JEZIKOSLOVLJE
20.2 (2019): 221-254

UDC 811.111'373.7=111
Original scientific article
Accepted for publication on 11.09. 2019
https://doi.org/10.29162/jez.2019.8

Jodi L. Sandford
University of Perugia

Taste and sight: A corpus analysis of English adjective-noun constructions*

Embodiment is central to the Cognitive Linguistics enterprise. The grounding of language in body experience is one of the major tenets of linguistic description at various levels of analysis. We receive the information of the world around us through the bodily sensations; i.e. we perceive, then process and conceptualize it. Research into the sensory domains has continued to elicit further examination of how we use metaphoric and metonymic cross-modal conceptualization in language. Investigation has been carried out both on the single sense domains of touch, taste, smell, hearing, and sight, but also on cross-modality or synesthetic phenomena. Linguistic transfer between various senses seems to respect a hierarchy from the lower (touch, taste, smell) to the higher senses (hearing and sight), even though some variation of this hierarchy has been noted. The present study is the first part of a two-fold analysis of cross-modal linguistic mappings that exist between the senses of taste and sight. The objective is to verify what collocations occur between the two domains: do they respect the hierarchy, and how frequent, or how strong are they? Corpus analysis of the construction of the adjective + noun type are in keeping with existing literature: the sensory domain that functions as source is understood as an adjective modifying another sensory domain, which is found

* This research was made possible through research funds from the University of Perugia and an "Erasmus+" Teaching Mobility grant. I would like to thank the Faculty of Humanities and Social Sciences at the University of Osijek, especially Mario Brdar, Marinja Omazić, and Tanja Gradečak, with the many other people involved, for ther kind and thoughtful support. Furthermore, I would like to thank the reviewers of this paper for their helpful comments, any outstanding errors remain my own.

in the form of a noun. This research concentrates on cross-modal pairs found through a corpus-based analysis of taste adjectives in the description of vision nouns, e.g. delicious colors. Linguistic data were retrieved from corpora that allow for comparison of the actual usage and definition of these constructions. These include the Corpus of Contemporary American English (COCA), and the Mapping Metaphor with the Historical Thesaurus of English. The experimental methodology is in keeping with the usage-based approach of Cognitive Linguistics, considering frequency and relevance.

Key words: cross-modality; sight/color; taste; perception; corpus-based constructions; collocates.

1. Introduction

Embodiment is central to the Cognitive Linguistics enterprise. The grounding of language in body experience is one of the major tenets of linguistic description at various levels of analysis. Of course, if we start from the event of our existence as individuals, we can not ignore that we are born into our bodies. We learn and perceive what is around us through our bodies that move through the world, interact with our environment and culture while grasping all kinds of messages for our brains to process and conceptualize. This is the information we have that our minds receive to make reason of. Thus, in this process of sensation, perception, conceptualization, and communication, we are more similar to the other members of our species than different. Certainly, each person has a subjective experience, yet at the same time the experience must be related to a common ground that allows us to empathize in communication - dialogue - language with our fellow humans (Orians 2014).

Cognitive Linguistic research has stressed the approach of the body in the mind and how we create meaning through our experience (see for example Lakoff & Johnson 1980; 1999; Lakoff 1987; Kövecses 2002; Croft & Cruse 2004; Gibbs 2005; Evans & Green 2006; Johnson 2008; 2013; Langacker 2008; Evans 2014, 2015). Research into the sensory domains has continued to elicit further examination of how we use metaphoric and metonymic cross-modal conceptualization in language. Investigation has been carried out both on the single domains of touch, taste, smell, hearing, and sight (e.g. Howes 2005; Gisborne 2010; Caballero & Diaz Vera 2013; Winter 2016; Digonnet 2016; Baicchi et al. 2018; Winter et al. 2018), but also on cross-modality or synesthetic phenomena (Cacciari 2008; Cuskley & Kirby 2013; Strik-Lievers 2015; 2018; Ronga 2016). Linguistic transfer between various senses seem to respect a hierarchy from those that have been historically

considered the lower (touch, taste, smell) to the higher (hearing and sight), forming the following sense hierarchy from the less to the most physiologically differentiated:

touch > (temperature)[1] > taste > smell > hearing > sight.

Nonetheless, some variation of this hierarchy has been noted (e.g. Williams 1976; Archer-Hind 1988; Cacciari 2008; Strik-Lievers 2015). Williams illustrates a generalization of the metaphorical transfer from the *earliest sensory meaning to another sensory modality*, that functions according to a specific schedule. More precisely, he takes into consideration the metaphorical extension of the lexeme that moves from one source domain to a new target domain in semantic change. In Figure 1, adapted from the original, he argues how "taste-words do not transfer back to tactile experience or forward to dimension or color, but only to smell (*sour smells*) and sound (*dulcet music*)"; and there are only some non-predicted transfers including e.g. "TASTE TO COLOR: austere, mellow" (1976: 463–464). This is to signify that he sees the transfer of taste to color as non-predicted. Similarly, Strik Lievers finds that the 'directionality principle' proposed initially by Ullmann (1957) "reflects the *frequency* of association types, rather than representing *universal constraints* on synaesthetic transfers, as has often been more or less explicitly assumed" (2015). Winter et al. (2018) also find that higher frequency of visual words in a corpora analysis reflects lexical differentiation for the visual domain in the English lexicon. It seems natural that a greater number of unique words for a given domain is indicative of how that language construes the entrenchment of that domain. Moreover, they also find that some sensory modalities are less frequently identified by speakers and show less lexical differentiation, such as taste and smell.

[1] Temperature is physiologically held to be a separate sense from touch. "The sense of touch is located in the skin, which is composed of three layers: the epidermis, dermis, and hypodermis. Different types of sensory receptors, varying in size, shape, number, and distribution within the skin, are responsible for relaying information about pressure, temperature, and pain" (from http://psychology.jrank.org/pages/634/Touch.html#ixzz5KNKbi02r). Yet Williams (1976) and Ullmann do not separate the two "[t]here is of course no harm in combining the two sets of data [i.e. heat and touch]; actually, this would only throw an even more glaring light on the general pattern" (Ullmann 1957: 278).

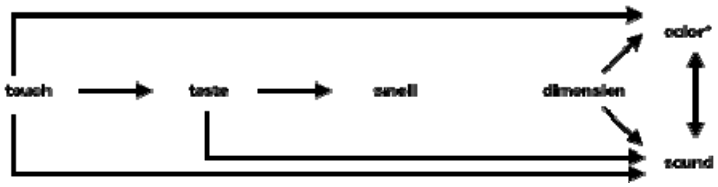

Figure 1. The Major Generalization (from Williams 1976: 463) color* stands for sight, and is further referred to in this paper as sight.

The specific semantic transfer that this study examines through a corpus analysis is taste to sight/color. It is the first part of a two-fold analysis of cross-modal linguistic mappings that exist between the senses of taste and sight. The objective is to verify what collocations occur between the two domains. Do they respect the semantic transfer hierarchy, and how frequent, or how relevant are they? Do they respect the schedule William proposes? What type of semantic process emerges?

The paper is structured in the following manner. After this brief introduction in Section 2 I include the methodology with an explanation of synesthesia and metaphor on which this corpus analysis is based, and the search words employed. Section 3 proceeds with the corpus analysis in COCA, firstly looking at the construction [BASIC TASTE adjective + noun] and the principle collocates in 3.1, then at the results of a specific search [TASTE*][SIGHT*] in 3.2 considering *divergence* or *convergence* with the hierarchy hypotheses. Next, Section 3.3 presents the source and target domains for taste and sight according to Mapping Metaphor with the Historical Thesaurus of English, stressing specifically taste as the source domain. Section 3.4. looks at frequency of vision related synonyms of taste-words, and collocates, and also a general collocation search and MI measure. Section 4 presents discussion results observing any *divergence* or *convergence*[2] with expectations in regard to the concept of linguistic embodiment and conclusions.

2. Methodology

Corpus analysis of the construction [adjective + noun] type are in keeping with existing literature: the sensory domain that functions as source is understood as an adjective modifying another sensory domain, which is found in the form of a noun (cf. Strik Lievers 2018). This research analyzes cross-modal pairs found through a

[2] Often research considers aspects of investigations that correspond or converge with a hypothesis, yet what actually does not correspond with, or that which diverges from, the hypothesis is just as revealing of the conceptualization process. Hence, I stress both aspects here.

corpus-based analysis of taste adjectives in the description of vision nouns: e.g. *delicious colors*.

(1) *Donghia's "Abracadabra" silk shantung, inspired by spices of Tangier and Jaipur, comes in nine* ***delicious*** [TASTE/Source] ***colors*** [SIGHT/Target], *including peppery tones and cinnamon*. [1997 NEWS]

The lexicon of the sensory domains was identified in keeping with previous literature on the topic, and it includes basic color-words and taste-words, superordinate words of both domains, and distinguishing words describing the properties of the domains. Linguistic data were retrieved from various corpora, which allow for comparison of the actual usage of these constructions. These include the corpus COCA (Corpus of Contemporary American English), and the the Mapping Metaphor with the Historical Thesaurus of English,[3] and WordPhrase COCA collocates. The experimental methodology is in keeping with the usage-based approach of Cognitive Linguistics and the three major hypotheses: "language is not an autonomous cognitive faculty, grammar is conceptualization, knowledge of language emerges from language use" (Croft & Cruse 2004: 1).

2.1. *Synesthesia and metaphor*

I share the traditional interpretation of synaesthesia in language as a (type of) conceptual metaphor. A view based on the kind of relation that holds between constitutional attributes and the conceptual level in synaesthesia. I agree with Strik-Lievers (2018), when she refers to synesthesia as "conceptual conflict" —a typical property of metaphors. Moreover, Prandi describes the distinction between metaphor and metonymy in seeing that these two *cognitive mechanisms* essentially differ in the way they deal with the conflict between the two domains. Metonymy resolves the conflict through a consistent conceptual *connection* (2012: 154). Thus, we may consider the sense domain conflict between "delicious" and "color" as metaphoric since they lack the direct connection of "metonymy." The couple may be considered metaphor in the sense that Kövecses states:

[3] The Mapping Metaphor with the Historical Thesaurus, the current version was completed in 2015, in Metaphor Map of English; with the Historical Thesaurus of English compiled at University of Glasgow, Glasgow (UK). The Corpus of Contemporary American English (COCA), Mark Davies, 1990-present; is equally divided by date and also by types of texts, which include spoken (SPO), fiction (FIC), magazine (MAG), news (NEWS), and academic (ACAD). The COCA is the largest freely-available corpus of English, and the only large and balanced corpus of American English. The corpus contains more than 560 million words of text (20 million words each year 1990–2017). Each corpus example shows the year and text type reference.

