great heat that emanates from a light bulb makes it impossible to manipulate it directly. To sum up, the compatibility of light emission verbs with this construction is also regulated by the type of light different objects produce (cf. **I glared the headlight into his eyes*).

- (b) The use of the sound emission verbs in the causative construction can be motivated by the high-level metonymy DIRECT/IMMEDIATE RESULT (i.e. SOUND PRODUCTION) FOR DIRECT/IMMEDIATE ACTION, which acts as licensing factor (cf. *I buzzed the bell*). This metonymy is in consonance with Givón's (1985) claim that predictable or stereotypical information must be incorporated into the verb. Furthermore, the causative construction selects only the sound emission verbs that belong to the CONTACT frame. Another distinction between the causative and the inchoative construction is that the former involves the intentionality of the agent to bring about a given state of affairs.
- (c) The fusion of sound emission verbs with the resultative construction is motivated by the high-level metaphor STATES ARE EFFECTUAL ACTIONS (cf. *I rumbled the gate shut*). It has also been demonstrated that in the resultative construction the resulting event determines the choice of the verbal subevent.
- (f) With respect to the intransitive motion construction, light emission verbs encode the means whereby motion takes place whereas sound emission verbs describe the result (i.e. the sound production) of the motion.

NOTES

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1. *Center for Research in the Applications of Language* (www.cilap.es). Financial support for this research has been provided by the Spanish Ministry of Science and Innovation, grant no. FFI2010-17610.
2. Fodor (1970) distinguishes between *lexical causatives* (e.g. *kill*) and *analytical causatives* (e.g. *cause to die*). In his view, the former depict 'atomic' causal events whereas the latter describe 'compound' causal events. He also argues that in the case of the analytical *cause to* construction "one can cause an event by doing something at a time which is distinct from the time of the event" (1970: 433).
3. Example taken from: <http://www.multimeterwarehouse.com/DT6930Manual.pdf> (accessed on April 4, 2011).

4. An open path can be defined as a path realized by an entity physically in motion over a period of time. The path is viewed as an entire unity which has a beginning point and an end point situated at different locations in space.
5. Example taken from: <http://www.webcorp.org.uk/cgi-bin/webcorp2.nm> (accessed on January 24, 2011)
6. According to Talmy (1991, 2000), English is a satellite-framed language in which the core information of a sentence is mapped onto the satellite (an adverbial) and the additional information is mapped onto the verb. In the utterance *She slammed the door open* the satellite *open* expresses the main information (the door opened) while the verb *slam* lexicalizes the manner in which the door opened.
7. The preposition *into* is one of the linguistic realizations of the CONTAINER image-schema. Johnson (1987) has defined image-schemas as abstract conceptual representations that derive from our sensory and perceptual experience of the external world. Image-schemas are not innate knowledge structures. They are subject to transformations since they arise from ongoing embodied experience (cf. Lakoff 1987; Peña and Ruiz de Mendoza 2009). For example, the CONTAINER image-schema derives from our recurrent daily experience with different kinds of containers ranging from rooms, bed-covers, clothing to states.

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