WHY **SARAH CANNOT GLOW THE LIGHT BULB?* ACCOUNTING FOR THE CONSTRUCTIONAL BEHAVIOR OF *LIGHT* AND *SOUND EMISSION VERBS*

ANDREEA ROŞCA[1]

Abstract. This article provides an in-depth lexical-constructional account of two English verbal classes, namely *light* and *sound emission*, with special emphasis on the causative-inchoative alternation, the resultative and the intransitive motion constructions. To shed light on the kinds of constructional realization for these verb classes, I will follow and build on previous taxonomic work by Levin (1993) and Faber and Mairal (1999), which will be complemented by the analytical and explanatory tools developed by the *Lexical Constructional Model* (Ruiz de Mendoza and Mairal, 2007, 2008; Mairal and Ruiz de Mendoza, 2008, 2009). Levin and Rappaport Hovav (1995) show that *internally caused* verbs can only participate in the inchoative construction (cf. *The stars twinkled in the black sky, Blood gurgled in his throat*) whereas *externally caused* verbs can occur in the causative configuration (cf. *He winked the light, She jangled her car keys*). Nevertheless, a serious problem for the internal cause generalization stems from the fact that intransitive light emission verbs can also express a light produced by an entity whose surface is in contact with a natural light source (cf. *The jewel sparkled in the sun*).

Key words: causative-inchoative alternation, resultative construction, intransitive motion construction, Lexical Constructional Model.

1. INTRODUCTION

In this article I would like to discuss the cognitive constraints that regulate the fusion of *light* and *sound emission* verbs with three main constructions, viz. the *causative-inchoative* alternation (*I blinked the porchlight/The porchlight blinked*; *He blared the horn/The horn blared*), the *resultative* construction (*She clattered the gate shut*) and the *intransitive motion* constructions (*The lightning flared into his face, The engine thrummed into life*). Additionally, this research explores the occurrence of light and sound emission verbs with the NP_1 V-light/sound emission *with/in* NP_2-emotion pattern (*Her eyes flamed with/in rage, He groaned with/in distress*). Faber and Mairal (1999) have studied the correlation between light emission verbs and emotions but have not analyzed the same correlation for sound emission verbs.

[1] *Center for Research in the Applications of Language* (www.cilap.es), deia_nira7@yahoo.com.

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The connection between light and sound emission verbs and the causative-inchoative alternation has received scant attention in the linguistic literature (see Cortés Rodríguez, 2007, 2009, Cortés and Gonzálvez Orta, 2006). Moreover, the distributional range of these two verbal classes is much wider that has been attested in Levin's (1993) lexical semantics. Neither Levin's (1993) nor Faber and Mairal's (1999) lexematics-oriented taxonomies mention anything about the participation of these verbs in the resultative and the intransitive motion constructions. My aim in this paper is to offer a more uniform proposal for the constructional behavior of these two verbal classes and to examine in detail what factors license or block out their lexical-constructional integration. To this end, I will make use of the classifications put forward by Levin (1993), Levin and Rappaport Hovav (1995) and Faber and Mairal (1999), complemented by insights from Goldberg and Jackendoff (2004) and the relevant elements of the analytical apparatus of the *Lexical Constructional Model* (LCM henceforth; Ruiz de Mendoza and Mairal, 2008, 2011).

In consonance with the usage-based character of the LCM, the research will adopt a corpus-based approach. This study is based on Levin's (1993) list of one hundred nineteen sound emission verbs and twenty one light emission verbs. The list will be further enriched as we delve deeper into the configurational variety of these verbs. The reason why sound emission verbs outnumber light emission verbs is because of a greater number of objects that produce sounds under manipulation by an external cause (cf. Levin and Rappaport Hovav, 1994: 68, Rothmayr, 2009: 167). I have used these verbs for the compilation, analysis and description of a large number of examples extracted from both computerized and non-computerized sources. The former refer to the original edition of The British National Corpus (BNC henceforth), The Corpus of Contemporary American English (COCA henceforth), and Webcorp whereas the latter comprise dictionaries and existing literature on the topic. Furthermore, some of the examples have been constructed for the sake of theoretical debate, but checked for validity by native speakers.