> ... conceptual metaphor can have a number of linguistic manifestations. A conceptual metaphor consists of a set of correspondences, or mappings, between a 'source' and a 'target' domain. The meaning of particular metaphorical linguistic expressions is based on such correspondences (2010a: 197).

Further, metaphor phenomenon are linguistic, conceptual, social-cultural, neural, and bodily, which are manifested on all these levels at the same time (Kövecses 2010b: 9). Therefore, the correspondences of the neural and bodily responses to postive things such as a good taste and a nice color would lead us to make a metaphorical connection to help describe the experience of these sensory modalities. Lakoff and Johnson as early as 1980 asserted that metaphor is conceptual in nature and that it is the foundation of our conceptualizaiton process; the notion of embodied metaphor emerged through the following years (cf. e.g. Johnson 1987; Lakoff 1981; Lakoff & Johnson 1999; Kövecses 2002; 2010a).

This corpus analysis is intentionally narrowed down to the construction of the [adjective + noun] type. The sensory domain 'taste' functions as *source* and is understood as an *adjective* modifying another sensory domain 'sight' as the *target*, which is found in the form of a *noun*. This paper concentrates on the cross-modal pairs that emerge through a corpus-based approach of taste adjectives in the description of vision nouns, e.g. *delicious blue*, rather than vision adjectives in the description of taste nouns, e.g. *colorful taste.*

2.2. *Search words*

The lexicon of the sensory domains employed in the query is in keeping with previous literature on the topic (cf. Bagli 2016; 2017; 2018 for taste, Sandford 2011a, b, c; 2012; 2017 for sight, and Williams 1976). It includes 31 lemmas - Basic words: 6 for SIGHT - *black*, *white*, *red*, *green*, *yellow*, *blue*; 5 for TASTE - *sweet*, *sour*, *bitter*, *salty*, *spicy*. Superordinate words of both domains: 3 for SIGHT - *color*, *vision*, *sight*; 3 for TASTE - *taste*, *flavor*, *savor*. Distinguishing words describing properties of the domains: 6 for SIGHT - *dark*, *light*, *dim*, *bright*, *vivid*, *dull*; 8 for TASTE - *tasty*, *delicious*, *disgusting*, *yummy*, *yucky*, *acid*, *fruity*, *smoky*. The 15 lemmas for SIGHT were narrowed down to 13, excluding the two adjectives *dim* and *vivid*, which produced 0 hits. The 16 lemmas for TASTE were also narrowed down to 14, since *yummy* gave only one hit, and *yucky* 0 hits.

3. Corpus analysis results

This section reports the results of several corpus analyses, one [adjective BASIC TASTE + general noun]; and one specific COCA analysis of [TASTE* + SIGHT*] adjective noun construction. Then the results of the Mapping Metaphor Source and Target domain analyses, are used to access the Historical Thesaurus examples of COLOUR, INDIVIDUAL COLORS, SIGHT, and TASTE. Furthermore, the TASTE and SIGHT search words are used in a further collocation corpus analysis to verify the construction and the semantic transfer from source to target.

3.1. *[BASIC TASTE adjective + Noun]*

In the first general search I queried [BASIC TASTE adjective + noun]; looking for the basic taste adjectives (source) to compare them to the sense (target) words in general. Table 1 shows the results of the first 100 hits accessed on 20 March 2017. I followed the definitions in dictionary.com if I had any doubts on which category the lexeme fit best (any definitions presented here are from that website). This was the case with *winter*, defined as "cold weather", not only a "season". Results like those in Table 1 will change according to the series of texts accessed on any given date, and thus can be used only as an example of frequency indications, of *divergence* or *convergence* with other hypotheses.

These frequencies show a variation from higher to lower specification. Summarizing, we could say that when taste (source) words are used to describe (target) nouns they break the initially proposed hierarchy of the less frequent to the most frequent sources: *touch* > *taste* > *smell* > *sound* > *sight,* and in this case take on a target frequency hierarchy: *sight* > *touch* > *sound* > *smell* > *taste*. Taste noun targets are dominant due to the taste adjective sources, same domain descriptions are more frequent (cf. Strik Lievers 2015; Viberg 1984).

The most common collocates for [BASIC TASTE adjective + noun] construction I categorized into superordinate noun categories according to: *food*, *concept*, *substance*, *people/person*, *place*, *time/experience*, *touch/feeling*, *taste*, *smell/air*, *sound/words*, *sight/color.* The category *concept* is the container for all the nouns that refered to something non-tangible or abstract, such as an event, e.g *divorce*, *battle*; in contrast with tangible things *foods*, *substances*, *peoples*, and *places*. *Time* and *experience* are superordinate terms I grouped together to identify something abstract that had to do with a phase, an occasion, a while, or an instance related specifically to the passing of time: *sweet day*, *sweet birthday.* Though not all *air* has a *smell*, all smells arrive through the air, so I grouped smell/air into one catego-

ry, in a similar fashion to the sound/word category, not all sounds are words nor are all words sounds, but the two categories overlap. Furthermore, the commonality of the nouns emerges as they are coupled with the taste adjectives. Though these categories may seem arbitrary, I followed these specific criteria in the analysis and categorization of the collocates, in keeping with the cognitive linguistic commitment that recognizes language as dynamic and open to experiential construal.

Table 1. [BASIC TASTE adjective + noun] hits per first hundred collocates with highest frequency rank

Adjective	Noun Category											
Basic Taste	Total	Food	Concept	Substance	People-Person	Place	Time-experience	Touch-Feeling	Taste	Smell-Air	Sound-Words	Sight-Color
sweet	10129	5138	1471	54	1013	318	562	25	599	603	346	0
sour	3683	2828	241	5	99	7	7	10	113	153	142	78
bitter	3565	350	*1830	0	114	65	263	450	357	15	121	0
salty	**811	220	27	***248	53	8	0	0	83	134	35	3
spicy	1177	904	25	0	0	0	0	6	140	98	4	0
Totals	19365	9440	3594	307	1279	398	832	491	1292	1003	648	81

* 1207 *bitter* coupled with the concept CONFLICT, ** 69 couples with *salty* in reference to seaman style, *** All couples of *salty* with *water*.

The results emerged with the most frequent collocate category (marked in blue in Table 1) for *sweet, sour*, and *spicy* as types of *food*: e.g. *sweet potato*, *sour cream*, *spicy foods*. And the category *concept* was the most frequent for *bitter*, especially in regards to types of *conflict*, e.g. *bitter divorce*, *bitter debate*, *bitter battle*, and *substance* for *salty*, e.g. *salty water*. The second most frequent collocate (marked in lilac in Table 1) for *sweet* and *sour* was the category *concept*, e.g. *sweet spot*, *sweet deal*, *sweet thing*, *sweet stuff*; *sour mood*, *sour expression*, *sour economy*, *sour patch*. Yet the second collocate for *bitter* was *touch* or *feeling*, e.g. *bitter cold*, *bitter wind*, *bitter winter*, *bitter feelings*. The second collocates for *salty* was *food*, e.g. *salty snacks*; and for *spicy* was *taste*, e.g. *spicy flavor*.

3.2. *Specific search* [TASTE* + SIGHT*]

The second search I carried out using the specific syntax for a generic taste-word with a generic sight-word as indicated in section 1.2, [TASTE* + SIGHT*]. The aim was to verify the frequency of the lexeme couple in COCA. Table 2 shows the results of the search of the 12 taste-words, and 13 sight-words. The highest combinations are marked in green boxes (between 100–20 hits), the second highest (between 20–10 hits) are in yellow boxes, then between 10–1 hits are in blue boxes.

Table 2. COCA analysis of [TASTE* + SIGHT*] adjective noun construction

Words	color	sight	vision	black	white	red	green	yellow	blue	dark	light	bright	dull	Totals
taste	6	1	0	16	6	7	9	0	2	7	8	4	6	72
flavor	0	0	0	7	4	4	8	4	4	4	2	0	0	37
savor	0	2	0	4	1	0	3	1	1	1	1	0	0	14
sweet	9	**10**	1	**33**	**74**	**100**	**52**	**19**	**11**	**18**	**12**	3	1	**343**
sour	4	1	1	1	0	2	2	2	0	2	2	0	0	16
bitter	1	1	0	16	15	2	**55**	0	6	7	0	1	0	**104**
salty	0	0	0	0	0	2	0	0	2	0	2	0	0	6
spicy	2	0	0	**20**	5	**36**	**29**	1	3	1	0	0	0	97
tasty	3	0	0	5	3	1	12	2	0	0	2	0	0	28
delicious	5	0	1	4	6	7	7	2	5	5	1	0	0	43
disgusting	2	6	0	1	4	2	1	1	1	0	2	0	0	20
acid	8	0	0	0	2	0	**21**	7	4	0	0	1	0	43
fruity	0	0	0	4	10	**22**	4	1	0	0	0	0	0	41
smoky	5	0	0	7	3	8	9	4	**25**	11	16	0	0	88
Totals	45	20	3	118	133	**193**	**212**	44	64	56	48	9	7	952

The basic color-words *black*, *white*, *red*, and *green* have the most hits. *Sweet*, *bitter*, and *spicy* are the basic taste-words with the most hits. The more frequent couples are *yellow* and *blue* with *sweet*. *Sweet* combines with all the words over ten times except *color*, *bright*, and *dull*. *Taste* combines most with *black*. *Bitter* com-

bines most with *black*, *white*, *green*. *Spicy* combines with *black*, *red*, and *green*. The next combinations of distinguishing words are *tasty green*, *acid green*; *fruity white*, *fruity red*; and *smoky blue*, *smoky dark*, *smoky light*. *Yummy* resulted only once—*yummy colors*, so it was excluded from the table and further searches.

