Image Schemas as Emotional Attractors in *The Crying of Lot 49*: To Live Narratives is to Feel Narratives

MARTA SILVERA-ROIG

Abstract

Now, thanks to the latest Neuroscience and Cognitive Linguistics studies (Lakoff 2014), we know that the most complex and the common day-to-day linguistic constructions share the same cognitive scaffolding. Something similar happens with emotions. Following the somatic markers hypothesis, emotional states are related to body and regulatory states structures even when they do not arise from the body but in its mental representations. Thus, the emotional mind cannot be separated from the cognitive mind for our thought processes are intrinsically bound to emotional processes. To understand the power of narratives is also to understand our ability as human beings to feel and experience what others are feeling and experiencing. Thus, to further understand the evolutive role of storytelling we should put narrative studies at the core of the New Humanities and Brain Studies (Zeki 2014). Here, we apply the cognitive linguistics model of Image Schemas (mental patterns of our bodily experience which provide structure to other experiences) to several examples from the novel *The Crying of Lot 49* by Thomas Pynchon in order to describe the hypothesis that relational actions from image schemas and their inherently embodied and dynamic structures function as attractors profiling the chaotic but deterministic trajectory of the narrative. Thus, the changing configurations in space, conformed by image schemas, might correspond with the occurrence of changes in emotional states, exposing one of the invisible processes taking place in our narrative experience.

Keywords: Neuroscience and Cognitive Linguistics studies, emotional states, Image Schemas

1. Introduction

But a few choosing to venture deeper into the painful corridors of their affliction, found after a while that they could now grind and polish ever more exotic surfaces, hyperboloidial and even stranger, eventually including what we must term 'imaginary' shapes (which some preferred to term invisible).

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Thomas Pynchon is considered a *rupturist* postmodern writer demanding in his narrative dynamics. Therefore, the meaning integrations and emotions emerging from the activation of Pynchon's narrative can represent a novel contribution to Neuroaesthetics and Empathy Studies. One of the richest future explorations in the mentioned disciplines lies in our vision on how to integrate Idealized Cognitive Models and emotional states which are not just conceptualized in terms of domains but are also part of the pre-conceptual activities' mechanism. New questions and revelations about the continuum mind-body-world will spring up with the creation of bonds between Humanities and Natural Sciences.

Even though we do not know yet how emotions emerge, get mixed, develop and differentiate from each other, there are studies that support their essential role in personality and social interaction (Panksepp 2006; Panksepp, Wright, Döbrössy , Schlaepfer & Coenen 2014). Besides, Neurobiology has recovered the study of emotions and has put them in a privileged place: by establishing differences between primary and secondary emotions, between emotions and feelings, and giving an account of their interconnections (Damasio 1994, 2003). If, as we believe, narratives are inherent to human beings and our mind is a literary mind; if emotions and empathy are fundamental in our quality of biocultural beings, an integrating model of how these processes function in the course of mind, body and world could help us to understand their physical dynamics. Here, we propose that image schemas could function as emotional attractors in the activation of narratives and we illustrate that idea with several examples from *The Crying of Lot 49*.

1.2 Embodied Mind and Aesthetic Experience

According to Grodal (2009) the artistic experience is a process of the embodied mind: the vital feelings which emerge from the body create the basis for the following stages of development and for the same aesthetic experience (Stern 2000). Body experience is inseparable from emotional reactions, which play a central role in memory, cognition and consciousness (Damasio 1999; Ledoux 1998; Grodal 1997). When we watch someone move, our mirror neurons simulate these movements (Stamenov and Gallese 2002) and, through another type of mirror neurons, we can feel what the emotions of another person's facial expressions suggest (Schulte-Rüther , Markowitsch & Piefke 2007; and Martín-Loeches 2014). As Lakoff and Johnson (1999) affirm, our conscious processes are built on structures that serve to control our embodied minds and their movements in space. Hence, the structural characteristic of the metaphor (not as a mere rhetoric figure but as an essential cognitive tool) and its biological hook in narratives: from short fiction (Silvera-Roig 2018) to films (Coëgnarts 2017) and architecture (Silvera-Roig & Martínez-Rodríguez 2014).

On the other hand, feelings represent both mental and bodily states, and their processes take place through innate dispositions. For this reason, an approach that considers that human experiences are intimately linked to the embodied mind is an integrative approach, in contrast to classical semiotic models (Grodal 2009). What is more, the process of reading a literary text, the pre-reading moment and the spatial and temporal location of the reading time are not insignificant factors regarding the physical facilitation of positive or negative emotions to carry out the interaction with the text (Burke 2011): cognition, among other things, is always situated. As noted by Varela, Thompson& Rosch (1991), cognition depends largely on the types of bodily experiences in their biocultural environment. In his work, Burke coined the term 'oceanic cognition' to describe literary reception. According to this idea, 'oceanic cognition' is not located in different brain areas that converge unidirectionally but is distributed in a succession of mixtures and combinations of basic and multidirectional neuronal processes (called a neural fuzzy network in Neuroscience studies).

Psychologist and neuroscientist Arthur Jacobs (2015) has analyzed the methods and models which investigate the neuronal and cognitive-affective bases of literary reception. The study begins with the observation that, as happens with all studies regarding our embodied minds, we still know very little about how the brain creates narratives. However, because poetic and literary discourses combine thought and language, prosody and images, along with pleasure and emotion, are a unique and valuable material in explaining the complexities involved in the construction of meaning (Schrott & Jacobs 2011).