The structure of the rest of the paper is as follows. Section 2 is concerned with the notion of *construction* and its role within the LCM. The last part of this section briefly examines the relevant *internal* and *external constraints* that are involved in the integration process between light and sound emission verbs and argument structure constructions. Section 3 presents in a nutshell the semantico-syntactic properties of the constructions under scrutiny. In section 4, I address the issue of how the world-knowledge information encapsulated in an internal predicate variable can determine the compatibility of light and sound emission verbs with the causative-inchoative construction. Section 5 touches on Faber and Mairal's (1999) correlation between intense and unsteady light emission verbs and negative emotions. The intention is to see to what extent this connection can help us to predict the compatibility of light emission verbs with certain configurations. Also, the same correlation is applied to sound emission verbs. Section 6 centers on

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possible explanations for the (non) participation of these two verbal classes in the resultative and the intransitive motion constructions. The final section rounds up all the findings of the present research.

2. THE LCM'S APPROACH TO CONSTRUCTIONS

The notion of construction is central to Construction Grammar, which is considered to be a theory of grammatical representation within the more general framework of Cognitive Linguistics. A construction is a structured pairing of form parameters (e.g. phonological and intonational restrictions, syntactic order, morphological information) and meaning with different degrees of productivity and internal complexity. Schönefeld (2006) offers a concise description of how this concept in mirrored in different constructionist approaches. Goldberg (1995) argues that the meaning of a construction is independent of its specific lexical constituents. The LCM regards constructions as form-meaning correspondences of the kind proposed in the various versions of *Construction Grammar* (CxG; cf. Gonzálvez-García and Butler, 2006). The LCM fuses both functionalist and constructionist theories of verb meaning with the intention of providing a proper explanation of the relationship between semantics and syntax. The LCM is a usage-based model of language that accounts for the way meaning construction processes take place, at four different levels: argument structure level (level 1), implicature level (level 2), illocutionary level (level 3), and discursive level (level 4). This article focuses on level 1 argument structure constructions. The LCM refines the Goldbergian account in the sense that the lexical-constructional integration or *subsumption* is viewed as a cognitive process that is regulated by internal and external principles. The internal constraints act on the internal semantic make-up of the lexical and constructional constituents.

The rest of this section is devoted to the presentation of those internal and external constraints that are relevant for our discussion. Thus, the *Event Identification Condition* constraint states that the semantic configuration of the construction must be a proper subevent of the canonical lexical template. A case in point is supplied by the contrast between *Tom hit at the fence* and **Tom petted at the cat*. The first sentence is perfectly acceptable because the verb *hit* meets the requirements for a conative construction, i.e. the presence of both a motion and a contact subevent. In contrast, *pet* is an activity predicate which involves only a contact subevent. The *Internal Variable Conditioning* constraint is at work when the world-knowledge information associated with an internal predicate variable restricts the nature of both the predicate and constructional arguments. One clarifying example is provided by the verb *drive* in the resultative construction. The meaning of this verb (i.e. loss of control for the object) acts as a predictor of the Z element, which can only be filled by a negative mental state as in *drive someone mad/crazy/wild*.

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The external constraints make reference to high-level metonymic and metaphoric operations. The high-level metaphor A COMMUNICATIVE ACTION IS AN EFFECTUAL ACTION coerces the subsumption of the verb *talk* into the caused-motion construction (cf. *He talked me into business*). The LCM has also incorporated into its analytical apparatus the high-level metonymies originally formulated by Ruiz de Mendoza and Pérez (2001) such as OBJECT FOR ACTION (e.g. *He began [selling/drinking] the beer*) or INSTRUMENT FOR ACTION (e.g. *Tom shipped his father a package*).

3. CONSTRUCTIONAL TYPES AND THEIR PROPERTIES

Before going on to analyze the factors that underlie the fusion processes between verbs and constructions, I will first provide the reader with a brief overview of the theoretical assumptions about the causative-inchoative alternation, the resultative and the intransitive motion constructions. Thus, the causative-inchoative alternation has two variants: a transitive [S/NP1 V OBJ/NP2] (e.g. *Peter broke the window*) and an intransitive one [S/NP2 V] (e.g. *The window broke*). The former is a causative configuration that depicts the bringing-about of a change of state whilst the latter describes a change of state which lacks the agent. In this article, Levin's (1993) syntactic alternations will not be interpreted as the result of different syntactic projections of one predicate, but as the outcome of the principled interaction between a predicate and two self-standing constructions (cf. Ruiz de Mendoza and Mairal, 2011).