The two most frequent words out of 952 total hits, for taste are *sweet* 343 hits (36%), and *bitter* 104 hits (11%); for sight are *green* 212 hits (22%), and *red* 193 hits (20%). Of the 240-total possible [TASTE* + SIGHT*] lexeme couples 115 emerged, that is 48% of the possible combinations had more than 1 example.

Some specific examples, one per taste-word, are listed in Table 3 with the year and type of text. The couple of words are highlighted in italics. Even if some of the combinations did not produce frequent hits, it is necessary to note that the use of the search with an asterix has yielded the various words with the necessary adjective and noun suffixes, e.g. *tasteful*, *savory*, *colors*, *reds*, *darkness*, *brightness*, *lights*. Moreover, results emerged like *sweet* [*-est, -er, bitter-*] *sight,* 10 hits; *tasteless sight*, 1 hit; and *disgusting sight* 6 hits, all referring to something seen.

Table 3. Examples COCA analysis of [TASTE*] [SIGHT*] adjective to noun, year, and text type

clad in *tasteful black* and shocking beige, made their way,	1998	FIC
offer a variety of cheeses to appeal to different tastes-aged goat, a *flavorful blue*,	2005	MAG
to absolve themselves from the spotlight of the FBI, not a very *savory sight*	1992	SPOK
and soon the orange glow faded into the *sweet darkness* of slumber.	2013	FIC
The *sour colors* are drab. Everything is drab. No transition, no twilight.	2006	FIC
with the chant of the alien voices and the *bitter brightness* of the sun.	2000	FIC
rising stiff-eyed into the gray *salty light* of Gulf summer dawn	1990	FIC
these are the colors you'll want for fall: rich browns, *spicy reds*, golden blondes.	2009	MAG
area of the St. Lawrence River are good places for *tasty yellow* perch.	1991	MAG
After resting another night, and sharing *delicious visions* with each other but	1992	FIC
Who else has that *disgusting color* for writing paper?	1993	FIC
are a natural complement for the *acid green* of the willows in springtime.	1992	MAG
Try a soft, *fruity white* such as the Joseph Phelps or Kendo	2004	MAG
This time, she didn't avoid my gaze. Her eyes were a *smoky green.*	2014	FIC

These example utterances document how the construction is used to refer to a variety of colored objects, clothing, light and lack of light, eyes, food, flowers, and concepts about situations and events.

3.3. *Mapping Metaphor with the Historical Thesaurus source vs target*

In the third corpus analysis I queried the Mapping Metaphor with the Historical Thesaurus of English to distinguish and compare the source and target domains. This research is specifically interested in verifying how frequent, both generically and specifically, taste is the source domain and sight is the target domain, and in what circumstances.

Each table starts with the search term and its code. The first figure in the code indicates one of the three main divisions respectively (1 External world, 2 Mental world, 3 Social world). Secondly, the 37 major categories in the Metaphor Map are indicated by a capital letter (e.g. 1B Life, 2A Mental capacity, etc.) that come directly from the hierarchy of the Historical Thesaurus of English. And the third number stands for one of the 415 more detailed categories; there are further 225,000 subcategory divisions of those categories. The concepts within the Historical Thesaurus hierarchy were divided by the Mapping Metaphor editors into semantic categories which were deemed as close to 'basic' concepts as was possible within the constraints of the data (e.g. Sense and speech organ, Physical sensation, etc.).

3.3.1. *Mapping Metaphor COLOUR*

In Table 4, COLOUR (British English spelling) is presented as 1J32, separate from Il12 SIGHT. The code 1 stands for External World, J for Matter, and 32 for Colour. It has a total of 36 metaphor mappings.

It becomes evident how COLOUR is predominantly a source domain, both single and bidirectional, in 28 (18+10) out of the 36 mappings. Therefore, the target of the search query of this study does not emerge as being predominant. COLOUR serves exclusively as target domain only in the external world mapping (8 times), and bidirectional in the external, mental, and social world mappings (10 times), for a total of 18 times.

Table 4. COLOUR category as source or target domain and both

1J34 COLOUR	SOURCE DOMAIN	TARGET DOMAIN	BIDIRECTIONAL	TOTAL
EXTERNAL WORLD	5	8	7	20
MENTAL WORLD	9	0	2	11
SOCIAL WORLD	4	0	1	5
TOTAL	18	8	10	36

Relevant examples of COLOUR as a target emerge when described by words of the different categories, cf. Table 5;[4] including *vivid* and *dim*, the two of the original search adjectives that were excluded because they were rare. Some, are yielded in transfer from words of Life, e.g. *lively*, *vivid*; words of Weight, heat and cold, e.g. *glow*, *cold*, *warmth*, *flame*, etc.; words of Strength, e.g. *strong*; words of Weak, e.g. *weak*, *delicate*, and words of Size and spatial extent, e.g. *deep*, *flat*, etc.

Table 5. COLOUR targets with strong metaphoric link from Mapping Metaphor

Source domain	Start era	Examples of metaphor
1B01: Life	1350 - 1399	lively, vive, livelihood, vivacity, vividity
1J03: Weight, heat and cold	1350 - 1399	glowing, glow, flaming, cold, warmth, flame, hot, burnt
1J08: Strength	1500 - 1549	stark, strong, strong
1J09: Weakness	1500 - 1549	tender, weak, delicate
1J11: Softness	1500 - 1549	tender, soft, velvety
1L03: Size and spatial extent	1550 - 1599	deep, heighten, thin, deeply, flat
1L04: Shape	1350 - 1399	sharping, sharp, thin, flatten, flat
1L06: Relative position	1700 - 1749	standing, stand, raised

[4] Tables 5 and 6: Connections to / from '1J34', strength: strong. 2018. In Mapping Metaphor with the Historical Thesaurus. Glasgow: University of Glasgow. Retrieved 21 June 2018, from https://mappingmetaphor.arts.gla.ac.uk/drilldown/?subCat=1J34&viewChange=y&strength=strong&changeViewOpt=changeTable.

Bidirectional mapping results in Table 6 show the links between Colour and Ill-health, Hearing and noise, Dirtiness, Bad condition, Behaviour and conduct, Stupidity, and Emotional suffering, with mostly negative words like *tainted*, *dull*, *off colour*, *sick*, *toneless*, *black*, *dim*, *dark*, *darken*, *colourless*, *sad*; and mostly positive words with the domains like Plants, e.g. *colour*, *flourish*, *bloom*; and Vigorous action and degrees of violence, e.g. *lively*, *vibrant*, *faint.* These examples of the single and bidirectional categories, however, show no direct references to taste. However, many of these words may be used to describe tastes, e.g., *tainted*, *dull*, *toneless*, *dim*, *dark*, *colourless*, but the construction collocations [TASTE adjective + SIGHT noun] are not revealed possibly due also to the adjectival forms that seem to predominate, rather than the nouns that could be described by taste.

Table 6. Bidirectional COLOUR targets with strong metaphoric link from Mapping Metaphor

Source domain	Start era	Examples of metaphor
1C02: Ill-health	1300 - 1349	fade, tainted, dull, toneless, off colour, sick, sickly, languish, sickly, sicken, bleed, bleeding, bleeding
1F01: Plants	1300 - 1349	fade, flourish, florid, bloom, bloom
1I13: Hearing and noise	1450 - 1499	dully, colour, unshaded, criard, toneless, reverberation, blaring, symphony, blare, screaming, resonant, shout-ingly, noisy, shrieking, shrill
1I15: Dirtiness	1300 - 1349	black, tainted, muddy, dirty, dusty, murky
1J38: Bad condition	1300 - 1349	fade, worn-out, tainted
1O20: Vigorous action and degrees of violence	1350 - 1399	lively, vibrant, faint
1O22: Behaviour and conduct	1550 - 1599	dye in the wool, wanton, austere, savage, violent, swarthy
2A14: Stupidity	1350 - 1399	dull, dim
2D06: Emotional suffering	Old English	dark < deorc, dull, darken, colourless, darkly, sad, sullen, sadden, sombrous
3M04: Music	1550 - 1599	colour, coloured, colour, colouring, half-tone, symphony, undertone, harmonization, jazzy, muted, jazzinses

3.3.2. *Mapping Metaphor INDIVIDUAL COLOURS*

In Table 7 the individual colors serve as source domain in 34 out of 37 metaphoric mappings, equally divided between the external, mental, and social worlds. And as

bidirectional (including target domain projection) for the external and mental worlds, only in 3 cases. The 3 INDIVIDUAL COLOUR target domains are listed in in Table 8.[5] However, only one of the categories involves taste and foodstuffs: Food and eating. Greenness (c1450–1719) refers to the quality of being unripe, and certainly may be defined by taste words. *Sour green* shows only 2 hits in COCA, once referring to economic indicators and another to mangoes.

Table 7. INDIVIDUAL COLOUR categories as source or target domain and both

1J35 INDIVIDUAL COLOURS	SOURCE DOMAIN	TARGET DOMAIN	BIDIRECTIONAL	TOTAL
EXTERNAL WORLD	12	0	2	14
MENTAL WORLD	11	0	1	12
SOCIAL WORLD	11	0	0	11
TOTAL	34	0	3	37

The Historical Thesaurus examples show: *green* (1863) may be synonym with putrid; red meat may be referred as *red* (1837–); barley soup as *sky-blue* (1887–) in nautical words; "coated in white" was called *sugar-candied* (1592–1673). Many food names are used to describe different kinds of browns (italics for Mapping Metaphor food examples Table 8); dark brown: *chocolate* (1771–), cocoa-coloured (1887); medium and light browns: toast-coloured (1898), olive-coloured (1613–), *pea-soup* (1828), *mustard* (1848–), *biscuit* (1884–), toast (1922–), *lobster bisque* (1929–), milk chocolate (1958–), milk coffee (1972), or coffee, nut, chestnut, hazel, liver, cinnamon, orange, smoke.

