A cognitive analysis
of three English fragmentation verbs*

Análisis cognitivo de tres verbos ingleses de fragmentación

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ABSTRACT

This paper provides a detailed analysis of three closely related fragmentation verbs in English (*dissipate, disintegrate,* and *dissolve*) from the perspective of Cognitive Semantics. Special emphasis is placed on the conceptual modelling structures, above all metaphoric and metonymic mappings, which underlie the polysemy of these verbs. The three verbs under study share a common image-schematic basis, linked to the physical notion of fragmentation, and a basic pattern of metaphorical extension. However, it is argued that the different lower-level scenarios typically associated with each verb seem to motivate the existence of partly divergent metaphoric and metonymic routes. Finally, the results of the analysis are explored theoretically and connected with current research on the partial nature of metaphoric mappings as well as on the metaphor-based conceptualization of existence at a generic level.

KEY WORDS

Fragmentation verbs. Cognitive semantics. Image schemas. Polysemy. Metaphor. Metonymy.

RESUMEN

Este artículo recoge un análisis detallado de tres verbos de fragmentación en inglés (*dissipate, disintegrate* y *dissolve*) realizado desde el punto de vista de la Semántica Cognitiva. Se hace especial hincapié en las estructuras conceptuales (sobre todo proyecciones metafóricas y metonímicas) que subyacen a la polisemia de estos verbos. Los tres verbos estudiados presentan una base imagístico-esquemática común, que viene asociada a la noción física de fragmentación, así como un mismo patrón básico de extensión metafórica. Sin embargo, se argumenta aquí que los diferentes escenarios asociados con cada verbo en un nivel inferior de genericidad conceptual pueden motivar la existencia de rutas metafóricas y metonímicas parcialmente divergentes. Finalmente, los resultados del análisis se exploran teóricamente y se relacionan con la investigación actual sobre la naturaleza parcial de las proyecciones metafóricas y sobre la conceptualización metafórica de la existencia en un nivel genérico.

PALABRAS CLAVE

Verbos de fragmentación. Semántica cognitiva. Esquemas imagísticos. Polisemia. Metáfora. Metonimia.

1. Introduction

The theory of conceptual metaphor, as developed by Lakoff, Johnson, and other scholars in the Cognitive Linguistics tradition, offers valuable insights for the theoretical discussion of meaning extensions in language (Lakoff 1993). From this perspective, I attempt to provide in this paper a detailed analysis of three English verbs (*dissipate, disintegrate*, and *dissolve*) which can be regarded as lexical instantiations of the physical notion of fragmentation. The primary aim of the paper is to identify the conceptual modelling structures which underlie and connect the different senses of these verbs. In this connection, it may be argued that the shared image-schematic basis (cf. section 5) and the existence of well-entrenched metaphoric mappings onto more abstract domains are two crucial factors in accounting for certain similarities in the semantic behaviour of the three verbs under scrutiny. Motivation in conceptual structure is also brought to bear in order to deal with the partly divergent metaphoric and metonymic routes followed by each of the verbs. Some theoretical implications are explored, especially as regards the partial nature of metaphoric mappings (i.e. how certain source-domain elements are brought into focus to the detriment of others when projected onto a specific target domain); the notions of *primary metaphor* (Grady 1997) and *main meaning focus* (Kövecses 2000, 2002) will be particularly relevant in this respect (cf. section 5). Furthermore, it is interesting to observe how such partial mappings may be related to the various high-level metaphors which allow us to conceptualize the domain of existence in English (e.g. EXISTENCE IS PERCEPTION, EXISTENCE IS FUNCTIONALITY) (Santibáñez 2001). The analysis is extensively illustrated by means of corpus evidence[1].

2. Conceptual metaphor and metonymy

It is a central claim of Cognitive Linguistics that metaphor and metonymy, which have traditionally been regarded as nonessential rhetorical devices, constitute fundamental conceptual mechanisms in language and thought. Metaphor is defined within the cognitive framework as a partial mapping (i.e. a set of correspondences) between two domains, a source domain and a target domain, in such a way that we can reason and speak about the target domain in terms of the knowledge and language associated with the source domain. Metonymic mappings, however, are internal to a given domain and are primarily (but not exclusively) used for referential purposes (cf. Ruiz de Mendoza 2000).

Conceptual metaphor involves one or more conventionalized correspondences across conceptual domains (see e.g. Lakoff and Johnson 1980, 1999; Lakoff 1987, 1993; Johnson 1987). Linguistic expressions may be regarded as metaphorical inasmuch as they are sanctioned by cross-domain mappings, which typically operate on human conceptual systems in a chiefly unconscious, automatic way. For instance, the well-known metaphor THEORIES

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[1] All examples are taken from the British National Corpus.

(and ARGUMENTS) ARE BUILDINGS must be conjured up in order to make sense of everyday expressions such as *The theory needs more support, The argument is shaky, We will show that theory to be without foundation*, and *So far we have put together only the framework of the theory* (Lakoff and Johnson 1980: 46). These and other related expressions reflect our capacity to reason about theories and arguments in terms of our experiential knowledge of buildings as structured wholes. Similarly, we often conceptualize love and love relationships in terms of a journey along a path, from a source to a destination (Lakoff 1993: 206-209): *Look how far we've come, We can't turn back now, The relationship isn't going anywhere, We're spinning our wheels*. By means of the LOVE-AS-JOURNEY metaphor, we map travellers onto lovers, the vehicle onto the love relationship, the travellers' common destination onto the lovers' common goals, and impediments to travel onto difficulties in the relationship. Inferential patterns related to journeys are also superimposed on the love scenario. Thus, if we are travellers on a journey and our vehicle breaks down or gets stuck, we can fix the vehicle or get it past any impediments; or we can remain in the vehicle and desist from trying to reach our destination, or simply abandon the vehicle. By invoking the appropriate epistemic correspondence, it is possible to reason in a similar way about difficulties in a love relationship: we can get the relationship moving again by fixing it or getting it past the difficulty; we can remain in the relationship and desist from trying to achieve our common life goals, or we can abandon the relationship. It should be noted that the structural similarities between the domains of love and journey do not correspond to preexisting features shared by both concepts or to similarities in the external world, but they are rather a result of the metaphoric mapping itself.