With respect to the resultative construction, it is generally accepted that this type of construction is a transitivity pattern which specifies the end result of a change of location, state or property undergone by a person or an inanimate entity. The resultative construction has been in the limelight of various theoretical frameworks ranging from formalism (e.g. Hoekstra, 1988; Levin, 1993), functionalism (e.g. Halliday, 1967) to constructionist approaches to language (cf. Boas, 2002, 2003, 2005; Broccias, 2003, 2004; Goldberg and Jackendoff, 2004; Iwata, 2006). This construction has the semantics X CAUSES Y TO BECOME Z, where Z is the result argument, which can be represented by an adjectival phrase (AP) or a prepositional phrase (PP). Goldberg (1995: 180-198) claims that resultatives share the following semantic constraints:

i. The subject argument must be an (animate) instigator.
ii. The object argument undergoes a change of state.
iii. The verb must encode direct causation (without intermediary interval).
iv. The resultative adjective must designate the endpoint of a scale (binary adjectives).
v. The change of state must occur simultaneously with the endpoint of the action denoted by the verb.

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Ruiz de Mendoza and Luzondo (2011) postulate two basic schemas for the resultative construction, viz. A>B, where the object experiences a transcendent change (e.g. *Rain has turned the clay into mud*), and A>A', in which the object acquires a new property but does not undergo a major change of state (e.g. *He clattered the gate shut*). According to this classification, verbs of light and sound emission fall into the second category since they cannot encode a transcendent change. Lastly, the intransitive motion construction (e.g. *The honey bees buzzed into the yard*) is semantically represented as X MOVES Y, where Y is the path of motion followed by X. The motion of the X element seems to be self-instigated for no external cause is mentioned. This construction draws partial structure from the caused-motion construction (cf. Goldberg 1995).

4. THE CAUSATIVE-INCHOATIVE ALTERNATION WITH LIGHT AND SOUND EMISSION VERBS

To account for the causative-inchoative dichotomy, Levin and Rappaport Hovav (1995) group verbs into two categories, i.e. *internally* and *externally caused* verbs. The first group, which describes an eventuality caused by a property inherent to the argument of the verb, can only accept an inchoative construction. In contrast, 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 Hovav, 1995: 92). This second group can display a causative construction. Applying this distinction to light emission verbs, I observe that most of them can be classified as internally caused verbs, occurring in the inchoative construction. Likewise, Rothmayr (2009) states that most light emission verbs reject the causative construction because the event denoted by the verb cannot be brought about by people. A close inspection of the subject type preference of these verbs reveals that the light emission event is mainly caused by natural sources of light rather than human beings:

(1) *He unbuttoned his shirt and the sun* gleamed *on the astrological medallion around his neck.*(APU 1634 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) *A great fire* flamed *in an open fireplace.* (Longman online dictionary)
(4) *Stars* glittered *with the brilliance of jewels against a velvet backcloth.* (HA6 1545 BNC)
(5) *I just do my research to understand why jellyfish* luminesce*, and why that protein* fluoresces. (Wordnik Online Dictionary)

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As can be seen from the examples reproduced in (1)-(5) the light emission event can be caused by natural forces such as the sun in (1), the lightning in (2), the fire in (3), and the stars in (4). Example (5) illustrates an interesting case of light emission which can be accounted for by the bioluminescence phenomenon. This refers to the ability of some animals living in the sea/ocean or on land to produce their own light as a way of protecting themselves against predators, luring their preys or communicating (e.g. jellyfish, fireflies, glowworms, flashlight fish, some mushrooms, etc.). Nevertheless, Levin and Rappaport's (1995) internal cause generalization seems to overlook a second possibility which is exploited by the following sentences:

(6) a. *The sea* glistened *in the sunlight.*
b. *The sun* glistened *onto the sea.*
c. **The sun* glistened *the sea.*

Examples (6a) and (6b) point out that the same light emission event can be shared by two elements, namely the sun and the sea. The sun is an external causer whereas the sea is an enabling factor or an internal causer. Since the sea and the sun are co-causal factors of the glistening event, the linguistic coding of the sea as a mere patient would be infelicitous (see (6c)). Therefore, intransitive light emission verbs can express, on the one hand, a light caused by natural sources (e.g. sun, stars, etc.) which escapes human control and, on the other hand, a light emitted by an entity whose surface is in contact with a natural source of light: water (e.g. *shimmer, glisten*), jewels (e.g. *sparkle, glint*), shoes (e.g. *shine*).

The inchoative construction with sound emission verbs obeys the same logic since most of these verbs can be categorized as internally caused verbs. The sound emission can be brought about either by an animal or a natural force which cannot be controlled by people:

(7) *The bird had stopped tick-ticking and was* trilling *away cheerfully.* (BMS-W_fict_prose COCA)
(8) *The snake* hissed. (AMU-W_fict_prose COCA)
(9) *And he was in the Jacuzzi with her, turning up the dials until the water* bubbled *furiously around them.* (H8S-W_fict_prose COCA)
(10) *Outside the rain* pattered *lightly on the window, and in the room there was a great sense of tranquillity.* (H8N-W_fict_prose COCA)

Thus, the sound emitter can be an animal as in (7) and (8) or a natural force as in (9) and (10). It can be observed that only a small number of animate entities can emit their own light. Alternatively, all animals can produce sounds, even though some of them are hardly audible to the human ear. For instance, echolocating animals such as bats, dolphins, oilbirds or toothed whales navigate

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through air or water using their echoes to locate objects in their environment. What is more, intransitive sound emission verbs can also indicate involuntary sounds that come from inside our body such as *sneeze, hiccup, belch, burp, rumble* (stomach).

The second part of this section focuses on the reasons which make light and sound emission verbs compatible with the causative construction. Levin and Rappaport Hovav (1994) and Rothmayr (2009) posit that the causative construction is fully acceptable when the light emitter is an electrical device directly manipulated by people as an instrument of producing light. Consider the examples below which clearly corroborate their hypothesis:

(11) *Mom* beamed the flashlight *over the rocks halfway up the hill.* (2000-News-Denver COCA)
(12) *Grace* blinked the porchlight *twice when they pulled up in front of the house, then all the light went out.* (1997-FIC-AntiochRey COCA)
(13) *He reached down and dialled in a violet filter, then rapidly* flashed the lamp *while looking into the eyes of the creature in front of him.* (2004-FIC-Analog COCA)
(14) *Thorvald handed Roger the container, then* shined the light *onto the text: late imperial dialect, but a Latin he could read.* (2006-FIC-Analog COCA)

All these four examples describe a light emission event brought about by people who exert direct control over electrical devices. The direct causation can be another key factor for the grammaticality of causative configurations. Hence, Fodor (1970) argues that the well-formedness of a causative construction also depends on the overlap between the cause event and the effect event. Similarly, Lakoff (1987: 55) claims 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 1980). However, Levin and Rappaport Hovav's (1994) and Rothmayr's (2009) hypothesis falls short to explain why other light emission verbs that describe light produced by electrical devices cannot participate in the causative construction (cf. **I glowed the light bulb*/**I blazed/glared the headlights into his eyes*). My contention is that the subsumption of light emission verbs into the causative construction is sometimes dependent upon the type of light different objects produce. Verbs like *glare* and *blaze* describe a strong, intense and disagreeable light, thus indicating that it cannot be easily controlled. Also, it is against the traffic laws to use high beams which could dazzle other road users like car drivers, pedestrians, etc. The fact that this situation can only be caused accidentally conflicts with the requirements of the causative construction, namely the agent's intentionality. The sentence **I glowed the light bulb* is ill-formed because the verb *glow* implies that the light emitter gives off great heat, which would make impossible the direct manipulation of the electrical device. The Internal Variable Conditioning constraint blocks out the integration of verbs like *glare, blaze,* or *glow* into the causative pattern. World

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knowledge information stored in our brains tells us that in general people do not direct a blinding and disagreeable light at somebody else or that objects that emanate great heat cannot be touched.