[5] Table 8: Connections to / from '1J35', Category '1G01 Food and eating' selected, strength: strong. 2018. In *Mapping Metaphor with the Historical Thesaurus*. Glasgow: University of Glasgow. Retrieved 22 June 2018, from https://mappingmetaphor.arts.gla.ac.uk/drilldown/?subCat=1J35&changeBoxSelected=1G01_Food_and_eating&viewChange=y&strength=strong&changeViewOpt=changeTable.

Table 8. Bidirectional INDIVIDUAL COLOUR Targets with strong metaphoric link from Mapping Metaphor

Source domain	Start era	Examples of metaphor
1B32: Mourning and obsequies	1350 - 1399	sable, purple, mourning
1G01: Food and eating	1450-1499	greenness, green, sky-blue, sugar-candied, chocolate, pea-soup, mustard, biscuit, lobster bisque, avocado
2D07: Anger	1200 - 1249	red, red, black, livid, angry

Avocado green is listed as being called *avocado* (1963–). Yet these category examples of INDIVIDUAL COLOURS do not delineate direct metaphor with taste, per se. Concluding, both the COLOUR and INDIVIDUAL COLOR searches did not yield taste target domain specifications that were of specific interest.

3.3.3. *Mapping Metaphor SIGHT*

The superordinate categories taken into consideration are sight and taste. SIGHT is identified with 1I12SIGHT, where 1 stands for the external world and I for physical sensation, 12 for SIGHT.

Table 9. SIGHT category as source or target domain and both

1I12SIGHT	SOURCE DOMAIN	TARGET DOMAIN	BIDIRECTIONAL	TOTAL
EXTERNAL WORLD	11	12	8	31
MENTAL WORLD	23	1	0	24
SOCIAL WORLD	5	1	1	7
TOTAL	39	14	9	62

Table 9 shows how sight may serve as a target domain in a total of 23 out of 62 mappings.[6] Nonetheless, again the target domain or bidirectional mappings do not

[6] Table 9: Connections to / from '1I12', strength: strong. 2018. In *Mapping Metaphor with the Historical Thesaurus*. Glasgow: University of Glasgow. Retrieved 22 June 2018, from https://

include taste-words. There are some lexemes that may be coupled with taste-words mapped from the bidirectional domains. The categories include Light and Flickering, Glowing light, with examples such as: *sour glare* (COCA 1 hit referring to a person's facial expression), *acid-yellow glare* (COCA 1 hit referring to a type of light), *bittersweet sparkle* (COCA 1 hit referring to a type of light), *acid sparkle* (COCA 1 hit referring to a type of wine), *bitter glance* (COCA 5 hits referring to a person's facial expression), *disgusted glance* (COCA 3 hits referring to a person's facial expression). They also include Weight, heat and cold: *sweet glow* (COCA 3 hits referring to warm light). The example of the domain of Soft is pertinent in that *sweet softness* (COCA 3 hits) emerged twice referring to warm light and once to a person's face. Hence, we can see the metaphoric extension move to the sight domain from the touch domain, like in the example is *delicious fuzziness* (COCA 1 hit referring to a mental state).

3.3.4. *Mapping Metaphor TASTE*

On the other hand, taste is identified with 1I10 TASTE, where 1 stands for the external world and I for physical sensation, 10 for TASTE. Table 10 shows how taste may serve as source domain 36 times out of 47. This, however, is the metaphoric projection that is of specific interest here.

Table 10. TASTE category as source or target domain and both

1I10 TASTE	SOURCE DOMAIN	TARGET DOMAIN	BIDIRECTIONAL	TOTAL
EXTERNAL WORLD	11	5	4	**20**
MENTAL WORLD	21	0	1	**22**
SOCIAL WORLD	4	0	1	**5**
TOTAL	**36**	**5**	**6**	**47**

Nonetheless, in Table 11, TASTE as source reveals 6 bidirectional targets, none of which directly access sight, eventhough many of these same source domains may be used to describe visual aspects, e.g. *metallic*, *loud*, *hot*, *coolish*, *cold*, *warmth*, etc. Only 22 of the 36 direct targets that may be perceived through vision,

mappingmetaphor.arts.gla.ac.uk/drilldown/?subCat=1I12&viewChange=y&strength=strong&changeViewOpt=changeTable.

see Table 12. The examples of metaphor do not show direct visual links, yet the concept of taste and visual response to what one sees would appear to create a deep and early metaphoric extension.

Table 11. Bidirectional TASTE 1I10 Targets with strong metaphoric link from Mapping Metaphor

Source domain	Start era	Examples of metaphor
1A16: Minerals	1800 - 1849	metallic, sweet, tinny
1I13: Hearing and noise	Old English	sweet < swete, sweetness, honeyed/honied, unsweet, dulcified, loud, silent
1J02: Chemistry	1650 - 1699	sweet, metallic, sour
1J03: Weight, heat and cold	1500 - 1549	hot, coolish, fieriness, hotly, heat, cold, bitterness, bitter, warmth
2D07: Anger	1150 - 1199	bitter, sour, bitterness, sour, sourness, tartness, acrimony, embitter, asperity, acidity, vinegary, angry, vehement
3K07: Materials and fuel	1450 - 1499	sour, sweet, brassy, metallic, tinny

The generic domains in Table 12[7] such as Existence and its attributes, Vigorous action and degrees of violence, Behaviour and conduct, Similarity, Moderateness and smallness of quantity, Part-whole relationships, Perception and cognition, Knowledge and experience, carry over into the meaning of positivity expressed generally by *sweet* and *sweetness*, etc. Positive sight experience is expressed in domain specifications of pleasant taste in reference to domains: Aesthetics and good taste, Fashionableness, Beauty, Good, Pleasure. The opposite, unpleasant taste, generally related to *sour* and *bitter*, or variations thereof, like *unsavory*, *distaste*, *disgust*, *unsweet.* These emerge in domains like Bad, Emotional suffering, Hatred and hostility, and Ugliness. Expression of tastes that lie somewhere in-between are found especially in the domain Excitement with *piquant*, *spicy*, *nutty*, *saltily*. If we look at the totals of the source domains for COLOR, INDIVIDUAL COLOR, and SIGHT the total metaphor mappings as source domains (91) is superior to the TASTE source domains (36), as predicted by, or converging with, the sense hierarchy for frequency rank.

[7] Table 11 and 12: Connections to / from '1I10', strength: strong. 2019. In Mapping Metaphor with the Historical Thesaurus. Glasgow: University of Glasgow. Retrieved 6 October 2019, from https://mappingmetaphor.arts.gla.ac.uk/drilldown/?subCat=1I10&viewChange=y&strength=strong&changeViewOpt=changeTable.

Table 12. TASTE 1I10 Targets with strong metaphoric link from Mapping Metaphor

	Source domain	Start Era	Examples of metaphor
1A15	Geological features	1500 - 1549	sour, sweeten
1A28	Atmosphere and weather	1550 - 1599	sour, bitter, bitterness
1I01	Physical sensation	1300 - 1349	savour, sweet, sugared, lick one's lips, taste, tastelessness, bitter-sweet
1K01	Existence and its attributes	1400 - 1449	tarage, taste, taste of, savour, flavour, taste
1O20	Vigorous action and degrees of violence	Old English	bitter < biter, sour, sweeten, spicy, peppery
1O22	Behaviour and conduct	Old English	sweet < swete, sweetness < swetnes, bitterness < biternes, bitter < biter, sweetly, honeyed/honied, rancour, unsavoury, embitter
1P09	Similarity	1350 - 1399	smatch, tarage, savouring, taste, smack, taste, season of, flavorous
1P31	Moderateness and smallness of quantity	1350 - 1399	taste, spice, smack, tang, haut-goût, savour
1P37	Part-whole relationships	1550 - 1599	salt, tinge, relish, tincture
2A07	Perception and cognition	1300 - 1349	savour, taste
2A20	Knowledge and experience	1300 - 1349	taste, taste, taste of, smatch, gust
2B09	Aesthetics and good taste	1300 - 1349	sweet, sweetness, gusto, taste, goût
2B11	Fashionableness	1700 - 1749	goût, taste
2B12	Beauty and ugliness	1300 - 1349	sweet, sugared, sweet, spicy, unsweet
2C01	Good	1200 - 1249	savour, sweetness, sweet, sweet, honey, finger-lickin'/ licking
2C02	Bad	Old English	sour < sur, bitter < biter, unsavoury, rancid
2D03	Excitement	1550 - 1599	sauce, salt, savour, gusto, haut-goût, piquant, flavorous, spicy, nutty, saltily
2D05	Pleasure	Old English	sweetness < swetnes, sweet < swete, savoury, sweet, bitter-sweet, honeyed/honied, mellifluous, taste, sugary, honeysome, bitter-sweet, gustful, palatable, saccharine, sugar-candyish

2D06	Emotional suffering	Old English	bitterness < bitternes, bitter < biter, unsweet < unswete, sour, attery/attry, unsavoury, wersh, tasteless, unpalatable, spiceless
2D09	Hatred and hostility	1350 - 1399	bitterness, unsavoury, sourly, distaste, disgust, mistaste
3M05	Visual arts	1650 - 1699	sweet, sweetly, sweeten, goût
3M06	Literature	1350 - 1399	sugared, unsavourily, saltness, spicy, agrodolce, salty, spiciness

3.3.5. *Mapping Metaphor with TASTE as source domain*

Looking at the specifics of TASTE as a source domain in the Historical Thesaurus, on which the Mapping Metaphor project is based, the exact attestations of when the term emerged with the metaphoric extension is defined. Firstly, *Taste* meaning aesthetic quality, pleasantness, one's choice emerges as follows: the earliest is Good taste[8], Having good taste, Displaying good taste, pleasing to the aesthetic sense, *sweet* (c1366–); then Love, Liking/favourable regard, fact of being to one's taste, taste (for something), *taste* (c1477–). Following this is: Be pleased with, Please / give pleasure to, *taste* (a1586 fig.); and Pleasure, relish, *taste* (1604 + a1716); Be pleased with, take pleasure in/enjoy, *taste* (1605–1896); and Good taste, *taste* (1671–); moving to Aesthetic quality/good taste, *taste* (1739–); Fashionableness, the/a prevailing fashion, *taste* (1739–). Lastly, it extends to Free will, Types of choice, a preference, choosing as more desirable, one's special preference, *taste* (1739). The opposite development happens later and yields, *Bad Taste*[9], Taste/flavour, Insipidity, *tastelessness* (1600 + 1875); Ability to be perceived by senses, Dullness of sense perception, *tastelessness* (1626–a1774); Bad taste, *tastelessness* (1778–).