1.3 Thomas Pynchon's Narrative: Classical and New Considerations

Scholars usually talk about intuition and revelation, together with fascination and uncertainty, when they approach Pynchon's literary production. How do we connect and empathize with such an intricate and apparently obscure narrative? Even though the mechanisms underlying it do not differ from the ones underlying any other semiotic act, the relations between the primary blocks of conceptualization seem to hide their secrets, and the search for answers or the mere immersion in the questions seems to directly appeal to the brain reward system.

According to the literary theorist Joseph Tabbi (2002), when reading Pynchon we can approach, with some precision, areas that not only avoid totalization but also seem designed to escape conscious perception. Many of the strangest episodes, which involve an active constitution of being and environment that does not distinguish between inside and outside, and many of Pynchon's voluble characters may be linked to the Cognitive Sciences idea about large tracts of the unconscious. Tabbi quotes Cary Wolfe (1995), referring to the work on consciousness and ecology by Bateson, and

particularly the second-order cybernetics of Humberto Maturana and Francisco Varela by saying that "total loops such as those imagined by Bateson must always turn into 'strange' loops of the sort imagined by Escher's Möbius strip" (Tabbi 2002, 35). Thus, the complex network of connecting links and hyper-integrated narratives of Pynchon's poetic acts work against recognition in the novel as a deeper contingency, in those moments when characters and narrator rise one level and imagine a fully aware and fictional "greater mind". This is essentially the same Mind that Oedipa, the main character of the novel, imagines as a "great digital computer" (Pynchon 1966,125) when instead of inhabiting a potential emergency space in the "excluded middle" (1966, 125), she remains imprisoned by zeroes and ones: "the zeroes and ones twinned above, hanging like balanced mobiles right and left, ahead, thick, maybe endless" (Ibid). At that moment the narrative goes from inconsistent meanings and strange loops to a total loop. As we know, Pynchon refers to these moments as paranoia and opposes them to the anti-paranoia in which "nothing is connected to anything" (Pynchon 1973,434) but there is nothing especially paranoid about the interpretive impulse described here. Instead, paranoia, anti-paranoia, and the entire network of "ideas of the opposite" on the surface of Pynchon's narrative dramatize a condition in which all connections and oppositions can be brought to consciousness (a narrative and cognitive impossibility).

Expanding on this perspective, Arich-Gerz, in one of the 60 documents of the 1998 Program for International Pynchon Studies (PIPS), brings attention to the fact that if we stay on a horizontal plane, even when the perspectives and frames change, Pynchon's narrative maintains readers at a level of narrative immanence; that is, it develops a complex second-order system or chaotic attractor, instead of a first-order control cybernetics. Moreover, according to Tabbi (2002), Pynchon characters want to penetrate the *Sacred Text*, unearth the shapes and discover the meaning. Since the exegesis of meanings restricts itself to a textual object, the search for "the inside" levels out and experience becomes a matter of discourse, a political gesture, a language play. Indeed, without the limits and tacit knowledge inherent to an embodied world-life, there is no end to the meanings that can be generated in this type of textualism.

To these regards, Ashton Nichols (2003) affirms that Pynchon's_work consistently reveals that words create fictional versions of an experience and even record cognitive elements of that same experience, in my opinion, another twist in the line of the possible worlds theory. From the search for "the direct, epileptic Word" (Pynchon 1966, 81) Pynchon suggests that moments of "revelation" are mental moments linked to linguistic artifice, and not to metaphysical experiences of mystical transportation. Nichols states that the work of writers like Pynchon reveals the way contemporary writers use language to produce meaning: they present powerful verbal images that are never explained - but the epiphanic images speak for themselves. In

these examples, the cognitive aspects of the human experience are transformed, through literary language, into resonance moments, more significant for having occurred in a mind (brain) than for any precise meaning they may have. That "something" revealed in modern literary epiphanies is always connected with a powerful emotional consciousness. If recent cognitive studies are right (Abbott 2000; Herman,2003), this secular literary revelation may record the deeply complex human mind self-revealing itself, and then others, through language. The intuition of Literary Studies points to paths worth to be explored by the new studies of the mind (from Cognitive Linguistics to Neurobiology).

1.5 The Somatic Markers Hypothesis: Emotions Rule Decision Making

For the last years, emotions have been the focus of study of many disciplines (such as Psychology, Sociology, Psychiatry or Political Science, among others) and, especially, of Neuroscience (which nevertheless did not take them into account in the past). We believe that the development of Affective Neuroscience is key to understand human motivation in all dimensions of its existence. Emotions are a major factor (or rather, essential) in the interaction between environmental conditions and human decision processes, with emotional systems (underlying the activation of somatic states) providing valuable implicit or explicit knowledge when making fast and advantageous decisions. Thus, the involvement of somatic markers in decision-making is anchored in the human emotional part (Bechara 2004). According to Damasio (1994, 1999, 2003), emotions correspond to specific groups of changes in the body and brain. Each emotion is evoked by perception and influenced by thoughts or memories. Changes in the body, called somatic or body states, may include changes in facial expression, posture, hormones, heartbeat and muscle contraction. On the other hand, brain changes correspond to discharges of neurotransmitters (such as serotonin, noradrenaline and acetylcholine). These changes also include mental representations of bodily changes; representations are coded or classified in physiological changes, and each code or signal corresponds to a specific pattern of body states. Mental representations of bodily changes cause a subjective experience or feeling (anger, for example, can cause a mental representation that marks that the blood supply has increased in the upper part of the body, heart rate and respiration increase and other body states, without coding every somatic change).