It is also noteworthy to mention that some light emission verbs disrupt the pattern set by Levin and Rappaport Hovav (1994) and Rothmayr (2009), who claim that the only way verbs of light emission could be used in the causative configuration is to use electrical devices as instruments of producing light. Take into consideration examples like *As he spoke, the door of the shop opened and a gust of wind flickered the candles* (2009-FIC-FantasySciFi COCA) or *Jazzbeaux held up her ungloved hand, knuckles out, and shimmered the red metal stars implanted in her knucks* (CH0 876 BNC). In the first example the wind (an inanimate agent) acts upon a non-electrical light emitter (the candle) and makes it flicker. In the second example a shiny object (*metal stars*) becomes an instrument of producing light.

Last but not least, a causative construction like *John rang the bell* can be justified by the high-level metonymy DIRECT RESULT (SOUND PRODUCTION) FOR DIRECT ACTION. This utterance can be further decomposed into *John pressed the bell button* (ACTION) *and the bell rang* (RESULT). The economy of information packaging observes one of Givón's iconicity principles (1985: 207) which stipulates that "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 other words, we infer from the sound emission event that the action of pressing the bell button has already taken place. All causative sound emission verbs activate the CONTACT frame as demonstrated by their combination with a *together* or *against* phrase[2] (cf. *The glass in her right hand still clashed against her teeth* FP0 W_fict_prose COCA; *Whenever their team scored a goal, they leapt up and down clanking their beer cans together Cambridge Online Dictionary*). So, the sound production results from a volitional (in the case of *together*) or accidental contact (in the case of *against*) between two or more entities. When the entities that come into contact are identical, the preposition *together* is used whereas difference in the nature of the entities determines the use of the preposition *against*.

5. LIGHT AND SOUND EMISSION AND EMOTIONS

The classification proposed by Faber and Mairal (1999: 261) of verbs of stable/unstable light proves very helpful for the examination of the manipulation process of the light emitter. Tables 1 and 2 show that there is direct correlation between the parameter of stability and the type of emotion encoded by a light emission verb (either positive or negative).

[2] See also Cortés and Gonzálvez Orta (2006) for a discussion of the overlap between the domains of SOUND and CONTACT.

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Table 1

Verbs of stable light

LIGHT	*shine*	*gleam*	*beam*	*glow*	*glare*	*blaze*
EMOTION	happiness	sudden emotion	friendliness, cheerfulness	contentment, pride, satisfaction	anger	intense anger, fury

Table 2

Verbs of unstable light

LIGHT	*flash*	*glitter glint*	*twinkle*	*flicker*	*sparkle*	*glimmer*
EMOTION	sudden emotion	greed anger	pleasure, amusement, mischief	nervousness	happiness, excitement, amusement	hope, interest

Faber and Mairal (1999: 261) also order verbs of light emission according to a scale of intensity, which is reproduced here in figure 1. The most generic term is the verb *shine*, since the presence of light in our environment is a default value. As mentioned in the previous section the verbs *glare* and *blaze* cannot be found in the causative construction since they express a very bright or extremely bright type of light emission that cannot be directly controlled by a human agent (cf. the scale of intensity).

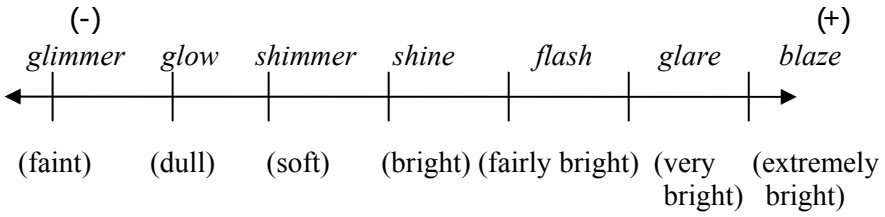

Fig. 1. Intensity scale of light.