Taste with reference to the mind: The mind, Goodness and badness,[10] Pleasing, *sweetness* (c1400–); and Emotion, Quality of being pleasant/pleasurable[11] emerges

[8] 02.02.12 (n.) Good taste. 2018. In The Historical Thesaurus of English, version 4.21. Glasgow: University of Glasgow. Retrieved 26 June 2018, from https://ht.ac.uk/category/?id=134730.

[9] 02.02.13 (n.) Bad taste. 2018. In *The Historical Thesaurus of English*, version 4.21. Glasgow: University of Glasgow. Retrieved 26 June 2018, from https://ht.ac.uk/category/?id=134812.

[10] 02.03 (n.) Goodness and badness. 2018. In *The Historical Thesaurus of English*, version 4.21. Glasgow: University of Glasgow. Retrieved 26 June 2018, from https://ht. ac.uk/category /?id=238071.

from Old English: *swet* OE, *sugar* (c1374–); *dulcour* (c1450–1675); *dulceness* (c1535–1605); *dulcetness* (1536–a1555); *dulcity* (1623–1657); *dulce* (1659–1728); *sweetness* < swetnes OE, *sweetness and light* (1927–); and the opposite Suffering, Displeasure, unpleasantness, that which is unpleasant, displeasure (1470/85–); *distasture* (1611), *distastefulness* (1654–); cause of annoyance/vexation, *distaste* (1611–1711), *disgust* (1654–1807/8). Similarly, Pleasant was described with *savoury* (a1225–), and Ill-nature as *unsavoury* (1568).

If we look briefly at each basic taste-term that can be related to any visual experience the following links emerge. *Sweet*[12] is used early on in relation to Beautifully, With pleasing appearance, *sweet* (a1300–); In good taste, pleasing to the aesthetic sense, *sweet* (a1300–); Perceptible by the senses, Of/relating to pleasure, pleasing to the senses, *sweet* (a1366–); Pleasure, *sweet* (1377–1878); Ability to be perceived by senses, Sensuous pleasure, that which is pleasant, *sweet* (1377–); Good, and pleasing, *sweet* (a1400–1594 + 1824); Acceptable, *sweet* (1577–). Later it becomes more specifically visual in Pertaining to the Arts, Work of art, qualities of work of art, *sweet* (1662 + 1662); Attractive sweet (1779–); Particular flower/plant esteemed for flower, iris and related flowers, irises *sweet*/yellow *sedge* (1839–); Well, and pleasing, *sweet* (1846–); Good, Acceptable, *sweet* (1898– Austral. slang).

Sour and *Bitter* fall into the same category of displeased and unpleasant.[13] The earliest negative taste-word is *sour* (c1200–), unsweet (c1600), then from *biternes* (OE–), comes *bitter* (1810), and peppery (1829–). What did not emerge from the Historical Thesaurus, but is mentioned by Williams, bitter (meant "biting, of pungent taste," to "acrid-tasting"[14]), which is an original transfer from the touch domain into the taste domain (1976: 475). Then we find the remaining taste-words

[11] 02.04.10.01 (n.) Quality of being pleasant/pleasurable. 2018. In *The Historical Thesaurus of English*, version 4.21. Glasgow: University of Glasgow. Retrieved 26 June 2018, from https://ht.ac.uk/category/?id=128438.

[12] Sweet. 2018. In *The Historical Thesaurus of English*, version 4.21. Glasgow: University of Glasgow. Retrieved 26 June 2018, https://ht.ac.uk/category-selection/?qsearch=sweet; 02.02.16 (adv.) Beautifully. 2018. In *The Historical Thesaurus of English*, version 4.21. Glasgow: University of Glasgow. Retrieved 26 June 2018, from https://ht.ac.uk/category/?id=135004.

[13] 02.04.11.09|02 (adj.) Displeased :: unpleasant. 2018. In *The Historical Thesaurus of English*, version 4.21. Glasgow: University of Glasgow. Retrieved 26 June 2018, from https://ht.ac.uk/category/?id=129803.

[14] See also in Online Etymology Dictionary. Retrieved 26 June 2018, from https://www.etymonline.com/word/bitter.

Spicy and *Salty*, in Pertaining to the arts, vigorous forceful[15], mordant (1474 + 1858–), piquant (1521–1868), pugnant (1529), pungent (a1661–), piperaceous (1674), peppery (1826–). *Piquant* is further specified with piquant (1695–), piquante (1823–1873), *spicy* (1844–), *salty* (1866–) (witty > coloured 1855-), and piquancy/poignancy with *saltness* (1612 + 1896), piquancy (1683–), *spiciness* (1876–fig.). So both taste-words emerge in a chain of linked terms: *bitter, peppery, spicy, salty*, to refer to something that is forceful and vigorous in the arts. *Spicy* emerges separately only in reference to Pleasing appearance, neat trim, *spicy* (1846–). Williams, however, clarifies *piquant, poignant, pungent* as moving originally from touch to taste, like *sharp* (1976: 476).

One of the metaphoric extensions between taste and color is the word *tinge* meaning 'to impart a taste'[16], *tinge* (1690–1863). However, by date of development it emerges from a color source domain first: Colour, tinge, *tinge* (1477–); Colour, Become coloured, *tinge* (1662–1821); To a slight degree, *tinge* (1690–); Colour, *tinge* (1752–); Colouring matter, small amount, *tinge* (1770–). It also emerges in a metonymic sense as part in relation to the whole: Wholeness, Condition/state of being mixed/blended, that which is added as an ingredient, admixture/addition as ingredient, a small admixture of something, *tinge* (1797–fig.). Hence a transfer must be categorized as moving from the source SIGHT to the target TASTE, not the opposite.

3.4. *Frequency of SIGHT related synonyms and collocates*

The last phase of this study regards the frequency of taste-words and the sight related synonyms and collocates in a COCA WordPhrase[17] query; together with COCA collocate analysis for ulterior information. I set a query for each of the 14 taste-words. The rank of each is listed here with the sight domain related synonyms and collocates. The rank, e.g. #25 means that it is the 25th most frequent lemma in COCA. Here I discuss the words in the same order as Table 2.

[15] 03.13.03.04.05.05 (adj.) Vigorous/forceful. 2018. In *The Historical Thesaurus of English*, version 4.21. Glasgow: University of Glasgow. Retrieved 26 June 2018, from https://ht.ac.uk/category/?id=218799.

[16] 01.09.06 (vt.) Taste. 2018. In *The Historical Thesaurus of English*, version 4.21. Glasgow: University of Glasgow. Retrieved 26 June 2018, from https://ht.ac.uk/category/?id=58597.

[17] This web tool allows you to see detailed information on the top 60,000 words (lemmas) of English, based on data from the Corpus of Contemporary American English (COCA). https://www.wordandphrase.info.

The results for the superordinate lemmas *taste*, *flavor*, and *savor* are: Tasteful (#18265 adj.) synonyms *discerning*, *attractive*, *sophisticated*, *elegant*, *aesthetic*, *refined*, *stylish*, *chic*, *classy*, *discriminating*; collocates *color*, *black*, *blue*, *beige*, *dark*. Tasteless (#18611 adj.) synonyms *flashy*, *garish*; collocate *colorless*. Flavor (#3137 n.) synonyms *aspect*, *suggestion*, *hint*; collocate *color*. Flavor (#9597 v.) synonyms *characterize*, *distinguish*, *color*, *imbue*; collocates *color*, *green*, *red*. Flavoring (#24707 adj.) synonym *additive*; collocates *coloring*, *color*. Flavorless (#39526 adj.) synonyms *boring*, *bland*; collocate *white*. Savor (#8459 adj.) synonyms *pleasant*; no vision collocates present.

This shows that Flavor as a noun is the highest ranking in this group of lemmas. Moreover, the highlighted synonyms are related, though not exclusively, to the act of sight or vision. These reveal the semantic shift in meaning from taste to sight. The collocations help illustrate the complexity of the metaphoric domain exchange or transfer.

(2) a. *the Daughters of the American Revolution, clad in* ***tasteful black*** *and shocking beige* [1998 FIC]

b. *simplicity verging on disappearance -- odorless and* ***colorless****. Yes, and anything but* ***tasteless*** [2016 NEWS]

Example (2a) shows the collocation *tasteful black*, where *tasteful* is being used to express how if something is 'full of taste,' it is elegant, has a refined aesthetic, and is classy or attractive. Whereas, (2b) shows the the collocation for *tasteless* with *colorless* in almost ironic opposition between the two words, again referring to the idea of good 'taste' being simple and sophisticated. Note that the collocation search setting can be 4 to the left or right of the search term, with a mutual information (MI) score[18] over 3. MI collocation results give us a different look at which lemmas relate to each other, beyond the initial construction [TASTE adjective + SIGHT noun].

The results for the basic taste-words confirm the apparent dichotomy between sweet vs. sour/bitter: Sweet (#1572 adj.: collocates with *red*) stands for everything that is *attractive*, *appealing*, *delightful*, *adorable*, *pleasant*, *pleasing*, *agreeable*; Sour (#5339 adj.) and Bitter (#3606 adj.) for everything that is *bad*, *unpleasant*,

[18] Mutual Information is the ratio of the collocation frequency of any two words to the products of the two words' respective probabilities of occurring independently. The statistical value measures the extent to which the joint occurrence of the two words is exclusive. This thus expresses the relevance of the couple of words vs. frequency. The formula used in COCA is MI = log ((AB * sizeCorpus) / (A * B * span)) / log (2).

disagreeable, though no vision collocates emerged in this query. Bitter collocates with *cold* and the synonyms for Spicy (#7824 adj.) are *hot* and *fiery*, revealing a further opposition. Spicy collocates with *red* and *brown*. Salty (#9580 adj.) showed no vision synonyms or collocates.