Conceptual metaphor usually enables us to understand concepts which are abstract or somehow elusive in terms of other more concrete concepts (or at least more clearly delineated constructs characterized by a higher degree of internal structure). Furthermore, metaphor is often employed in order to bring to the fore certain aspects of the target domain to the detriment of other elements, including inferential patterns, which may generate undesired cross-domain inconsistencies and are thus systematically left out. Consider, for instance, the well-known CONDUIT metaphor (Reddy 1979; Lakoff and Johnson 1980), which plays a crucial role in objectivist theories of linguistic communication and emerges in a variety of everyday language-related expressions: *It's hard to get that idea across to him, Your reasons came through to us, Try to pack more thought into fewer words, His words carry little meaning*. In virtue of this metaphor, objects map onto ideas (or meaning), linguistic expressions are understood as containers for ideas, and communication is a matter of sending and receiving packages (the addresser puts ideas into a container which is sent to the addressee, who in turn takes the ideas out of the container). The mapping, however, obliterates important facets of the communication process, such as the relevance of context variables and the dynamic nature of meaning negotiation.

Metonymic models are also fundamental structures in human conceptual systems, although until very recently the interest in this subject on the part of cognitive linguists has

been rather subsidiary. As mentioned above, metonymic mappings are domain-internal. In this connection, Radden and Kövecses (1999: 21) define metonymy as "a cognitive process in which one conceptual entity, the vehicle, provides mental access to another conceptual entity, the target, within the same idealized cognitive model". A further characteristic of metonymy is that it is primarily used for reference, i.e. "via metonymy, one can refer to one entity in a schema by referring to another entity in the same schema" (Lakoff and Turner 1989: 103). It must be emphasized, however, that this aspect does not necessarily indicate that a specific expression instantiates a metonymy rather than a metaphor, since it is possible to use metonymy non-referentially (e.g. the predicative use in *John is a real brain*) and, conversely, metaphorical expressions can also perform a referential function (e.g. *The pig is waiting for his check*: Ruiz de Mendoza 1997: 164). Lakoff and Johnson (1980: 38-39) draw attention to a relatively small set of conventionalized metonymies in English, such as THE PART FOR THE WHOLE (*Get* your butt *over here!*), PRODUCER FOR PRODUCT (*He's got a* Picasso *in his den*), OBJECT USED FOR USER (*The* sax *has the flu today*), CONTROLLER FOR CONTROLLED (*Nixon bombed Hanoi*), INSTITUTION FOR PEOPLE RESPONSIBLE (*The Army wants to reinstitute the draft*), THE PLACE FOR THE INSTITUTION (*The White House isn't saying anything*), and THE PLACE FOR THE EVENT (*Pearl Harbor still has an effect on our foreign policy*).

Ruiz de Mendoza (1999, 2000) focusses on the functioning of domain-inclusion relations in order to contend that conceptually relevant metonymies basically fall into two all-encompassing categories: *source-in-target* and *target-in-source* metonymies (see also Ruiz de Mendoza and Pérez 2001; Ruiz de Mendoza and Díez 2002). Source-in-target metonymies, in which the source is a subdomain of the target (e.g. THE PART FOR THE WHOLE, OBJECT USED FOR USER), serve to expand the source domain. Figure 1 exemplifies the OBJECT USED FOR USER mapping in *The sax has the flu today*:
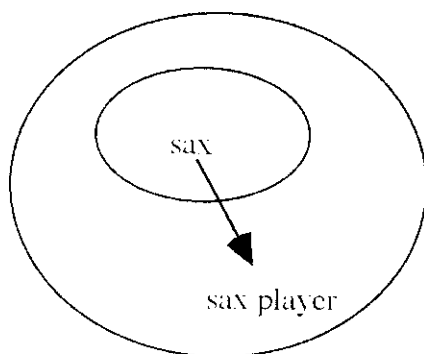

Figure 1.   Source-in-target metonymy

On the other hand, in target-in-source metonymies, where the inclusion direction is reversed (e.g. PRODUCER FOR PRODUCT, CONTROLLER FOR CONTROLLED), a noncentral subdomain of the source is highlighted. By way of illustration, consider Figure 2, which represents the metonymic mapping underlying the example *Nixon bombed Hanoi*:
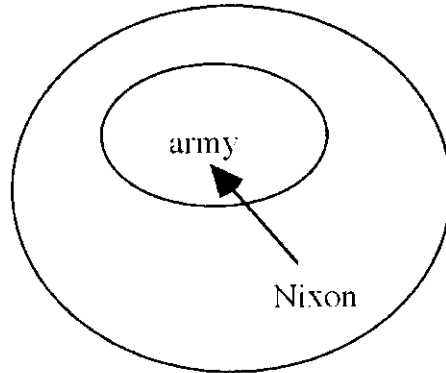

Figure 2.   Target-in-source metonymy

This unorthodox distinction differs from received accounts (both in traditional rhetoric and in cognitive linguistics) in that it leaves out metonymies of the PART-FOR-PART kind, which are purportedly based on mere contiguity relations between elements within an experiential domain (for detailed discussion of why these are left out of the picture, see Ruiz de Mendoza 2000). According to Ruiz de Mendoza and Díez (2002), the selection of a matrix domain (i.e. the domain against which another concept is profiled) is performed on the basis of the well-delineated nature of the domains involved as well as other basic principles of cognitive salience, like the ones postulated by Radden and Kövecses (1999). These authors look into the various competing principles of relative salience which impinge upon the selection of the preferred metonymic vehicle for a given target. They make a distinction between cognitive principles, which are based on different aspects of human conceptual activity, and principles of a pragmatic nature, such as the principle of clarity and the principle of relevance (Sperber and Wilson 1986). The cognitive principles discussed by Radden and Kövecses arise from human experience (e.g. concrete physical objects are more salient than abstract entities; functional parts take precedence over non-functional parts), perceptual selectivity (e.g. immediate stimuli, factual experiences, and clearly delineated wholes are typically more salient to us than non-immediate stimuli, potential experiences, and poor gestalts), and cultural preference (e.g. typical members of a category often stand for the category as a whole, and basic categories are preferred to non-basic categories; initial and final stages tend to be more salient than middle stages).