The taxonomy of verbs of stable/unstable light, together with the intensity scale of light emission, shows that verbs that denote agreeable types of light emission (e.g. *sparkle, twinkle, beam*) are associated with positive emotions, as can be seen in *He/His face/His eyes beamed with happiness/pleasure/ delight/glee/excitement/pride, etc*., or *His eyes sparkled with liveliness/mirth/joy/ excitement, etc*. On the other hand, verbs that encode disagreeable types of light emission (e.g. *glitter, glint, blaze, flame*) will be associated with negative emotions (cf. *His eyes glittered with greed/cruelty, His eyes blazed with anger/fury/rage, His eyes flamed with anger/resentment/fury* or *His eyes flared with anger/lust/rage*). These examples are accounted for by Lakoff and Johnson's (1980) metaphor THE EYES ARE CONTAINERS FOR THE EMOTIONS, whereby emotions are treated

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as substances that are inside a container, which corresponds to the eyes. I would like to argue that the association of 'anger' with verbs like *burn, blaze, flame,* and *flare* is not a random connection. Kövecses (1990) demonstrates that there is a clear connection between the cultural model of the physiological effects of anger and the conceptual expressions that are used to code this emotion. Some of the physiological effects of anger are increased body heat, increased heart rate and blood pressure. Therefore, it is no wonder that anger is expressed by means of verbs related to fire which produces extreme heat. The sentence *His eyes flamed/burnt/blazed/flared with anger* is motivated by Kövecses' (1990: 58) metaphor ANGER IS FIRE, which displays the following correspondences:
Source: FIRE
Target: ANGER

- The fire is anger
- The thing burning is the angry person
- The cause of the fire is the cause of the anger
- The intensity of the fire is the intensity of anger
- The physical damage to the thing burning is mental damage to the angry person
- The capacity of the thing burning to serve its normal function is the capacity of the angry person to function normally
- The object at the point of being consumed by fire corresponds to a person whose anger is at the limit

The reason why intense and unstable light is associated with negative emotions is straightforward. Light is perceived by the retina and whatever disturbs the human eye is regarded as negative. What is more, excessive light can cause headaches, fatigue and increase in blood pressure. Exposure to an intense light (*glare, glow*) blocks our vision by creating temporary flash blindness which, if experienced on roads at night, can result in car accidents. Gazing at the intense light of the sun or any other artificial source without eye protection can result in photokeratitis, which is characterized by increased tears and an abrasive and painful sensation in the eyes. These symptoms are usually noticed several hours after exposure. Experts show that people who live and work in white brightness polluted environments can suffer from dizziness, insomnia, loss of appetite and even cataracts. In addition, color light pollution, which is defined as constant exposure to black lights, fluorescent or incandescent lamps, glinting and flickering color light sources used in discos, can cause damage not only to the eyes but also to the central nervous system of the brain.

The combination between light emission verbs and their corresponding emotions gives rise to two types of construction that shall be examined in detail here. The first pattern, NP1 V-light emission *with* NP2-emotion (e.g. *His eyes blazed with anger*), is licensed by the high-level metonymies INSTRUMENT FOR ACTION FOR MANNER (OF PERFORMING THE ACTION). The second

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configuration, NP1 V-light emission *in* NP2-emotion (e.g. *His eyes blazed in anger*), is accounted for by the metaphor STATES ARE LOCATIONS, according to which experiencing a state is seen as being in a location. This second construction can be paraphrased by a NP2 V-light emission *in* NP1 pattern (e.g. *Anger blazed in his eyes*) in which the object of the first variant becomes a subject in the second variant. The PP is optional in both cases (cf. *His eyes blazed like fire*).