Body changes after emotions can be evoked by two types of objects and events: primary and secondary inducers (Damasio 1995). Primary inductors provoke pleasant or unpleasant states (the inducer can be a snake, or the solution to a problem). Secondary inductors are thoughts or memories of a primary inducer; when we evoke these thoughts or memories, we provoke their corresponding somatic states. The primary inducer pathway is the

amygdala: several studies have indicated that when this region is damaged the somatic response is limited (Bechara & Van Der Linden 1999; Brand, Grabenhorst, Starcke, Vandekerckhove &Markowitsch 2007). Emotional objects or events are processed unconsciously (by circuits that include the thalamus) or consciously (by circuits that include sensory and associative regions of the cortex). On the other hand, the route of secondary inducers is the ventromedial prefrontal cortex: when this region is damaged, subjective feelings in response to emotional memories decrease (Bechara, Damasio, Damasio & Anderson 1994; Clark, Manes, Antoun, Sahakian &Robbins 2003; Fellows & Farah 2005). When human beings need to decide between two alternatives, information about them is received in the ventromedial prefrontal cortex; this region then transmits an output to the hypothalamus and other structures that generate somatic states that can affect us in several ways: highlighting feelings in an individual experience, raising or lowering the threshold to activate these states in the future, or influencing regions associated with working memory. Bechara & Van Der Linden (2005) point out that, in general, emotions influence working memory and decisions to improve behaviors. Thus, decisions can incorporate previous experience and its pleasant or negative responses and sensations. Future studies in the field of Affective Neuroscience, in conjunction with other disciplines such as Neuroaesthetics or Biopoetics, could significantly improve our knowledge about the integration of emotions into models of meaning, the emotional emergence in art, or the aesthetic experience of reading a literary text.

2. Theoretical Model: The Image Schema

2.1 Image Schemas

In Semantic and Cognitive Linguistics, an Image Schema is a condensed re-description of perceptual experience whose purpose is to map spatial structure into conceptual structure. According to Johnson (1987), these patterns "emerge as structures of meaning, especially at the level of bodily movements in space, manipulation of objects, and perceptual interaction" (1987, 29). The Image Schema, as Mandler (1992, 2004) says, plays an important role during development, thus forming the basis of early cognitive development, and extending to all perceptual sensorimotor modalities (physical perceptions and direct motor action), so we can consider them an inseparable part of emotional development.

Image Schemas were defined and developed by Lakoff (1987), Lakoff and Turner (1989) and Johnson (1987). As with other theoretical constructs of Cognitive Linguistics, it is said that Image Schemas are more than elements of linguistic theory: they have a psychological reality for which there is experimental evidence in Psycholinguistics, Cognitive Psychology, and Evolutionary Psychology (Gibbs & Colston 1995). Concepts, domains,

construals and categories represent the most accepted foundations of Cognitive Semantics. A concept is a mental unit, a domain is the basic knowledge to represent concepts, construal is the process by which experience is conceived, and categories are internally structured by prototypical relationships between its members and, externally, by taxonomic relationships between categories. Image Schemas are not specific images but abstract ones: they are schematic. They represent schematic patterns that arise from imaginary domains: container, path, links or forces are recurring in a variety of embodied domains, and structure our bodily experience, and our non-bodily experience, through metaphors (Lakoff 1987; Johnson 1987). This definition clarifies the seemingly contradictory description of Image Schemas: Image Schemas are abstract in one sense of the word (they are schematic) and not abstract in another sense (they are embodied).

2.2 Image Schemas: Body and Brain

In recent years we have begun to observe what happens in the brain when we process metaphorical information, thanks to advances in brain imaging technology and the research of, among others, Hauk, Johnsrude & Pulvermüller (2004); Coslett, Saffran, & Schwoebel (2002); Moore , Stern, Corkin, Fischl, Gray, Rosen & Dale (2000); Rizzolatti, Fogassi & Gallese (2001, 2002); and Rohrer (2001). We now know that language functions do not occur exclusively in areas of the lower frontal lobe and in the superior temporal lobe (areas of Broca and Wernicke) (Rohrer 2005); and we have a new vision of a distributed model of semantic understanding, in which the areas that were previously considered purely sensorimotor ones now play important roles in the so-called major cognitive processes, such as language. In other words, language makes much greater use of spatial, visual and mental imaginism brain processes than previously thought.

Inspired by linguistic and philosophical evidence, Lakoff and Johnson (1980, 1987) developed a hypothesis in which Image Schemas are so frequent and so rooted in patterns of experience in human organisms that they would surely be exemplified in our nervous system (Lakoff & Johnson 1999). In addition, these schematizations can be used metaphorically. Johnson (1987) described for the first time an Image Schema as a recurring pattern of our actions, perceptions and conceptions. According to Johnson, these patterns emerge primarily as structures with meaning especially at the level of our bodily movements in space, our manipulation of objects, and our perceptual interactions (Johnson 1987, 29). This description was illustrated with several examples of how the conceptual and linguistic structure is underlaid by an Image Schema structure: such as, for example, the structures of the CONTAINER schema (or the regular recurring experiences of putting objects in and out of a limited area). We can experience this pattern in the tactile

perceptual mode with physical containers, or we can experience it visually by following the movement of an object that is introduced or removed from a limited area or container. For Johnson, these patterns can be metaphorically extended to structure non-tactile, non-physical and non-visual experiences.