3. Common patterns of meaning extension

According to Levin (1993: 244-246), the verbs *to dissipate, to disintegrate,* and *to dissolve* can be classified on the basis of their shared meaning and behaviour as verbs of change of state (more specifically, externally caused changes of state). From a syntactic viewpoint, these verbs display a number of common characteristics. Thus, for example, they may participate in the causative/inchoative alternation (e.g. *They dissolved the pill in the water / The pill dissolved in the water*)[2]; instruments may appear as subjects (e.g. *The hammer disintegrated the glass*); and neither locative inversion nor *there*-insertion is allowed (e.g. **In the water is a pill dissolving, *In the water there is a pill dissolving*).

It should be noted, however, that the label *change of state* may be slightly confusing from the perspective of semantics, especially when opposed to other verb classes in Levin's inventory (e.g. verbs of existence and verbs of appearance). This is so because, for instance, it is possible to use the verbs under study to speak about both the disappearance and/or destruction of a given entity. As will become evident from the analysis, it is frequently very difficult to establish clear-cut differences between such closely related domains as existence, perception, movement, and change of state.

In Cognitive Linguistics special attention is paid to the conceptual motivation of linguistic usage. In this vein, it might prove interesting to find an alternative semantic criterion which accounts for why these three verbs may be grouped together on the basis of formal similarities. As will be seen below, this criterion is to be found in the power of conceptual metaphor to account for meaning extensions in a relatively principled way. Thus, the three verbs, when not used to denote physical fragmentation (their literal meaning), may variously express 'motion' (i.e. 'scattering'), 'disappearance', 'change of state', 'destruction of physical entities', and 'destruction of abstract entities' (or 'cessation of physical/abstract existence', to avoid the causative bias), often in combination:

1   MOTION ('scattering', 'dispersing', 'moving away from each other')
  a.   ...the heat rapidly *dissipates* to the atmosphere.
  b.   ...his body seemed to *disintegrate* and fly in all directions...
  c.   ...the deuterium was continuing to be *dissolved* into the palladium...

2.   DISAPPEARANCE
  a.   ...the smoke was beginning to *dissipate*.
  b.   The yellowing pages of the Penguin edition will be crumbling, the spine will have collapsed, the signatures will be *disintegrating*...
  c.   A violent headache can be safely *dissolved* within minutes...

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[2] Underlying the interpretation of *The pill dissolved in the water* is the idea that someone put it there so that it would dissolve. Thus, in this context the causative/inchoative alternation is arguably licensed by the generic ACTION-FOR-PROCESS metonymy. It is not clear, however, whether this metonymy-based explanation could be applied to all the occurrences of the three verbs under study; as will be seen from the examples below, in many cases the depicted scenarios do not necessarily call for the presence of an external agent or instigator of the fragmentation process.

3. CHANGE OF STATE ('becoming')
   a. ...they do not store the energy but *dissipate* it almost entirely as heat...
   b. ...a half-smoked, stubbed-out, hand-rolled cigarette, *disintegrating* into rags of paper and shreds of tobacco...
   c. ...the natural sugars in the malt *dissolve* into the liquor[3].

4. PHYSICAL DESTRUCTION
   a. ...to *dissipate* the smell from the corpses of three of the young men he murdered[4].
   b. ...the wreckage of a crashed aircraft greatly *disintegrated*...
   c. The buffer pill is then *dissolved* in the water...[5].

5. ABSTRACT DESTRUCTION
   a. ...the Conservatives' prewar fears had been *dissipated*[6].
   b. ...she felt her whole universe was on the point of *disintegrating*.
   c. ...the National Assembly and all political institutions were *dissolved*.

It may be argued that the first two meanings ('motion' and 'disappearance') are really subcomponents of a prototypical *fragmentation scene*: the particles making up a given entity (an object or substance) move away from each other to such an extent that the entity is no longer perceived as a coherent whole[7]. This fragmentation scene is fairly schematic and seems to be recurrent in everyday human language and cognition, so it easily lends itself to being described in image-schematic terms (cf. Santibáñez 2002).

Image-schemas may be roughly defined as preconceptual abstractions over recurrent experiences, typically of a spatial nature. Among the best-known examples of image-schema are the notions of CONTAINER, PATH, and PART-WHOLE, as well as those that have to do with spatial orientation (UP-DOWN, FRONT-BACK, LEFT-RIGHT). Each image-schema is characterized by a number of structural elements as well as an associated internal logic (Johnson 1987; Lakoff 1987, 1989; for some theoretical implications concerning the verbs under study, see section 5). From the examples above, it is possible to see that the basic

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[3] This example is fairly similar to (1c), which I have used to exemplify the 'motion' meaning of the verb *to dissolve*. It depends on how we choose to construe the scene whether the malt sugars are felt to change their ontological status when they dissolve into the liquor. The example is more doubtful than (3a) and (3b), since *the liquor* is a pre-existing substance while both *heat* and *rags of paper* result from the fragmentation process itself.

[4] It is also possible to understand smell dissipation in terms of 'disappearance' (i.e. 'lack of perceptual availability through the senses').

[5] It might be argued that the buffer pill continues to exist although in a dissolved state. In my opinion, however, it is more appropriate to label the example as an instantiation of the 'physical destruction' meaning: once dissolved in water, it is the components of the pill that continue to exist rather than the pill itself.