Faber and Mairal (1999) exploit the notion of *polarization*, which was borrowed from Krzeszowski (1990), in order to discuss the connection between sounds and emotions. Human beings constantly evaluate their environment using the polarity *good* and *bad.* Tischner (in Krzeszowski, 1990: 142) proposes a three-level hierarchy of values, which range from values related to direct sensory experience (the first level), through values associated with life and health (the second level) to spiritual values such as truth, beauty or goodness (the third level). The domain of SOUND (to make a loud sound/to make a soft sound) belongs to the first-level of the hierarchy of values. Sounds can be interpreted in terms of the dichotomy pleasant/harmonious vs. unpleasant/discordant. Thus, predicates like *screech, shriek,* and *thunder* are axiologically loaded with negative connotations whereas *murmur, whisper,* and *rustle* display positive connotations since they tend to denote low and pleasant sounds. Their list could be enlarged with the inclusion of, on the one hand, *blare, blast, clatter, rasp, roar, scream, shrill, squawk* as verbs describing unpleasant sounds and, on the other hand, *burble, gurgle, jingle, lilt* as verbs which are positively loaded. In addition, I have noticed that there is a clear correlation between the intensity and the duration of a sound and the intensity of the emotion expressed by that particular sound. The longer the sound the greater the emotion described by that sound. Verbs like *groan, growl, howl, shriek, squawk, ululate, wail,* and *whine* express deep long or sharp sounds which most frequently encode negative emotions (e.g. *He was soon so unwell that he groaned with distress*- ALH 760 BNC; *Estabrook growled in fury and frustration*- CRE 121 BNC; *Meredith howled in despair and rage*- CEB 3119 BNC; *(...) a rabbit caught by some predator shrieked in terror*- CA0 2509 BNC). Contrary to verbs of light emission, only some sound emission verbs can display these two similar patterns (NP1 V-sound emission *with* NP2-emotion and NP1 V-sound emission *in* NP2-emotion) in which the emotion coded is more often a negative than a positive one.

6. THE RESULTATIVE AND THE INTRANSITIVE MOTION CONSTRUCTIONS WITH LIGHT AND SOUND EMISSION VERBS

First of all, this section is concerned with explaining why, in contrast to sound emission verbs, light emission verbs cannot match with the resultative construction (cf. **I flashed the lights red* vs. *The lights flashed red*). Second of all, I will examine the principles that underlie the subsumption processes between light

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and sound emission verbs and the intransitive motion construction. Thus, a sentence like **I flashed the lights red* is deemed ungrammatical because the event described by the verb does not precede the event encoded by the adjective, i.e. the light flashing and turning red happen simultaneously. That is why the sentence *The lights flashed red*, which can also be paraphrased as *The lights, which were red, flashed*, is perfectly acceptable.

Unlike light emission verbs, sound emission verbs fit easily into the resultative construction because causal actions tend to be associated more with sounds than with lights. According to Talmy (1996), the verb in the resultative construction must specify the immediate cause of the final resulting event encoded by the satellite[3]. Consider the utterance *She slammed the door open*. The satellite *open* describes the final resulting event while the verb *slam* refers to a prior causal subevent. Also, the resulting event (The door is opened) cannot be conceptualized by a sentence like **She grabbed the door open* because the verb *grab* lexicalizes the first sequence (grabbing the door knob) in the chain of events. The LCM accounts for this phenomenon in terms of the internal constraint Event Identification Condition, which relates to the proper identification of events. Thus, the verb *slam* here does not depict the hitting event (cf. **She hit the door open*) but the sound produced when the door is hit against the wall and makes it open. This is so because the sound production is the closest temporal subevent to the resultant end state. The purpose of the resultative construction is to parametrize the action performed by the agent (the sound can be caused either by closing or opening the door).

Goldberg and Jackendoff's (2004) notions of *constructional* and *verbal subevents*[4] can be applied to the intransitive motion construction with light and sound emission verbs in order to understand better the function of verbs within a given construction. Consider the sentence *The shuttle blazed out into space*. In this example the verbal subevent (*blaze*) is the means of the subject's motion and it depicts a scenario that is prior to the one described by the constructional subevent, i.e. the shuttle moves through space. The rocket fuel is made up of fuel and oxidizer. The explosion that propels the craft into space is caused by a burst of heat added to the fuel and the subsequent introduction of the oxidizer. Following

[3] Talmy (1991, 2000) classifies English as a satellite-framed language in which the main information of a sentence is encapsulated by the satellite (an adverbial) and the extra information is mapped onto the verb. In *She slammed the door shut* the adjective *shut* encodes the core information (the door closed) whereas the verb lexicalizes the manner in which the door closed, viz. in a violent way.