Image Schemas are not temporarily static, but take place in, and over time; they are temporarily dynamic in the sense that, once they have been triggered, we tend to complete the entire perceptual outline of the scheme. As Gibbs (2012, 359-361) states, change is a perpetual and essential part of self-organized systems; thus, Image Schemas constantly emerge and destabilize, as is the case with attractors (Guerra 1992). An Image Schema can momentarily activate a new attractor that alters the 'landscape' of the entire system. From the perspective of self-organization, attractors are not localized representations, but emerging patterns of the entire system in action (as in the brain-body-world interaction). One of the most relevant considerations of Image Schemas, as part of the multiple attractors that shape metaphorical action, is that they are motivated by sociocultural forces and stabilities, and not simply by bodily schemas of experience. These stabilities, in sociocultural actions and beliefs, influence our bodily experience at different levels.

2.3 Image Schemas and Mirror Neurons

In developing the notion of Image Schemas, Johnson and Lakoff (Johnson 1987; Lakoff 1987; Lakoff & Johnson 1999), use the term 'image' in its broad neurocognitive sense of mental imagery, and not as something that exclusively indicates visual imagery. Mental imagery can also be cenesthetic, in the sense of our own body image; we plan motor movements thousands of times every day, constantly re-evaluating the extent of what is within our reach according to our body position. With some discontinuities, the body image in the primary sensorimotor cortex is somato-topical (with adjacent neurons largely mapping contiguous sections of the body). Similarly, premotor cortical maps are also somato-topical.

In addition, in a series of studies in macaques and humans, Rizzolatti, Fogassi & Gallese (2001) have discovered that sensorimotor cortices do not only map 'peripersonal' space (which is within our reach) but also contain mirror neurons with which the premotor cortex simulates the actions performed by another monkey (or another human). When a monkey watches another monkey perform a task of grabbing something with its hands, mirror neurons activate the pre-motor regions of the cortex of the monkey's own hand. The experiments on mirror neurons of the Rizzolatti group (Rizzolatti & Craighero 2004) are designed inter-modally, that is, the experience in one modality is mapped in others. In this light, it can be argued that narratives would have a critical role in our understanding of ourselves, other people, and the environment.

2.4 Image Schemas and Language

According to recent studies (Schomers & Pulvermüller 2016), sensorimotor cortical regions play a more relevant role than previously thought in semantic comprehension tasks. Some research (Hauk, Johnsrude & Pulvermüller 2004) show that it is possible to activate somatomotor neuronal maps using linguistic inputs - as opposed to perceptual. Therefore, it is possible that Image Schemas have a neurobiological anchor in the neural maps that represent somatomotor and multimodal imaginary tasks. According to Cognitive Psychology, there is neurological and neuroimaging evidence that shows that mental imagery carried out in pre-motor and multimodal somatosensory cortices is essential for semantic understanding. Yes, we understand an action phrase because we subconsciously imagine ourselves carrying out that action. Image Schemas have phenomenological, linguistic, evolutionary and neural implications in explaining pre-conceptual and pre-verbal structures of human experience, which can only be addressed in terms of intermodal factors (Johnson & Rohrer, 2007).

As we have seen, Image Schemas are recurring patterns of body experience; they are imaginistic (they preserve the topological structure of perceptual experience); they operate dynamically in and through time; they link sensorimotor experience with conceptualization and language; they are exemplified as activation patterns in topological neural maps; and they allow 'normal' termination patterns that serve as a basis for inferences (Rohrer 2005).

2.5 Image Schemas as Spatial Stories

Following Mandler and Pagán (2014) there are also three cognitive structures that have not been differentiated so far: spatial primitives, image schemas and schematic integrations. According to the researchers, space primitives are the first conceptual blocks formed during childhood, image schemas are 'spatial stories' constructed with the first, and schematic integrations use the two types to construct concepts that include non-spatial elements, such as force or emotion. Gibbs and Colston (1995) have pointed out that Image Schemas can be defined as dynamic analogous representations of spatial relationships and movements in space. Although Image Schemas are derived from perceptual and motor processes, they are not sensorimotor processes by themselves. As Mandler and Pagán say, in order to understand the origin of Image Schemas without considering the language that makes use of them, it is useful to observe what the conceptual understanding of the world is like before language. For example, during childhood we begin to conceptualize occlusion and containment at two and a half months (Aguiar & Baillargeon, 1999; Hespos & Baillargeon, 2001). Presumably, children are attracted to containment and occlusion events because the objects they are seeing disappear from their sight: people leave the rooms, objects get into boxes, etc. It is possible that this act of disappearance of objects makes

containers the first objects that children conceptualize. At a certain point, children begin to see themselves as containers, even without making connections between what enters and what is eliminated, and this may explain the initial basis of the notion that quantity is irrelevant to the container (common notion in linguistic containment metaphors).

2.5.1 Image Schema CONTAINER

Dewell (2005), the abstract and static definition of a container as a limited region in space, commonly accepted in Cognitive Linguistics, does not correspond with the Image Schemas formed during childhood, which first focus on the movement inside and outside the containers, instead of worrying about regions and limits. In the case of containers, we find many metaphors in which it is perfectly acceptable for an object to be larger than a container (for example, a country may be in someone's heart). We also find countless examples in which the object, the container, or both lack size or limits, or these simply do not matter (you can have something in your pocket, the whole world in your hand, etc.) In contrast, it is difficult to find examples that reverse inside and outside, or cases in which it does not matter if the object enters or leaves the container. This seems to indicate that the container schema maintains some of its early developmental characteristics in adult life, and that our early conceptualizations of containment experiences are more important for the formation of metaphors than abstract generalizations such as "space-limited region" (Mandler 2014).