[6] The analysis of this example may also pose some problems, since it is possible to understand fear dissipation in terms of 'disappearance' (i.e. fears dissipate when they are no longer perceived by the experiencing subject). However, I prefer to include the example under the 'abstract destruction' heading in the light of pervasive evidence for the metaphoric conceptualization of emotions in English (cf. Peña 2003).

structural elements of the FRAGMENTATION image-schema are at least the following: the entity or substance losing its integrity; the act of breaking-up itself; the outcome of fragmentation, typically in the shape of small and relatively numerous pieces/parts; and some kind of force (either internal or external to the affected entity) responsible for the breaking-up. This basic image-schematic scenario may be enriched and parametrized at various levels of genericity in different ways; for instance, the causal aspect may be further characterized as an external agent violently acting upon the affected entity with an instrument (e.g. a person using a hammer to hit a window pane). The FRAGMENTATION schema also possesses a structural logic of its own which allows us to derive meaningful implications. For example, everyday interaction with entities in the world tells us that the force applied on the affected entity must be strong enough to break it into pieces, and that it is typically the case that the stronger the force, (i) the greater the fragmentation, i.e. the larger the number of resulting pieces, and (ii) the greater the scattering of such pieces.

The relationship between the three verbs under study and the conceptual structure supplied by the FRAGMENTATION image-schema may be further explored. Thus, two main states of affairs (or subscenes) may result from fragmentation: either the affected entity loses its original identity to become something else (meaning 3) or it is just destroyed without it becoming any other kind of perceivable whole (meaning 4). Note that, in any case, the notion of physical destruction is conceptually dependent for its understanding on spatial and perceptual meaning elements. In fact, the senses (or meanings) listed here bring to the fore various facets of the fragmentation scenario: the 'motion' and 'disappearance' readings focus on two different stages in the fragmentation process, whereas the 'change of state' and 'physical destruction' interpretations profile two alternative results of that process[8]. The role played by functionality —there are usually functional links between a whole and its parts, which are no longer operative when integrity is lost— is also important, as will be shown below.

The embodied concept of physical fragmentation, which is instantiated by the verbs under study, may be metaphorically mapped onto the realm of abstract entities (in the examples in 5, *prewar fear, her whole universe, political institutions*). Upon analyzing the conceptual metaphors (or root analogies, in his terminology) structuring the English lexicon, Goatly (1997: 46-47) draws attention to the reification of abstractions as a central metaphorical pattern. The verbs *to dissipate, to disintegrate*, and *to dissolve* are listed by this author among the lexical items which apply in a general way (i.e. they can be used with a wide range of abstract entities) when it comes to speaking about concrete and integrated wholes being subject to penetration, destruction,

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[7] In this sense, note the motion component inherent in the etymological Latin meaning of *to dissipate*: 'to scatter, to throw apart'. A look at diachronic evidence for the two other verbs reveals as well a physical —though slightly different— origin: *to dissolve* is traced back to Lat. *dissolvere* 'to loosen asunder, to disunite', whereas *to disintegrate* etymologically revolves around the notion of Lat. *integer* 'whole, untouched'.

[8] It is largely a matter of construal whether the 'disappearance' meaning is also understood to profile a result of the fragmentation process.

and disintegration. Although Goatly's remarks on general applicability are basically correct, in the following section I will discuss in some detail the revealing connections between slight differences in physical meaning and differences in metaphorical meaning, especially as regards the tendency of each of the verbs to co-occur with certain kinds of abstract entities when used metaphorically.

To sum up, the core meaning extension connections between the different senses of these verbs may be diagrammed as follows:
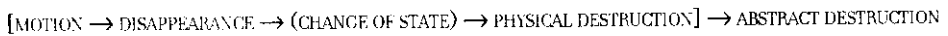
[MOTION → DISAPPEARANCE → (CHANGE OF STATE) → PHYSICAL DESTRUCTION] → ABSTRACT DESTRUCTION

Figure 3.   Common pattern of meaning extension

The figure should be interpreted in the light of the foregoing discussion. Thus, the first four senses are enclosed in square brackets because they relate to different facets (or subscenes) of the image-schematic fragmentation scenario; the 'abstract destruction' sense, in turn, emerges as a consequence of a metaphoric mapping of this material onto other less directly apprehended domains. The arrows are intended to capture the motivated nature of the links between the different senses. Finally, the 'change of state' sense appears in parentheses because it constitutes a state of affairs alternative to the 'physical destruction' scenario (i.e. the entity undergoing fragmentation loses its original ontological status and becomes something else).

4. Verb-specific meanings

In the preceding section I have outlined the common meaning components of the three fragmentation verbs under review. However, not all the aspects of a fragmentation scene seem to be equally highlighted for each verb. In what follows emphasis is placed on the peculiarities of the physical scenarios prototypically associated with each verb and, particularly, on how these subtle differences affect verb-specific meanings of a metaphoric or metonymic nature.

In some fragmentation verbs the perception element is more central than in others, although it may be argued that it is tacitly present in the three cases. Thus, if we say that something *disintegrates*, it follows that it is no longer possible to perceive it as a whole, but it may be possible to perceive the different parts or pieces into which the disintegrated entity has been separated; it may also be possible to make conjectures as to the nature of the original entitiy. The idea of fragmentation may be underlined by specifying the number of resulting pieces. Consider the following example, which exploits that particular aspect of the internal logic of the FRAGMENTATION image-schema (i.e. the greater the fragmentation, the larger the number of resulting pieces):

6. It careered down the track for 500 yards before somersaulting three or four times and crashing broadside into a clump of tree before *disintegrating* 'into 100 pieces', as a trackside official described it⁹.

However, the cases of *to dissipate* and *to dissolve* are rather different. This is especially so because these verbs typically imply that the resulting pieces are not observable or are very difficult to identify because they have been mixed with other substances (in the case of *to dissolve*, in a liquid). As far as the verb *to dissipate* is concerned, what is often mapped is the perceptual meaning component, that is, the fact that the affected substance vanishes from sight. The most obvious physical instantiations of this concept have to do with such gaseous or gas-like entities as fog or smoke. When the fog disappears, sunlight makes places and objects perceptible again:

7. Then, the mist *dissipates* to allow them to see what is below.

Thus, the scattering aspect often gets metaphorized together with the associated knowledge that once a given element has scattered completely and vanished, it is possible to see what was behind¹⁰. The following corpus examples illustrate how once an abstract entity has vanished, a hidden element is disclosed or a given problem or situation can be assessed in a new light:

8.
a.   Any lingering doubts about the closeness of that alliance were *dissipated* when Chancellor Helmut Kohl gave his ringing support for President François Mitterrand's call for a special inter governmental conference next December...
b.   The excitement of the adventure started to *dissipate* and I was left with the cold reality of knowing that I was on a train with hardly any money, no ticket and nowhere to go¹¹.
c.   Once the new analogy is recognized, it can be compared with the old and shown to be more adequate, in that it *dissipates* previously insoluble problems.