Examples in (3) show the collocations *sweet red* and *spicy red*; (3a) and (3c) illustrate a further transfer of the taste-sight couples to SMELL, i.e. *perfume* and *scent* respectively. (3b), (3c), and (3d) reveal the use of this type of taste-sight couple —*sweet red* and *spicy red*— to highlight a comparison to other colors.

(3) a. *she smelled the lingering stink of Tabitha's cigarettes but also the **sweet red** perfume of raspberry jam*. [2016 FIC]

b. *she can watch the blue life vessels give way to **sweet red** inside*. [1995 FIC]

c. *Her mother, Renee, had a dark, **spicy red** scent, with a few sworls of black and yellow, but the spicy red almost crowded out all the other colors*. [1997 FIC]

d. *was crowned with a triangle of **spicy red** hair just a few shades darker than the sunset locks on her head*. [1999 FIC]

The specific distinguishing taste term results are exemplified in (4). They included:

Tasty (#8628 adj.) that revealed no sight synonyms, though something may appear *juicy, succulent, appetizing,* or *scrumptious*; there were no vision collocates in the WordPhrase search. The expanded COCA search yielded examples like (4a), "tasty colors".

Delicious (#5036 adj.), similar to Tasteful, is synonymous to *lovely*, *pleasant*, *charming*, *appealing*, *delightful*, *delectable*; and collocates with *red*, *golden*, though referring almost exclusively to a type of apple. It is interesting to see that Delicious COCA collocates in the [TASTE adjective + noun] construction with *irony*, *aroma*, *smell*, *flavor*, *sense*, *smells*, *feeling*, *aromas*, *flavors*, *sensation*, *scent*, *taste*, *warmth*, *scents*, *odor*, *version*, *fragrance*, in order of highest to lowest frequency. So, the predominance of other sensory domain cross-modal transfer becomes evident, with smell then touch.

(4) a. *The screen is alive with **tasty colors***. [2000 MAG]

b. *Soon it was all covered in wet sand like a second skin, a **disgusting sight***. [2013 FIC]

c. *It was a bright, **fruity red**, all trimmed in white, and contrasted with a*

marker flag. [1997 FIC]

d. *The other nurse, bruise above her eye now a **fruity green**, harassed already*. [1994 FIC]

e. *Sometimes we play backgammon, and sometimes we converse on philosophical subjects until the **smoky blue** edge of dawn creeps into visibility through my windows*. [2011 FIC]

The opposite to delicious is Disgusting (#9122 adj.) synonyms *revolting*, *ghastly*, *repulsive*, *revolting*, *nauseating*, *repellent*; collocates - *pretty*, *dirty*. In the [adj. TASTE + noun] construction Disgusting collocates with *smell*, *noises*, *pictures*, *stench*, *spectacle*, *noise*, *sounds*, *odours*, *sight*; again, often with nouns of smell and sound, besides sight. Examples like (4b) "*disgusting sight*" illustrate the conventional [adj. TASTE + noun SIGHT] construction. Acid (#44694 adj.) emerged with no vision synonyms or collocates (though without the MI limit the examples emerged in Table 2). Fruity (#18039 adj.) synonym to *harmonious*; collocates with *red, light, white*, which are predominantly coupled in reference to wine. In the [adj. TASTE + noun] construction Fruity collocates with *red*, *green*, *black*, *reds*; and with *flavor*, *flavors*, *perfume*, *smell*, *aroma*, *scent*, *fragrance*, *taste*, *flavours*, *aromas*, *taste*, *bouquet*, *unflavored* predominantly for the taste and smell sensory domains. Yet the examples (4c) *fruity red* and (4d) *fruity green* show how the semantic space of fruit allows us to move across two extremes: mature red to immature green. Smoky (#10114 adj.) taste, as in "darkened or begrimed with smoke" hence a smoky flavour,[19] is synonym to sight related "having the character or appearance of smoke" *misty*, *murky*, *opaque*, *cloudy*, *misty*, *hazy*, *foggy*, *smoke-filled*: collocates - *light*, *dark*, *blue*, *gray*, *red*. In the [adj. TASTE + noun] construction it also collocates with *flavor*, *voice*, *blue*, *gray*, *smell*, *light*, *taste*, *scent*, *sweetness*, *green*, *flavors*, *brown*, *red*, *odor*, *mist*, *dark*, *aroma*, *aromas*, *essence*, *darkness*, *atmosphere*, *quality*, *nuance*, *tang*, *perfume*, in order of frequency, revealing a predominance of smell together with taste and sight. Example (4e) shows how the usage *smoky blue* seems clearly a visual reference, the semantic passage through the domain of taste seems superfluous. However, according to the semantic change of the lexeme it was first used as a taste, then as a visual modifier.

[19] Smoky (adj.) early 14c., 'emitting smoke,' from smoke (n.) + -y (2). Meaning 'filled with smoke' and meaning 'resembling smoke.' Of flavors, from 1540s; of colors, from 1550s. Related: Smokiness. are from late 14c. In Online Etymology Dictionary. Retrieved 26 June 2018, from https://www.etymonline.com/search?q=smoky.

When searching in the opposite mode setting the sight-word query with taste-words (in a list of 200 collocates one to the left), different couples emerged. For example, see (5a) with Color yielded *luscious* #184 ("highly pleasing to the taste or smell"), and (5b) *acidic* #381 ("a substance with a sour taste").

(5) a. *His eye for* ***luscious color*** *is evident in the embroidered and beaded pillows* [1999 NEWS]

b. *Elegantly proportioned and saturated in rich*, ***acidic color***, [1995 MAG]

Red also collocated with *luscious*, *tart*, and *zesty*.

The last step required that I analyze the three words that Williams had included in The Major Generalization originally proposed to identify the semantic change of sensory domains (1976: 476). The words he initially indicated as moving from "TASTE TO COLOR" included *austere*, *brisk*, and *mellow*, that are marked as being out of use and in violation of the predicted pattern. All three lexemes were found in COCA, with over MI 3, one collocate to the right of the term in the first 100 ranking collocates. As indicated in some selected examples: (6a) *austere white* #12 MI 3.38; and (6b) *austere black* #19 MI 3.31; *austere* also collocates with *light*, *dark*, *grays*, *whiteness*, *shade*, *gray*. For example, (6c) *mellow yellow* #12 MI 8.40 has a very high MI score, even though *yellow* is a highly frequent word. *Mellow* also collocates with*, light gold*, *blue*, *glow*, *golden*, *red*, *orange*, *brown*. (6d) *mellow tones* #6 MI 9.78, (with 7 occurrences total, only 3 of the examples refer to color, 3 refer to sound and 1 to taste).

(6) a. *Twombly's white sculptures stand in* ***austere white*** *gallery spaces* [2001 SPOK]

b. *they have draped the* ***austere black*** *of city women*. [2012 FIC]

c. *a shell of an ogre: mean and green on the outside, but all* ***mellow yellow*** *inside*. [2010 NEWS]

d. *Lichens lend their* ***mellow tones*** *to a pine bench constructed in the 1890s*. [1997 MAG]

e. *he stood in the* ***brisk darkness*** *outside the Supreme Court as his wife* [2015 MAG]

One possible example of a sight collocate emerged for *brisk*, (6e) *brisk darkness* MI 4.70, generally *brisk* seems to refer to speed or temperature not necessarily to COLOR. We may conclude, nonetheless, that there is a complex synesthetic multimodal processing that occurs.

The other two taste-words in William's list that he does not show as transferring to COLOR are *acrid* and *tart*. Yet several collocates have emerged from the COCA query. *Acrid* is defined as "sharp or biting to the taste or smell; bitterly pungent; irritating to the eyes, nose, etc.". Thus, it would be natural to think that the sharpness, bitterness, and pungent aspects of *acrid* that have already collocated with sight could carry over in a similar metaphoric or synaesthetic manner "irritating the eyes". *Acrid black* (7a), #12 MI 4.41; *acrid gray* (7b), #21 MI 6.32, *acrid yellow* (7d), #136 MI 4.83; *acrid blue* (7e), #146 MI 3.63 (in the first 200 collocates), all refer to smoke and clouds. Nevertheless, it is again hard to say if conceptually the collocation is the "acridness of the color", or the "acridness smell/taste of the air". The fact is that the words collocate together, and this allows, or will allow, for the color itself to be conceptualized as "acrid".

(7) a. *The air thickens with **acrid black** smoke, then reddens like a summer sunset*. [2014 FIC]

b. *He grabbed up the pillow, and squinting into the **acrid gray** cloud* [2016 FIC]

c. *A ribbon of **acrid yellow** smoke rose from the crematory as a Buddhist monk approached* [1996 NEWS]

d. *heart-damaging pollution in the **acrid blue** clouds that hover between diesel locomotives* [2015 NEWS]

e. *find ground sumac, made from **tart red** edible sumac berries, in the spice aisle of well-stocked grocery stores.* [2012 MAG]

f. *three brown spotted trunkfishes, and a school of royal gammas, their heads a **tart orange**, as orange as a hunting license pinned to a coat, their back* [1998 FIC]

The word *tart* similarly is found both with *red* #27 MI 3.55, and *orange*, #103 MI 3.99. *Tart red* (7e) is used to describe *edible sumac berries*, thus it is not an adjective + noun construction, but a series of adjectives describing a noun. It represents a projection from taste to sight, which follows the grammatically required adjective order before a noun; that is the quality - description- classification- word order. This is similar to the *delicious red* and *delicious golden* collocations. *Tart orange* (7f), however, maintains the construction pattern, with tartness transferring into the sight domain of the color term.

4. Discussion and conclusions

Returning to the initial questions: what collocations occur between the two domains: do they respect the semantic transfer hierarchy, and how frequent, or how relevant are they? Do they respect the schedule William proposes? What type of semantic process emerges? There is a definite synaesthetic transfer in English from the taste domain to the sight domain. This result *diverges* from William's hypothesis and generalization of the direction of semantic change (1976). The data that emerges in this study also finds examples that were considered non-active between the two sensory domains.

For example, *acrid tinge* (#64 MI 10.40), illustrated in (8), is similar in its ambiguity to (7), though the mapping is quite different. The example emerged in the "acrid" query.