3. Spatial Relations of Image Schemas as Emotional Attractors in the Text

3.1 Theoretical Frame

In the studies in Neuroaesthetics of Miall and Kuiken (2001), the theory of the unfamiliarity and re-conceptualization cycle - when a reader approaches to the literary text (a complex and emergent poetic act) - indicates that the emotions caused by the reading facilitate alternative perspectives that direct and motivate new meaning. From the Neurobiology perspective, the primary responses during the reading of literary texts can activate the amygdala (Robinson 2005). Such as LeDoux (1998) points out, the primitive and quick way to emotions would be also involved in these cases. There is a growing interest from Neuroscience in literary reception because, apart from the visual stimuli studies that focus on emotions, such as in Carretié, L., Martín-Loeches (2001) and Carretié, Hinojosa, & Martín-Loeches (2004), poetic acts can also be a valuable object of scientific research.

Poetic acts, as Jacobs affirms (2015) can reveal perceptual, affective, and cognitive schemata and allow clear predictions about how and where in the brain such verbal stimuli are processed, for instance in analogy to stimuli producing visual illusions (Schrott & Jacobs 2011) or basic emotions (Jacobs

2015), thus presenting to us an experience perfectly designed for the human brain (Turner & Pöeppel 1983).

On the other hand, Gillespie has suggested in *The Aesthetics of Chaos* (2003) that chaos theory can reveal nonlinear patterns in the reading process that remain hidden in the argumentative structure of literary criticism. Gillespie affirms that the reading process patterns are shaped by a nonlinear complexity. This way, chaos theory could function as a tool to approach the lived experience of a literary text in terms of dynamics and structures. In *Design and Debris: A Chaotics of Postmodern American Fiction* (2002), Joseph M. Conte combines the spatiality of the strange attractor with the poetic act as an organism, in the sense in which it is able of "autonomous" growth. Conte describes two kinds of American literature which rebel against the repetitions of conventions: one of the groups, the disruptors, include Don Delillo, Paul Auster and Thomas Pynchon, because they are considered writers who despise the conventionalities of lineal narratives and their cause-effect proportion. Conte argues that the performative elections of the reader cause an "open disorder" of emergent structures and meaning – in this article, following the work of my thesis (Silvera-Roig, 2016) where Idealized Cognitive Models were applied to Pynchon's novel, we propose that performative elections could be motivated by emotions.

Many studies that focus on chaos theories suggest a relation between literature and physical structures; literature is not chaotic because it represents chaos, but because it is the way the universe is, including literature (Polvinen 2008). This dynamic conceptualization between literature and reality responds to the arguments presented by Biopoetics, as in the common thread in Guerra's studies (1992, 1995, 2011, 2013), for whom the poetic act is an adaptative (self-organized) complex system which (con)figurates human mental reality (2013: 259). Besides, in *The Whole Creature* (2006) by Wendy Wheeler, emergent complexity is the heart of both natural and cultural systems, which are semiotic processes. In *Embodiment and Cognitive Science* (2006), Raymond W. Gibbs proposes that the emergent nature of the Image Schemas as online embodied simulations is best understood in terms of complex interaction of brain, body and world. Thus, Image Schemas can be described as emergent properties: a kind of structural coupling between brain, body and world that emerges from the different "operational cycles" which constitute life. Image schemas reflect a way of stability within the cognitive systems. Following the self-organization theory, the order of a system arises around attractors that help creating and keeping stable patterns in the system. These attractors are preferred patterns in a way that the initial conditions of a system will change until they reach these attractors and will stay stable in the absence of other attractors. An attractor can be, among others, a point (such as the center of a bowl with a ball going round inside it), a regular trajectory (as a planetary orbit), a complex series of states (like

cell metabolism), or an infinite sequence - or unrepeatable in exact conditions – called strange attractor. Thus, a complex system will have several attractors.

Following the somatic markers hypothesis already mentioned here, emotional responses are essential to understand the processes of human reasoning and decision making. According to the main idea of this hypothesis, markers affect the response-to-stimuli processes in multiple operational levels, both conscious and unconscious. Markers emerge in bioregulatory processes, including those that are expressed in form of emotions and feelings; here, we propose that Image Schemas and their relational aspects could function in the literary text as attractors of the emotional integration emergence in the dynamic process of literary reception. Such as Gilles Faucconier and Mark Turner explain in *The Way We Think* (2003), human beings have the most effective abilities for meaning construction and, therefore, for the creation of the most elaborated forms (such as language, art, music or mathematics). By themselves, forms are hollow, but they do contain the potential that can be unfolded in dynamic and imaginative ways. Behind the form there is the human power to construct meaning, and the operations found at the heart of meaning are: identity, integration and imagination. Identity has to do with recognizing similarity or equivalence, which is an imaginative and complex unconscious task; identity and opposition, similarity and difference, are accessible through consciousness after an elaborated process. Integration consists on finding identities and oppositions, it is part of a much more complex process of conceptual integration, with dynamic and structural properties and operational restrictions. Identity and integration cannot account by themselves the meaning of imagination. Even in the absence of external stimuli, the brain can carry out imaginative simulations: the imaginative processes are always functioning, even in the simplest meaning constructions (Fauconnier & Turner 2003, 5-6).