It can be observed that the dissipating screen-like entity may be characterized axiologically in different ways. The perceptual barrier may be negative (e.g. *doubts, problems*), so removing it is felt as something good, or the other way round, if the barrier is positive (e.g. *excitement*), its disappearance is seen as something undesirable. In any case, the fact of enhancing perception and awareness is potentially positive.

⁹ Note the approximative nature of the phrase *into 100 pieces* (or *into a hundred pieces*), which has become conventionalized in English with the meaning 'in lots of pieces'; this is also the case with other related phrases, such as *into a thousand pieces* and *into a million pieces*. Other options including numerals (e.g. *in fifty pieces, in two million pieces*) may occur but are less conventionalized. As is natural, small quantities typically clash with the notion of 'disintegration' (e.g. ??*The vase disintegrated into five pieces* vs. *The vase broke into five pieces*).

¹⁰ It may be argued that this is also part of the internal logic of the FRAGMENTATION image schema.

¹¹ In this example, the ingressive aspect marks that the 'disappearance' process takes place gradually, which allows us to differentiate various stages within it.

The verb *to dissolve* also gives rise to certain semantic connotations, when used in metaphorical expressions, which may be linked to the perceptual facet of its physical meaning. As is well known, this verb typically involves an object or substance being put into a liquid until its particles get scattered, mix with the liquid and finally form part of it. As a result of the dissolution, the original entity is no longer perceptible as such (i.e. as an independent entity). This perception component gets mapped onto more abstract domains in order to speak and reason about entities metaphorically vanishing or disappearing from existence. The process is usually presented as extending over time rather than as an abrupt change, as corresponds with the gradual nature of the physical correlate (in this sense, note the collocation with *gradual* in 9b):

9.
a.   ...the *dissolution* of truth does not mean that no statements are true but only that there is no stable, unchanging absolute truth...
b.   ...the consequent and gradual *dissolution* of catholic nationalism.

However, in the case of the verb *to dissolve* there are also other elements which may be highlighted when a dissolution scenario is metaphorically projected. Thus, when an entity or substance dissolves into a liquid, we can see how the liquid gradually weakens the links between the particles which make up the affected whole and, as a result, they gradually separate from each other. Once dissolution is completed, there is typically no trace of the dissolving entity or substance. These meanings of 'complete loss of part-whole configuration' and 'destruction of binding force' are often metaphorized when dealing with groups or complex entities (e.g. organizations, marriages, etc.) which are broken up or terminated, often in a formal or official way:

10.
a.   The bankruptcy of William Sinclair's business around 1870 and his death in 1881 *dissolved* the family unit.
b.   The Socialist League was thus *dissolved* in May 1937.
c.   ...wartime associations were almost inevitably doomed to *dissolution*.
d.   The former political coalition which directed support towards the skilled working class in the private sector had begun to *dissolve*.
e.   The law, rather, reflects social changes in that it permits marriages that have in practice effectively ended to be legally *dissolved*.
f.   ...the Parliament was *dissolved* by military force...
g.   ...the confiscated property of *dissolved* monasteries.

A related metaphorical use of the verb *to dissolve* involves the elimination of barriers or boundaries, although in such cases special emphasis seems to be placed as well on the 'gradual change' facet of the physical correlate:

11.
a. The rise of the video-clip meant not some startling *dissolution* of media boundaries, but, rather, the incorporation of pop into the aesthetics of advertising.
b. His being, his desire, is stretched and broken over sexual/racial divides. So Prince's impulse is always to *dissolve* differences and borders.

Apart from the 'perception' element, the 'motion' element is also highlighted in some metaphorical occurrences of the verb *to dissipate*. In its physical dimension, this verb typically involves a scenario in which the particles making up a given entity separate and go away in all directions. The 'scattering' meaning ingredient figures prominently in the following examples:

12.
a. Finally, poor release *dissipates* clubhead speed because the downswing sequence is not correctly completed, resulting in short tee shots with the wooden clubs.
b. ...their energies were *dissipated* in a multitude of tiring undertakings.
c. Very quickly the greatest fortune tended to be *dissipated* among innumerable descendants.
d. The French peasantry's revolutionary energies were soon *dissipated* and channelled into supporting Napoleon Bonaparte's military regime...

In (12a-c) speed, energies, and money are spread around rather than preserved or concentrated. In (12d), on the other hand, the dispersed energies are gathered together again so that they can be used for a specific purpose. As can be observed from the examples, dissipation tends to be assessed negatively in axiological terms, since it is implied that what is scattered is lost and can no longer be used for a worthwhile purpose. Thus, it is only natural that this physical meaning may get metaphorically mapped in order to mean that valuable resources (money, time, effort, energy, etc.) are wasted gradually:

13.
a. As penniless brokers they often had to *dissipate* energy on make-do and mend activities.
b. ...the criminal way in which Gervaise's wife and her brother had *dissipated* the boy's fortune...
c. ...ensure that whatever resources were made available, they were not *dissipated*, but concentrated in special units.
d. He achieved little in his work and *dissipated* much of his time in an uncongenial student fraternity.

Further evidence of the negative axiological load of this sense can be found in the technical term *dissipation*, which is defined by the *Chambers Science and Technology Dictionary* as 'loss or diminution, usually undesirable, of power, the lost power being converted into heat' (see

example 3a above). This 'wasting' sense of the verb *to dissolve* may also be applied to states of affairs in which one fails to profit from an advantageous situation:

14. Firms can easily *dissipate* their first-mover advantages, as Henry Ford did after the first world war by sacking many of his best senior managers.