(8) *house, where the rich, tantalizing scent of French roast coffee mingled with the* ***acrid tinge*** *of wood smoke*. [2012 FIC]

Tinge originally a sight-word, the first definition is "to impart a trace or slight degree of some color to; tint", that has gone through a semantic change, the second definition is "to impart a slight taste or smell to". It is thus hard to claim whether *acrid* in (8) has undergone a semantic change from taste to sight and in this case is being used to transfer meaning to the other sight-word *tinge*, rather than *acrid* remaining a taste-word being used to transfer meaning to the sight-word or taste-word *tinge.* Or even, as might seem the case in this utterance, that both *acrid* and *tinge* are actually being used in a further semantic change as smell-words.

Whichever point of the conceptual process we choose, this analysis has made evident that there is transfer between the domains: taste to sight and sight to taste. I hope to deal more specifically with sight to taste in future research, conducting comparative queries to this study. I also foresee analyzing the construction: [TASTE adjective + COLOR adjective + noun] construction e.g. "sweet red onion," where many of these collocates emerge.

Concluding, the corpus analyses reveal how the sensory domain that functions as source may be understood as an adjective modifying another sensory domain, from which we may evince the synaesthetic transfer from taste to sight. The first corpus analysis in COCA of the construction [adjective BASIC TASTE + noun] revealed the principle collocates that include all the sense categories, *diverging* from the hypothesized hierarchy.

The results of the second specific corpus analysis [adjective TASTE* + noun

SIGHT*], considering *divergence* and *convergence* with the hypotheses, show that 48% of the possible combinations between 31 lemmas queried, 14 taste and 13 sight lemmas emerge as productive. These results *diverge* from Williams prediction. He claims that TASTE TO SIGHT (COLOR) were "non-predicted" transfers. Hence, even though they are not "frequent" they still result, and in almost half of the combinations are currently productive.

The third query considers the source and target domains for taste and sight according to Mapping Metaphor with the Historical Thesaurus of English, and illustrates the attestations of when the words emerged with metaphoric extension. This analysis shows how taste and sight serve both as source and target domains, yet COLOUR is predominantly a source domain in a 28/18 source/target ratio, adding the single and bidirectional mappings. These examples of the single and bidirectional categories however show no direct references to taste. The INDIVIDUAL COLOURS serve as source domain in 34 out of 37 mappings, and 3 of the mappings are bidirectional; meaning that there is 37/3 source/target ratio. Yet these examples of individual categories do not reveal direct metaphor with taste, per se. SIGHT may serve as a target domain in a total of 23 out of 62 mappings; 48/23 source/target ratio. Nonetheless, again the target domain or bidirectional mappings do not include taste-words. TASTE may serve as source domain 36 times out of 47; and in 6 bidirectional targets, none of which directly access sight; 42/11 source/target ratio. However, many of these same source domains may be used to describe visual aspects, e.g. *metallic*, *loud*, *hot*, *coolish*, *cold*, *warmth*, etc. Thus, 22 of the 36 direct targets may be perceived through vision. Positive visual experience is expressed in specifications of *pleasant taste* in reference to the domains: Aesthetics and good taste, Fashionableness, Beauty, Good, Pleasure, with *sweet*; and the opposite, *unpleasant taste*, generally related to *sour* and *bitter*, or variations thereof, like *unsavory*, *distaste*, *disgust*, *unsweet*. These emerge in domains like Bad, Emotional suffering, Hatred and hostility, and Ugliness. If we look at the totals of the source domains: COLOR, INDIVIDUAL COLOR, and SIGHT emerge with a total of 91 single direction source domain metaphor mappings, which is superior to TASTE with 36 single direction source domain metaphor mappings. This difference *converges* with the predicted sense hierarchy for sight being more frequently a source than taste.

The last query looked at the frequency ranks of taste and sight related synonyms, and collocates with MI scores for each of the query words. The superordinate *taste,* and *flavour* yielded vision synonyms and collocates, e.g. *tasteful black*, *flavourless white*. Of the taste-words, *sweet*, *sour*, *bitter*, and *spicy* yielded vision synonyms, but only *sweet* and *spicy* emerged with vision collocates in a specific

query that looked at the MI score without a frequency limit. The same for the distinguishing words *tasty*, and *delicious*. Instead *disgusting*, *fruity*, and *smoky* were productive both in regard to vision synonyms and collocates. *Acid* on the other hand showed no synonyms and no collocates. Other words, *luscious*, *acidic*, *tart*, *zesty* did emerge in a sight-word collocate query with taste-words. In checking Williams' Appendix, he shows *austere*, *brisk*, *mellow*, *acrid*, and *tart* as taste-words that do not transfer, or are no longer used in transfer to COLOR due to semantic change. However, they did emerge in this corpus query. This result thus, *diverges* from his hypotheses. I found current collocates for several words he marked as being out of use or in violation of his predicted pattern. Fundamentally, in considering the type of semantic process that emerges, this study *converges* with Strik Lievers (2015) that shows how the synaesthetic cross-modality transfers do occur from taste to sight, in a relevant manner, though not as frequently as the opposite direction.

I would argue that in English the grammatical order of adjectives before nouns that prescribes or constrains how to group a series of adjectives, serves as a base on which these domains issue synaesthetic transfer. English grammar dictates the order as going: description - classification - noun, e.g. *a green wine bottle*; opinion - description - noun, e.g. *a beautiful blue sky*; size - age - shape - color - origin - material noun: e.g. *a small round black leather bag*; and *a bitter fat old white man.* This order is constrained by our "knowledge of the world" where we use more generic words next to the noun: e.g. *green wine bottle* (there are lots of types of wine bottles), and less generic attributes or opinions are more distant from the noun (green is a type of wine bottle). Thus, examples like: *tasteful black*, *tasty green*, *fruity red*, *smoky blue*, *austere white* can be used to describe a noun, e.g. *a tasteful black dress*, *a smoky blue Italian car.*

Embodiment is paramount to the Cognitive Linguistics enterprise. The grounding of language in body experience is one of the major tenets of linguistic description at various levels of analysis (e.g. Gallese & Lakoff 2005; Hampe & Grady 2005; Aziz-Zadeh et al. 2006; Barsalou 2008; Della Putta 2018). Researchers suggest that the neural constraints of our "wiring" dictate the directionality of and the non-arbitrariness of synaesthesia and metaphor. Neural embodiment, concepts are mapped to activate brain circuits involved in embodied experience, especially at the basic levels. From a neural perspective, source and target domains are activated in correlated experiences, and as a normal consequence of associative learning: neurons that fire together, wire together (Cacciari 2008; Feldman 2008).

Winter et al. (2018) results *converge* with these, showing how sensory language

can be expected to change across time and contexts, but dominance of sight-words seems constant in English. They affirm that the semantic domains we use more frequently are also more lexically differentiated—a greater number of unique words—for perceptual experiences. I argue that this in turn means that the domains that are less differentiated, need more lexemes, possibly from other sensory domains, to describe those experiences (see cf. converging with Cacciari 2008, diverging with Strik Lievers 2015). So, when taste-words are used to describe sight-words, this breaks the hypothetical hierarchy—less frequent ranking to the most frequent—, changing it because there is a need to use other lexemes for the less differentiated domains.

References

Archer-Hind, Richard Dacre (ed./trans.). 1888. The Timaeus of Plato. London: McMillan; reprinted, Salem, NH: Ayers, 1988.

Aziz-Zadeh, Lisa & Wilson, Stephen M. & Rizzolatti, Giacomo & Iacoboni, Marco. 2006. Congruent embodied representations for visually presented actions and linguistic phrases describing actions. *Current Biology* 16. 1818–1823. http://dx.doi.org/10.1016/j.cub.2006.07.060

Bagli, Marco. 2016. "Shaking off so good a wife and so sweet a lady": Shakespeare's use of Taste words. *Journal of Literary Semantics* 45(2). 141–159. http://dx.doi.org/10.1515/jls-2016-0010

Bagli, Marco. 2017. "Naught so sweet as melancholy": A gustatory anatomy of melancholy. In Annalisa Volpone (Ed.), *La felicità di essere tristi. Saggi sulla malinconia*, 173–195. Passignano s.T.: Aguaplano.

Bagli, Marco. 2018. Defining taste in English informant categorization. In Baicchi, Annalisa, Digonnet, Rémi & Sandford, Jodi L. (eds.), *Sensory perceptions in language, embodiment and epistemology*, 155–176. Berlin: Springer. http://dx.doi.org/10.1007/978-3-319-91277-6_9

Baicchi, Annalisa & Digonnet, Rémi & Sandford, Jodi L. (eds.). 2018. *Sensory perceptions in language, embodiment and epistemology*. Berlin: Springer. https://doi.org/10.1007/978-3-319-91277-6

Barsalou, Lawrence W. 2008. Grounded cognition. *The Annual Review of Psychology* 59. 617–645. http://dx.doi.org/10.1146/annurev.psych.59.103006.093639

Caballero, Rosario & Díaz-Vera, Javier (eds.) 2013. *Sensuous cognition. Explorations into human sentience: imagination, (e)motion and perception*. Berlin: De Gruyter Mouton. http://dx.doi.org/10.1515/9783110300772

Cacciari, Cristina. 2008. Crossing the senses in metaphorical language. In Gibbs, Raymond, W. (ed.), *The Cambridge handbook of metaphor and thought*, 425–443. Cam-

bridge: Cambridge University Press. http://dx.doi.org/10.1017/CBO9780511816802.026

Croft, William & Cruse D. Alan. 2004. *Cognitive linguistics*. Cambridge: Cambridge University Press.

Cuskley, Christine & Kirby, Simon. 2013. *Synesthesia, cross-modality, and language evolution: oxford handbook of synesthesia.* Oxford: Oxford University Press. https://doi.org/10.1093/oxfordhb/9780199603329.013.0043

Davies, Mark, 2008–present, The Corpus of Contemporary American English (COCA).