As we can see, language is not the product of a structural system separated from the brain, but instead it belongs to general cognitive processes with which the human mind conceptualizes experience, what has been called embodied understanding by Cognitive Linguistics (Johnson 1987). Such as Freeman (in Barcelona 2000) declares, literary texts are the products of the cognitive minds and their interpretations the products of other cognitive minds in the context of the physical and sociocultural worlds in which they have been created and read.

In our broad thesis analysis of *The Crying of Lot 49* (Silvera-Roig 2016) the conceptual metaphors and blends point to our ability for cognitive mapping, creating different levels of identification through different conceptual domains. Following, a selection of Image Schemas will be shown and their spatial relations with the possibility of them functioning as emotion attractors.

3.2 Analysis: Examples from *The Crying of Lot 49*

In the following examples, and to support our thesis, the selected conceptual metaphors (please note that they are different to metaphorical linguistic expressions for they are conceptual and prelinguistic) are shown in italics before the paragraphs where the metaphorical linguistic expressions are located. The selection of metaphors has been carried out by selecting the most significant parts of the novel for its creative evolution, focusing on the key moments of meaning emergence. In the rest of the paragraphs not included metaphors are repeated, so the selected conceptual metaphors are significant and ubiquitous in all the text. The edition of the novel used was published by Vintage in 1996. The original edition was published in 1966.

· *Being forgotten is out of a container.*

· Metaphorical linguistic expression: "It took him over, and to the verge of being forgotten" (6)

In the text, the meaning construction motivated by the Image Schema CONTAINER marks in a significant way the spatial disposition as a ubiquitous feature. In this case, "to the verge of being forgotten", places Pierce in a non-equilibrium status that will keep on being visible in the narrative. What it can be discussed to be the force behind the movement taking out an element of CONTAINER is Oedipa. This way, we do not know the relationship characteristics, but we know that she wanted to forget him. In this case, the non-equilibrium situation brings out past feelings:

· *Crisis is being down in the bottom of a container*

· *Panic is a location.*

· Metaphorical linguistic expression: "I don't believe in any of it, Oed," he could usually get out. "I try, I truly can't," way down there, further down perhaps than she could reach, so that such times often brought her near panic. It might have been the sight of her so about to lose control that seemed to bring him back up" (7).

The force that keeps Mucho in the bottom of a CONTAINER is a crisis, produced by his doubts about his job, "I don't believe in any of it, Oed". Crisis situated at the bottom indicates that it is not easy to get over it. Observing this situation puts Oedipa in a panic state: "So that such times often brought her near panic" (7). This way, we can see here how a force that pushes Mucho towards the bottom inside CONTAINER motivates a force that moves Oedipa closer to LOCATION conceptualizing panic. Crisis and panic form this way a succession that finishes when Mucho observes Oedipa: "It might have been the sight of her so about to lose control that seemed to bring him back up"(7).

· *Magic is borders of a container*

· *Magic is opposing force*

· Metaphorical linguistic expression: "Such a captive maiden, having plenty of time to think, soon realizes that her tower, its height and

architecture, are like her ego only incidental: that what really keeps her where she is is magic, anonymous and malignant, visited on her from outside and for no reason at all. Having no apparatus except gut fear and female cunning to examine this formless magic, to understand how it works, how to measure its field strength, count its lines of force, she may fall back on superstition, or take up a useful hobby like embroidery, or go mad, or marry a disk jockey. If the tower is everywhere and the knight of deliverance no proof against its magic, what else?" (13)

In this case, Oedipa feels as a prisoner and wants to escape. However, she does not know what she is running away from. Here, the Image Schemas of the source domains are CONTAINER and FORCE; the limits of the container disappear when Oedipa discovers that her tower is boundless, that she is imprisoned in something more difficult to escape from: "That what really keeps her where she is magic, anonymous and malignant" (13). Thus, FORCE becomes the disappeared borders of CONTAINER:

· *Nothing is a container*

· Metaphorical linguistic expression: "She had looked down at her feet and known, then, because of a painting, that what she stood on had only been woven together a couple thousand miles away in her own tower was only by accident known as Mexico, and so Pierce had taken her away from nothing, there'd been no escape" (13).

Such as Fauconnier and Turner (2002, 241) affirm, non-things inherit characteristics of the contrafactual space and keep on being non-things in their actual space. In this case, Oedipa had thought that Pierce took her out from her prison, however, she discovers that it did not happen: "If the tower is everywhere and the knight of deliverance no proof against its magic, what else?" The fact that the tower is everywhere is a highly creative metaphor in which the distinction between OUTSIDE and INSIDE is lost: If the tower is everywhere the outside and inside of CONTAINER disappears. Oedipa feels disconcerted about this fact: "and so Pierce had taken her away from nothing, there'd been no escape" (13).

· *Mad is a location*

· Metaphorical linguistic expression: "she may fall back on superstition, or take up a useful hobby like embroidery, or go mad, or marry a disk jockey" (Ibid).

In this example, Oedipa does not know what keeps her imprisoned and she thinks about the possibilities she has: "she may fall back on superstition, or take up a useful hobby like embroidery, or go mad, or marry a disk jockey" (Ibid). The active agent in the dynamics of the Image Schema LOCATION is Oedipa; however, the possibilities she thinks she has, are options towards which she acts with resignation:

· *Revelation is a living entity going into a container*

· Metaphorical linguistic expression: "a revelation also trembled just past the threshold of her understanding" (15).