The derogatory nature is particularly evident in the case of the adjectives *dissipated* and *dissolute* (derived from the verb *to dissolve*), which are often used to speak about people who spend too much time and effort on harmful or vicious pleasures (rather than on more fruitful activities):

15.
a. ...Sulivan described himself as having once been 'wild, *dissipated* and favorite with both sexes'.
b. Julian Sands plays a *dissipated* Swiss...
c. Zacharias was a minor painter when he wasn't living off his mistresses, and reputedly a *dissolute*.

These examples may be partly accounted for in terms of the SCATTERED-SELF metaphor, as posited by Lakoff (1996: 111-112). This metaphoric model is based on the experiential knowledge that it is difficult to function properly (and to exert normal self-control) when one is forced to respond to a variety of divergent needs or responsibilities at the same time. In metaphorical terms, «when different aspects of the Self are attending to different concerns, the Self is split into parts that are at different places» (Lakoff 1996: 112). What is mapped here is the source-domain knowledge that an entity can only function properly when its parts are together; this metaphoric mapping enables us to derive the target-domain entailment that the Self can only function properly when the different aspects of the Self remain together[12].

Furthermore, it may be argued that the examples in (15) constitute instantiations of a metonymic mapping, since it is time, effort, or health (or even the moral Self), rather than the individual, that becomes dissipated. The metonymic mapping would be one of the target-in-source kind, i.e. a metonymic mapping where the target is a subdomain of the source. More specifically, by virtue of this metonymy a generic action domain is mapped onto one of its subdomains (an entity involved in the action) in order to highlight it.

As a consequence of the metonymic mapping, it is possible to use the deverbal adjective in order to designate an attribute of the entity involved in the action. More specifically, what seems to be highlighted is the fact that taking part in the action (i.e. dissipating valuable resources) has brought about some significant change in the entity. This kind of conceptual

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[12] Lakoff (1996: 112) provides the following expressions as linguistic instantiations of the SCATTERED-SELF metaphor: *He's pretty scattered. Pull yourself together. He's real together. He's all over the place. He hasn't got it together yet. He's not focused.*
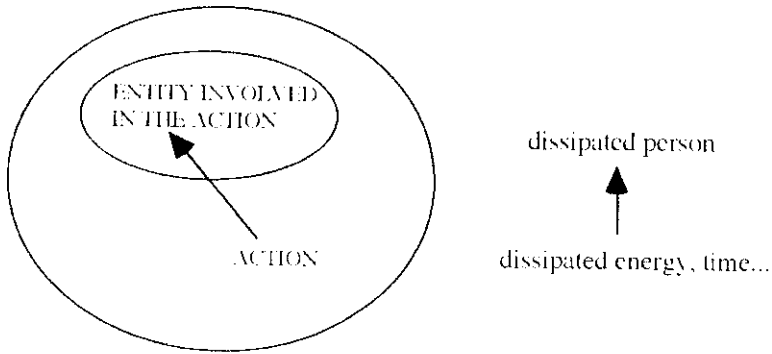
Figure 4.   ACTION-FOR-ENTITY INVOLVED IN THE ACTION metonymy
(a dissipated Swiss, a dissolute)

mapping also underlies the metonymic behaviour of other related deverbal adjectives in English. For instance, we say that someone is *drunk* when he/she has drunk too much alcohol and is therefore unable to behave properly. It is fairly evident that what is literally consumed is alcoholic drink rather than the person who drinks, but the latter undergoes some noticeable changes as a result of drinking.

Other metonymic connections are also possible. Consider the following expressions:

16.
a.   ...the feeble excuse for his *dissipated* behaviour...
b.   Pythagoras, however, left Samos and went to Kroton, in order — at least, so his biographers said — to escape from the *dissolute* court of Polykrates.

Example (16a) may also be accounted for in terms of a similar target-in-source metonymy. In this case, the action domain gets mapped onto the result subdomain (dissipated behaviour may be conceived of as the result of dissipating energy, time, etc.):
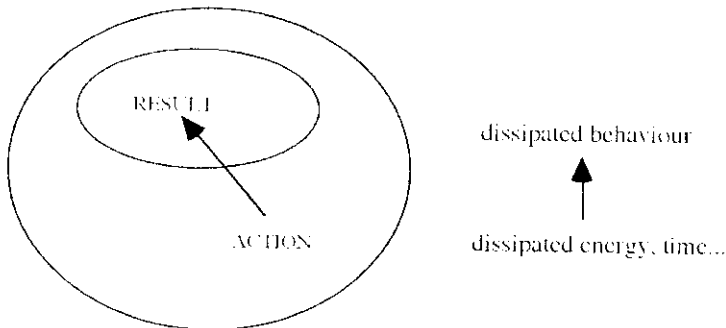

Figure 5.   ACTION-FOR-RESULT metonymy *(his dissipated behaviour)*

In (16b) the adjective *dissolute* is applied to a place (*the court of Polykrates*). The conceptual rationale for this example is slightly more complex than the previous ones, since it involves the coactivation of two independent metonymies. On the one hand, we have a metonymic mapping like the one represented in Figure 4 (ACTION-FOR-ENTITY INVOLVED IN THE ACTION), which accounts for the metonymic use of the adjective. On the other hand, a PLACE-FOR-PEOPLE metonymy allows us to refer to a group of people (i.e. the people in the court) in terms of the place or institution where they are located (i.e. the court). By combining the two metonymic mappings, a property of a place or institution is naturally made to stand for a property of the people in that place or institution:
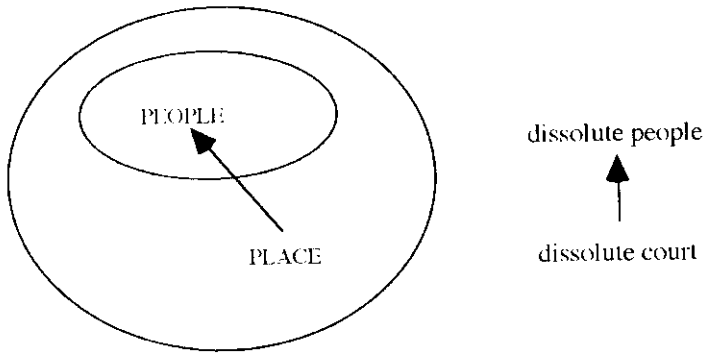