Della Putta, Paolo. 2018. Embodied semantics and the mirror neurons: past research and some proposals for the future. In Baicchi, Annalisa, Digonnet, Rémi & Sandford, Jodi L. (eds.), *Sensory perceptions in language, embodiment and epistemology*, 21–44. Berlin: Springer. http://dx.doi.org/10.1007/978-3-319-91277-6_2

Dictionary.com. 2018 Dictionary.com, LLC. http://www.dictionary.com.

Digonnet, Rémi. 2016. *Métaphore et olfaction: une approche cognitive.* Paris: Honoré Champion.

Evans, Vyvyan. 2014. *The language myth: why language is not an instinct*. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9781107358300

Evans, Vyvyan. 2015. *The crucible of language*. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9781316403631

Evans, Vyvyan & Green, Melanie. 2006. *Cognitive linguistics: an introduction*. Edinburgh: Edinburgh University Press. https://doi.org/10.4324/9781315864327

Feldman, Jerome. 2006. *From molecule to metaphor: a neural theory of language*. Cambridge MA: MIT Press. http://dx.doi.org/10.1016/S0093-934X(03)00355-9

Feldman, Jerome & Narayanan, Srinivas. 2004. Embodied meaning in a neural theory of language. *Brain and Language* 89. 385–392.

Gallese, Vittorio & Lakoff, George. 2005. The brain's concepts: The role of the sensorimotor system in conceptual knowledge. *Cognitive Neuropsychology* 22. 455–479. https://doi.org/10.1080/02643290442000310

Gibbs, Raymond W. 2005. *Embodiment and cognitive science*. Cambridge: Cambridge University Press. http://dx.doi.org/10.1017/CBO9780511805844

Gisborne, Nikolas. 2010. *The event structure of perception verbs*. Oxford: Oxford University Press. http://dx.doi.org/10.1093/acprof:oso/9780199577798.001.0001

Hampe, Beate & Grady, Joseph (eds.). 2005. *From perception to meaning: image schemas in cognitive linguistics.* Berlin: De Gruyter Mouton. http://dx.doi.org/10.1515/9783110197532

Howes, David (ed.). 2005. *Empire of the senses. The sensual culture reader*. Oxford: Berg.

Johnson, Mark. 2008 [2007]. *The meaning of the body: aesthetics of human understanding*. Chicago: University of Chicago Press. http://dx.doi.org/10.7208/chicago/9780226026992.001.0001

Johnson, Mark. 2013 [1987]. *The body in the mind: the bodily basis of meaning, imagination, and reason*. Chicago: University of Chicago Press.

Kay, Christian & Roberts, Jane & Samuels, Michael & Wotherspoon, Irené & Alexander, Marc (eds.). 2017. *The historical thesaurus of English*, version 4.21. University of Glasgow, Glasgow. http://historicalthesaurus.arts.gla.ac.uk/.

Kövecses, Zoltán. [2002] 2010. *Metaphor: A practical introduction*. Oxford: Oxford University Press.

Kövecses, Zoltán. 2010. *Metaphor in culture: Universality and variation*. Cambridge: Cambridge University Press. https://doi.org/10.1017/CBO9780511614408

Kövecses, Zoltán. 2010. Metaphor and culture. *Acta Universitatis Sapientiae, Philologica* 2(2). 197–220.

Lakoff, George. [1987] 1990. *Women, fire, and dangerous things*. Chicago: University of Chicago Press.

Lakoff, George & Johnson, Mark. 1999. *Philosophy in the flesh.* New York: Basic Books.

Lakoff, George & Johnson, Mark. [1980] 2003. *Metaphors we live by.* Chicago: University of Chicago Press. http://dx.doi.org/10.7208/chicago/9780226470993.001.0001

Langacker, Ronald W. 2008. *Cognitive grammar: A basic introduction*. Oxford: Oxford University Press.

Mapping Metaphor with the Historical Thesaurus. 2015. *Metaphor map of English*. Glasgow: University of Glasgow. Last accessed 10/04/2018, http://mappingmetaphor.arts.gla.ac.uk.

Online Etymology Dictionary; 2001-2018. Douglas Harper. https://www.etymonline.com/columns/post/abbr?ref=etymonline.

Orians, Gordon H. 2014. *Snakes, sunrises, and Shakespeare: how evolution shapes our loves and fears*. Chicago: University of Chicago Press. http://dx.doi.org/10.7208/chicago/9780226003375.001.0001

Ronga, Irene. 2016. Taste synaesthesias. Linguistic features and neurophysiological bases. In *Metaphor and communication*, Gola, Elisabetta & Ervas, Francesca (eds.), 47–60. Amsterdam: John Benjamins. https://doi.org/10.1075/milcc.5.03ron

Sandford, Jodi L. 2011a. Warm, cool, light, dark, or afterimage: dimensions and connotations of conceptual color metaphor/metonymy. In Biggam, Carole P. & Hough, Carole A. & Kay, Christian J. & Simmons, David R. (eds.), *New directions in colour studies*, 205–218. Amsterdam: John Benjamins. http://dx.doi.org/10.1075/z.167.24san

Sandford, Jodi L. 2011b. Conceptual metaphor and the interaction between color and light: LIGHT IS COLOR, SEEING IS RECEIVING LIGHT, SEEING IS COLOR. In Schindler, Verena M. & Cuber, Stephan (eds.), *AIC 2011 Interaction of Colour & Light in the Arts and Sciences*, 706–709. Zurich: pro/colore.

Sandford, Jodi L. 2011c. The figure/ground conceptual and concrete spatial relation of a color metaphor. In Brdar, Mario & Omazic, Marija & Pavicic Takac, Visnja & Grade-

cak-Erdeljic, Tanja & Buljan, Gabrijela (eds.), *Space and time in language: language in space and time*, 69–78. Frankfurt: Peter Lang Verla.

Sandford, Jodi L. 2012. *Red clover: linguaggio e percezione dei colori: uno studio cognitivo applicato alla lingua inglese*. Rome: Aracne Editrice.

Sandford, Jodi L. 2017. "Active in sight, the eye sees the colour": A cognitive semantic analysis of SEEING in Robert Burton's anatomy of melancholy. In Volpone, Annalisa (ed.), *La felicità di essere tristi. Saggi sulla malinconia*, 197–220. Passignano s.T.: Acquaplano.

Strik-Lievers, Francesca. 2015. Synaesthesia. A corpus-based study of cross-modal directionality. *Functions of Language* 22(1). 69–95.

Strik-Lievers, Francesca. 2018. Synaesthesia and other figures. What the senses tell us about figurative language. In Baicchi, Annalisa & Digonnet, Rémi & Sandford, Jodi L. (eds.), *Sensory perceptions in language, embodiment and epistemology,* 193–207. Berlin: Springer. http://dx.doi.org/10.1007/978-3-319-91277-6_11

The Oxford English Dictionary, OED Online. 2016. Oxford: Oxford University Press. (http://www.oed.com/).

Ullmann, Stephen. 1957. *The principles of semantics*. 2nd edn. Oxford: Blackwell.

Viberg, Åke. 1984. The verbs of perception: a typological study. *Linguistics* 21(1). 123–162. http://dx.doi.org/10.1515/ling.1983.21.1.123

Williams, Joseph M. 1976. Synaesthetic adjectives: a possible law of semantic change. *Language* 52. 461–478. http://dx.doi.org/10.2307/412571

Winter, Bodo. 2016. Taste and smell words form an affectively loaded part of the English lexicon. *Language, Cognition, and Neuroscience* 31(8). 975–988. https://doi.org/10.1080/23273798.2016.1193619

Winter, Bodo & Perlman, Marcus & Majid, Asifa. 2018. Vision dominates in perceptual language: English sensory vocabulary is optimized for usage. *Cognition* 179. 213–220. http://dx.doi.org/10.1016/j.cognition.2018.05.008

Author's address:

Dipartimento di Lettere - Lingue, letterature e civiltà antiche e moderne
Università degli Studi di Perugia
Via degli Offici 14
06123 Perugia, Italia
E-mail: jodi.sandford@unipg.it

VID I OKUS:
KORPUSNA ANALIZA ENGLESKIH KONSTRUKCIJA TIPA PRIDJEV – IMENICA

Otjelovljenost je središnji pojam u okviru kognitivnolingvističke paradigme. Utemeljenost jezika u tjelesnom iskustvu jedna je od glavnih postavki u opisu jezika na različitim razinama. Putem tjelesnih osjeta primamo, a potom obrađujemo i konceptualiziramo, informacije o svijetu. Istraživanja osjetilnih domena kontinuirano potiču daljnje studije o tome kako se koristimo metaforičkom i metonimijskom višeosjetilnom konceptualizacijom u jeziku. Istražuju se pojedinačne osjetilne domene dodira, okusa, mirisa, sluha i vida, ali i višeosjetilnost, odnosno sinestetske pojave. Jezični prijenos između različitih osjeta, čini se, ravna se prema hijerarhiji koja ide od nižih (dodir, okus, miris) prema višim osjetima (sluh i vid), iako su zapažena neka odstupanja. Ova je studija prvi dio dvodijelne analize jezičnih preslikavanja koja uključuju modalitete okusa i vida. Cilj je utvrditi koje se kolokacije uspostavljaju među dvama domenama, ravnaju li se one prema spomenutoj hijerahiji, koliko su česte te koliko su jake. Rezultati analize korpusa konstrukcija tipa pridjev + imenica podudaraju se s nalazima iz literature: osjetilna domena koja funkcionira kao izvorna domena interpretira se kao pridjev koji modificira drugu osjetilnu domenu koja se leksikalizira kao imenica. Ovo se istraživanje usredotočuje na parove pronađene korpusnom analizom pridjeva koji označavaju okus kao modifikatora imenica koje označavaju vidne podražaje, npr. *delicious colours* (‘ukusne boje’). Jezični podatci crpljeni su iz korpusa koji omogućuju usporedbu aktualne porabe i definiciju tih konstrukcija (*Corpus of Contemporary American English* (COCA) te *Mapping Metaphor with the Historical Thesaurus of English*). Eksperimentalna metodologija, tj. uočavanje čestotnosti i relevantnosti, u skladu je s uporabnim modelom kognitivne lingvistike.

Key words: višeosjetilnost; vid/boja; okus; osjet; korpusno utemeljene konstrukcije; kolokati.