As we have said, revelations keep on approaching to Oedipa, in moments of the narrative that we could describe as epiphanies:

· *Revelation is a moving entity around Oedipa.*

· Metaphorical linguistic expression: "That's what would come to haunt her most, perhaps: the way it fitted, logically, together. As if (as she'd guessed that first minute in San Narciso) there were revelation in progress all around her" (29).

· *A Play is a location*

· *A Play is a container***.**

· Metaphorical linguistic expression: "Oedipa found herself after five minutes sucked utterly into the landscape of evil Richard Wharfinger had fashioned for his seventeenth-century audiences, so preapocalyptic, death-wishful, sensually fatigued, unprepared, a little poignantly, for that abyss of civil war that had been waiting, cold and deep, only a few years ahead of them" (43- 44).

When Oedipa is in the theatre, she feels "sucked utterly into" the play: The revelations she has had up to this moment and hearing the word Trystero increases her feeling of astonishment:

· *Chaos is a container.*

· Metaphorical linguistic expression: "She walked in on soft, elegant chaos, an impression of emanations, mutually interfering, from the stub-antennas of everybody's exposed nerve endings" (52).

Here, Oedipa ends up getting herself into the mystery, even though she does not know anything about it or where it can take her: "she walked in on soft, elegant chaos":

· *Text is an object moving along a path*

· *Oedipa is a container for a collection of objects*

· Metaphorical linguistic expression: "Though she saw Mike Fallopian again, and did trace the text of The Courier's Tragedy a certain distance, these follow-ups were no more disquieting than other revelations which now seemed to come crowding in exponentially, as if the more she collected the more would come to her, until everything she saw, smelled, dreamed, remembered, would somehow come to be woven into The Tristero" (56).

Little by little revelations accumulate; they do not stop arriving to Oedipa. In her intent to follow Trystero, revelations "come crowding in exponentially", worrying Oedipa:

· *Meaning is a container.*

· *Meaning is a dome (container) around Oedipa*

· *Ignorance is an obstacle in a path.*

· Metaphorical linguistic expression: "For one thing, she read over the will more closely. If it was really Pierce's attempt to leave an organized something behind after his own annihilation, then it was part of her duty, wasn't it, to bestow life on what had persisted, to try to be what Driblette

was, the dark machine in the centre of the planetarium, to bring the estate into pulsing stelliferous Meaning, all in a soaring dome around her? If only so much didn't stand in her way: her deep ignorance of law, of investment, of real estate, ultimately of the dead man himself" (56).

Oedipa tries to imitate Driblette by creating meaning without looking for it outside herself and tries "to try to be what Driblette was, the dark machine in the centre of the planetarium, to bring the estate into pulsing stelliferous Meaning". However, her ignorance keeps her from achieving it:

- *Going to another location is outside force*
- *Inertia is a location where you cannot move.*
- Metaphorical linguistic expression: "It was some such feeling that got her up early one morning to go to a Yoyodyne stockholders' meeting. There was nothing she could do at it, yet she felt it might redeem her a little from inertia" (56).

When Oedipa begins to consider the possibility of not getting anything in her search, her situation is a situation of inertia. In order to get out of this state, Oedipa decides to visit Yoyodyne offices, without an actual purpose, just to get out of her present situation.

- *Murmur is a location*
- *Panic is a growing living entity inside a container*
- *Head is a container.*
- Metaphorical linguistic expression: "Somehow Oedipa got lost. One minute she was gazing at a mockup of a space capsule, safely surrounded by old, somnolent men; the next, alone in a great, fluorescent murmur of office activity. As far as she could see in any direction it was white or pastel: men's shirts, papers, drawing boards. All she could think of was to put on her shades for all this light and wait for somebody to rescue her. But nobody noticed. She began to wander aisles among light blue desks, turning a corner now and then. Heads came up at the sound of her heels, engineers stared until she'd passed, but nobody spoke to her. Five or ten minutes went by this way, panic growing inside her head: there seemed no way out of the area" (58).

Once in Yoyodyne offices, Oedipa feels lost between the workers who murmur and ignore her; this situation creates for Oedipa a situation of imprisonment that causes her panic.

- *Presence of madness is a container.*
- Metaphorical linguistic expression: "all with Yoyodyne was normal. Except right here, where Oedipa Maas, with a thousand other people to choose from, had had to walk uncoerced into the presence of madness"(60).

When Oedipa meets Koteks he explains to her what the Maxwell Demon is. Oedipa laments that, from all the possibilities, she ended up talking with a mad person:

- *Oedipa is a container*
- *Presence is an object.*

· Metaphorical linguistic expression: "She had caught sight of the historical marker only because she'd gone back, deliberately, to Lake Inverarity one day, owing to this, what you might have to call, growing obsession, with "bringing something of herself" even if that something was just her presence to the scatter of business interests that had survived Inverarity" (62- 63).

Oedipa is not able to find the truth beyond Trystero and her obsession about it grows. Realizing that she cannot get more information, she decides to visit one of Pierce's properties, "owing to this, what you might have to call, growing obsession, with "bringing something of herself" even if that something was just her presence to the scatter of business interests that had survived Inverarity"(63):

· *Life is a location you can get lost in.*

· Metaphorical linguistic expression: "Perhaps even in this last second but there was no way to tell. She glanced down the corridor of Cohen's rooms in the rain and saw, for the very first time, how far it might be possible to get lost in this" (66).