Figure 6.   PLACE-FOR-PEOPLE metonymy (*the dissolute court*)[13]

The semantic characteristics of the verb *to disintegrate* are slightly different. Rather than on motion or perception, this verb tends to focus strictly on loss of integrity, that is, the fact that there is no longer a coherent whole once fragmentation has taken place. There are objects (e.g. buildings, machines, fabrics, etc.) where the whole may be easily perceived as a configuration of parts; in these cases, the loss of part-whole structure is typically the central meaning aspect that gets mapped from the realm of the physical to more abstract domains (e.g. to speak and think about relationships, structures, systems, etc.). Moreover, the part-whole structure is often related to the function of each part within the configuration; once the original set-up is disintegrated, the functional characteristics of the affected entity are also lost:

17.
a. According to Buddhists the constituents of being are the five Khandas — form or body, feeling, perception, mental activity and consciousness. When these five aggregates are in

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[13] The fact that the deverbal adjective *dissolute* typically fails to collocate with *time, energy* or *money* (or, in general, any noun designating some kind of valuable entity) shows that it has become functionally specialized for metonymic instantiations of the concept.

combination, there is life, a being is in existence, though the aggregates themselves are always changing. When they *disintegrate* death takes place.

b. Even the nuclear family is in the process of *disintegrating*.

c. Societies *disintegrate* from within more frequently than they are broken up by external pressures.

d. ...from then on the marriage appears to have *disintegrated*.

e. This magnificent vision of church and society united as an organic whole was, however, doomed to *disintegrate*.

f. The social fabric is *disintegrating*...

g. The *disintegration* of any relationship is painful.

However, the verb may also occur in metaphorical expressions where part-whole structure and functionality are not necessarily highlighted. This usage also has easily identifiable correlates in physical experience, such as rocks or glass being reduced to particulate matter. In this respect, note how in (18c) the metaphorical source (*shattered glass*) is explicitly mentioned:

18.

a. 'I'm quite sure you already know!' she snapped shortly, her control *disintegrating* with a surge of anger.

b. You do not mind your reputation *disintegrating* along with the rest of the Company?

c. Isabel felt her defiant bravado *disintegrate* like shattered glass.

The verb *to disintegrate* is also employed, both literally and metaphorically, in examples involving change of state. A disintegrating entity may break up into component parts (19a) or be reduced to fragments (*a bubbling mass* in 19b), although the second scenario seems to come closer to the prototypical understanding of disintegration. Examples (19c-e) instantiate metaphorical mappings of this physical notion:

19.

a. Once inside an animal, cell viruses usually *disintegrate* into separated protein molecules and genetic material (C).

b. His limbs began to *disintegrate* into a bubbling mass of fat, water and blood.

c. Somalia is *disintegrating* into anarchy.

d. ...he can't continue claiming innocence if it leads to the heavyweight division again *disintegrating* into chaos.

e. The vistas of fir forests, islands and lakes *disintegrated* into an outer London suburb and a mundane wife called Letitia.

In (19c-d) the metaphorical concept of 'social disintegration' is reinforced by the use of the nouns *anarchy* and *chaos* to characterize the resulting states. Example (19e) further shows the

negative value judgements typically associated with this notion. Change of state, however, is more frequently highlighted in the case of *to dissolve*, which is consonant with the prototypical scenario conjured up by the verb. Moreover, emphasis is typically placed on the fact that the change is gradual. There is also a tendency towards negative axiology (examples 20b-e), although that kind of interpretation is not always required. For instance, in (20a) the verb *to dissolve* is used in a technical sense to the gradual transition from one shot to another in a film (the first shot fades away as is replaced by the second). In (20f-g) no negative connotations can be appreciated either:

20.
  a. Because it was implied that these girls had been sexually available to a wide number of men, the hero couldn't live with them after the fade-out. They were regarded as tainted. Typically, they would be shot in the back, throwing themselves in front of the hero, and get to die pathetically in his arms. Then he *dissolved* into a happy ending with some drip like Anne Shirley.'
  b. The old clear-cut certainties *dissolved* into an indeterminate haze.
  c. ...the game *dissolved* into massive complications.
  d. ...her will-power *dissolved* into helplessness...
  e. ...as the pain and bewilderment slowly *dissolved* into murderous fury.
  f. What began for us as the effort to capture a purely objective record of what we saw gradually *dissolved* into a quest, an odyssey of self-discovery...
  g. ...the existing mechanisms of formal and informal imperial control would *dissolve* into bonds of friendship between equal trading partners.

A special case involves expressions about people *dissolving into* laughter or tears. The main meaning implication in examples like (21a-b) is the loss of control on the part of the subject, which may be metaphorically associated with the physical experience of particles scattering away, once their binding connections have been broken, and becoming part of another entity:

21.
  a. To her bewilderment they both *dissolved* into giggles.
  b. She suddenly *dissolved* into floods of tears.

In this section we have seen how basic facets of physical meaning also have correlates in the interpretation of the metaphorical uses of the verbs under study. It can be argued that, at least to a certain extent, they conceptually motivate some of the senses of these verbs typically listed in dictionaries. A word of caution may be necessary here. It should be taken into account that metaphoric mechanisms like the ones analyzed in this paper help us to understand more deeply how the different senses of a lexical item may be plausibly connected in human conceptual systems; however, they are not predictive in the sense that they constitute just one

of the possible ways in which the polysemy networks of the verb under study could have been organized.

5. Some theoretical implications

Once a rationale has been provided for the main metaphorical uses of the three verbs under study, in this section I attempt to explore its implications for the theory of conceptual metaphor. I am particularly interested in the fact that, in each case, there are certain aspects of the prototypical scenario evoked by the verb which are typically mapped onto target domains of an abstract nature. Some ideas have already been anticipated in the discussion of corpus examples, although here they are further clarified and placed within the context of current research in Cognitive Linguistics; special attention is paid to the explanatory power of the notions of *image-schema*, *primary metaphor*, and *main meaning focus*. Finally, I briefly examine how the metaphoric behaviour of the three fragmentation verbs analyzed here may be related to alternative conceptualizations of the generic idea of existence in English.