[4] Goldberg and Jackendoff (2004) distinguish between two separable subevents in the meaning of an utterance, namely the verbal subevent, determined by the verb and the constructional subevent, determined by the construction. The verbal subevent can be the means whereby the constructional subevent takes place. In the resultative construction *He hammered the metal flat* the metal becomes flat by hitting it with the hammer. The verbal subevent can also be the result of the constructional subevent as in *The trolley rumbled through the tunnel*.

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Talmy's (1996) taxonomy of paths, our sentence can be classified as an *open path* event[5] with windowing over the final part of the trajectory of the moving entity (*into space*). The initial and medial parts of the trajectory are gapped (i.e. we have no information about the starting point of the motion event which is the launch pad or the intermediate position of the spaceship). However, it would be perfectly acceptable to construe a case in which readers have maximal windowing over the whole path (cf. *The shuttle blazed out from the launch pad through the air into space*) since the verb only specifies the means by which motion occurs. The subsumption of the verb *blaze* into this intransitive motion construction can also be motivated by the CAUSE (OF MOTION) FOR EFFECT (MOTION) metonymy since the blazing event is what makes possible the motion event. Different parts of the light trajectory can be highlighted by different prepositional slots: 1) the initial part, which can overlap with the source of light (e.g. *The sunlight blazed* from *the sky*, *Fire blazed* from *the sun*); 2) the intermediate part (e.g. *The lights blazed* through *space*, *The lights blinked* across *the sky*); 3) the final part or the destination of motion (e.g. *The lightning flared* into *my face*).

In the case of sound emission verbs I concur with Goldberg and Jackendoff's (2004) claim that the verbal subevent is no longer the means but the result of the constructional subevent. Let us briefly consider the intransitive motion construction *The frog plopped into the pond*. The verb *plop* skillfully merges the action carried out by the animate entity (falling) with the sound produced by that action. The construction (X MOVES Y) describes the motion of the subject along the path encoded by the PP. The verbal subevent, which relates to the final part of the trajectory, does not describe the means by which the constructional subevent can happen (contrast with *The frog fell into the pond*) but the result of the constructional subevent, viz. the plopping sound results from the motion of the frog (cf. *The frog fell into the pond with a plop*). A sound emission verb, which is inextricably linked to the final part of an event, can only combine with an intransitive motion construction that codifies the final part of the trajectory of a moving entity. Any information about the starting point or the intermediate points of the trajectory is ruled out (cf. **The frog plopped from the grass through the air into the water*). The ungrammaticality of such an example can be explained by the Internal Variable Conditioning constraint which states that the internal predicate variables place constraints on the nature of the constructional arguments. Therefore, the information encapsulated by the verb *plop* (i.e. a falling entity produces this sound) constrains the choice of the PP slots (*into the water/*from the grass/*through the air*).

[5] An open path is a path realized by an entity in motion over a period of time. The path is conceptualized as a whole unity with a beginning and an end point situated at different locations in space.

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3. CONCLUDING REMARKS

This article has brought into consideration the constructional behavior of light and sound emission verbs which has a broader scope than has been claimed before. I have also tried to discuss the internal and external constraints that regulate the integration of these verbal classes into the causative-inchoative alternation, the resultative and the intransitive motion constructions. The analysis in this paper has shown that Levin and Rappaport's (1995) internal cause generalization cannot be applied indistinctively to all intransitive light emission verbs (cf. *The sea shimmered in the sunlight* and *The sun shimmered onto the sea*). The causative construction with light emission verbs is possible not only when we use electrical devices as instruments of producing light (cf. *The wind flickered the candle*). Also, the direct manipulation of the electrical device does not guarantee the acceptability of the causative construction (e.g. **I glared the headlights*). The association between light emission verbs and emotions is licensed by the metaphor THE EYES ARE CONTAINERS FOR THE EMOTIONS. Last but not least, I have established a connection between the intensity and the duration of a sound and the intensity of the emotion expressed by that sound. In the resultative construction the resulting event determines the choice of the verbal subevent, which has to be the closest temporal subevent to the constructional subevent (cf. *She slammed the door open*). Regarding the intransitive motion construction, light emission verbs express the means whereby motion occurs while sound emission verbs describe a posterior event to the constructional subevent.

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