As mentioned above, image-schemata (e.g. CONTAINER, PATH, PART-WHOLE) are skeletal gestalt patterns of a non-propositional nature which recur in our everyday bodily and social experience (Johnson 1987; Lakoff 1987, 1989). These meaningful models serve a central structuring function in human cognition, especially since they may manifest themselves metaphorically (e.g. states are often conceptualized in terms of location within a container). In section 3, I have argued that most of the expressions analyzed here conjure up, at least to a certain extent, the FRAGMENTATION image-schema; this schema is subsidiary to the PART-WHOLE schema, which in turn requires the image-schematic notion of OBJECT for its full development and understanding[4]. The FRAGMENTATION schema basically captures our embodied experience that, as a result of an object breaking, its pieces may lie scattered over an area (and that it is sometimes possible to reconstruct the whole by rearranging those pieces) (cf. Santibáñez 2002). The FRAGMENTATION schema figures prominently in metaphorical expressions with the verb *to disintegrate*, and it is assumed — albeit not focalized — in most of the other examples; however, it may also be regarded as the central meaning element that gets mapped in (10), where emphasis is placed on the destruction of the binding force that preserved the integrity of groups or complex entities. Moreover, the notion of part-whole configuration is typically associated with functionality. As empirically proved by Tversky and Hemenway (1984), parts constitute the primary way of relating structure to function, since parts are often identifiable segments with a specialized function within a given configuration.

The functional dimension of part-whole configurations also lies at the base of the primary metaphor ORGANIZATION (or ABSTRACT STRUCTURE) IS PHYSICAL STRUCTURE. Grady (1997) argues that it is possible to decompose conventionalized metaphoric patterns (e.g.

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[4] For an exhaustive treatment of image-schematic hierarchies, see Peña (2003).

THEORIES ARE BUILDINGS) into more basic mappings called *primary metaphors* (see also Lakoff and Johnson 1999). Primary metaphors are based on direct correlations between subjective and sensorimotor experience within recurring experiential scenarios (or *primary scenes*; see Grady and Johnson 2002). Besides ORGANIZATION IS PHYSICAL STRUCTURE, other primary metaphors also play a fundamental role in the interpretation of fragmentation verbs. Consider, for instance, the expressions with *to dissipate* in (8) about the metaphorical removal of perceptual barriers; these examples are ultimately based on the well-known KNOWING-AS-SEEING metaphor, which is conceptually grounded in the correlation between the subjective experience of cognition and the sensory experience of visual perception. In other cases, the highlighting of the 'motion' ingredient may refer us to the conceptualization of change in terms of motion, which is as well a metaphoric primitive (on the pervasive presence of the EVENT-STRUCTURE metaphor in human language and thought, see Lakoff 1993).

According to Kövecses (2000, 2002), the *main meaning focus* of a source domain is the particular conceptual material that is most commonly carried over to target domains. What Kövecses calls *central mappings* are mappings in which the main meaning focus of the source is projected onto the target. This notion is in many ways similar to that of primary metaphor (for instance, intensity is the main meaning focus of fire when it functions as the source domain of a metaphor). As is fairly evident from the discussion of corpus examples in the preceding section, different meaning foci are typically associated with each of the verbs when engaged in metaphoric activity: the verb *to disintegrate* tends to focus on fragmentation and functionality (and secondarily on motion), whereas *to dissipate* and *to dissolve* primarily highlight the perception meaning (even the main meaning focus is shifted to either fragmentation or motion in certain metaphorical examples).

Finally, it may be theoretically interesting to relate metaphorical activity concerning fragmentation verbs with the conceptualization of existence as a basic domain of human experience. It has been argued that existence is metaphorically structured in English in terms of at least four conventionalized mappings of a generic nature: EXISTENCE IS SPACE (e.g. *They come and go out of existence*), EXISTENCE IS PERCEPTION (e.g. *53,000 jobs in engineering will disappear next year*), EXISTENCE IS FUNCTIONALITY (e.g. *A defence counsel would tear his evidence to shreds on that fact alone*), and EXISTENCE IS POSSESSION (e.g. *He gave the field of Engineering its very existence*) (Santibáñez 2001). These high-level mappings are conceptually grounded in what Lindner (1981: 171) calls the *region of interactive focus*, i.e. "the realm of shared experience, existence, action, function, conscious interaction and awareness". In broad terms, when an entity accesses this subjective region it may become available to us in all those ways (i.e. we can interact with it or otherwise experience it). The verbs which have been analyzed in this paper are basically used to speak about fragmentation and destruction (of both physical and abstract entities), so they may qualify as existence verbs (in the sense that they are used to profile a specific area of that generic domain). Without going down to the specifics of the relationship between mappings at different levels of generalization, some very obvious facts

may be noted: expressions focussing on loss of integrity may be placed under the EXISTENCE-AS-FUNCTIONALITY heading by virtue of the intimate relationship between part-whole structure and functional characterization; metaphorical examples whose meaning focus is primarily perceptual constitute lower-level instantiations of the EXISTENCE-AS-PERCEPTION mapping; and the focus on motion refers us to the conceptualization of existence in spatial terms.

6. Conclusion

In this paper I have tried to provide a detailed analysis of three fragmentation verbs which are often presented as largely synonymous, especially when used metaphorically. The theoretical framework chosen for the analysis has been that of Cognitive Linguistics. The cognitive paradigm provides some useful methodological tools not to be found in other approaches to semantic description, especially as regards the structuring and motivating power of conceptual mechanisms like metaphor, metonymy, and image-schematic reasoning. I have shown that, although the three verbs under study share indeed a common meaning core, some important differences may be identified. In this connection, special attention has been paid to the close relationship between the physical scenario evoked by each verb and its metaphorical meaning extensions. Finally, some theoretical points have been made regarding the partial nature of metaphoric mappings as well as the connection of the analysis presented here with the metaphor-based conceptualization of existence in English.

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