Here, Oedipa fears being left just with revelations and clues without ever knowing the truth. This fear makes her feel that she is lost:

· *Head is a container.*

· *Oedipa is an onject in a container*.

· Metaphorical linguistic expression: "Turned his back on her and ordered a drink. Oedipa took off her badge, put it in an ashtray and said, quietly, trying not to suggest hysteria, "Look, you have to help me. Because I really think I am going out of my head" (77).

Oedipa does not know whether she is discovering a hidden reality or if she is living a fantasy in a state of paranoia, this situation puts her in a state of desperation: "I really think I am going out of my head":

· *Dispair is an object moving along a path.*

· Metaphorical linguistic expression: "Story of my life, she thought, Mucho won't talk to me, Hilarius won't listen, Clerk Maxwell didn't even look at me, and this group, God knows. Despair came over her, as it will when nobody around has any sexual relevance to you" (80).

Oedipa feels abandoned by the men of her life, being inside a homosexual's bar this feeling increases: "despair came over her, as it will when nobody around has any sexual relevance to you" (80):

· *Hate is a location*

· *Speculation is a location.*

· Metaphorical linguistic expression: "She gauged the spectrum of feeling out there as running from really violent hate (an Indian-looking kid hardly out of his teens, with frosted shoulder-length hair tucked behind his ears and pointed cowboy boots) to dry speculation (a horn-rimmed SS type who stared at her legs, trying to figure out if she was in drag), none of which could do her any good" (80).

Oedipa observes the interior of the bar and defines the feeling of being there as standing between hate and speculation, and she decides to leave the place:

- *City is a container*
- *City is an infected being.*
- Metaphorical linguistic expression: "So she got up after a while and left The Greek Way, and entered the city again, the infected city" (80).

Oedipa leaves the bar and enters the city, "the infected city" (Ibid).

- *Dream is a moving object along the path.*
- Metaphorical linguistic expression: **"**She stayed with buses after that, getting off only now and then to walk so she'd keep awake. What fragments of dreams came had to do with the post horn" (81).

Oedipa spends the night bus-riding in the city and she dreams about Trystero; as happened with revelations, these dreams come to her:

- *Night is a location*
- *Idea is a moving object along a path*.
- Metaphorical linguistic expression: "At some indefinite passage in night's sonorous score, it also came to her that she would be safe, that something, perhaps only her linearly fading drunkenness, would protect her" (Ibid).

The physical state of Oedipa makes her feel safe: "it also came to her that she would be safe, that something, perhaps only her linearly fading drunkenness, would protect her":

- *Morning is a container.*
- Metaphorical linguistic expression: "She busrode and walked on into the lightening morning, giving herself up to a fatalism rare for her. Where was the Oedipa who'd driven so bravely up here from San Narciso? That optimistic baby had come on so like the private eye in any long-ago radio drama, believing all you needed was grit, resourcefulness, exemption from hidebound cops' rules, to solve any great mystery" (85).

Oedipa keeps on going across the city until the morning arrives, in that moment she begins to feel pessimistic and compares her actual state with the one she was in when she arrived to San Narciso for the first time: "Where was the Oedipa who'd driven so bravely up here from San Narciso?" (Ibid).

- *Safe is inside a container*
- *Lost is outside a container.*
- Metaphorical linguistic expression: "She knew, because she had held him, that he suffered DTs. Behind the initials was a metaphor, a delirium tremens, a trembling unfurrowing of the mind's ploughshare. The saint whose water can light lamps, the clairvoyant whose lapse in recall is the breath of God, the true paranoid for whom all is organized in spheres joyful or threatening about the central pulse of himself, the dreamer whose puns probe ancient foetid shafts and tunnels of truth all act in the same special relevance to the word, or whatever it is the word is there, buffering, to protect us from. The act of metaphor then was a thrust at truth and a lie, depending

where you were: inside, safe, or outside, lost. Oedipa did not know where she was" (88-89).

Oedipa feels disconcerted for she does not know if she is in a state of paranoia and compares it with the delirium a sailor is suffering from: "She knew, because she had held him, that he suffered DTs. Behind the initials was a metaphor, a delirium tremens, a trembling unfurrowing of the mind's ploughshare" (88). For her, paranoia is a state where events are relevant and are related to the truth: "the true paranoid for whom all is organized in spheres joyful or threatening about the central pulse of himself" (88). For the paranoid his vision of reality is his truth: "The act of metaphor then was a thrust at truth and a lie, depending where you were: inside, safe, or outside, lost" (89). However, Oedipa does not know if she is in a state of paranoia or not.

· *Psychosis is a meat hook.*

· Metaphorical linguistic expression: "She had decided on route, with time to think about the day preceding, to go see Dr Hilarius her shrink, and tell him all. She might well be in the cold and sweatless meathooks of a psychosis" (91).

Oedipa decides to visit her psychiatrist, fearing that she might be in a state of psychosis: "She might well be in the cold and sweatless meathooks of a psychosis" (Ibid).

· *Panic is a living being going up*

· *Head is a container*.

· Metaphorical linguistic expression: "She didn't know him. Panic started to climb out of a dark region in her head" (99).

Oedipa meets her husband, Mucho Maas; he is under the effects of LSD and she does not recognize in him the person he used to be, this puts her in a situation of panic: "She didn't know him. Panic started to climb out of a dark region in her head" (Ibid).

· *Head is a container*

· *Idea is an object inside a container.*

· Metaphorical linguistic expression: "She remembered. Now he would never be spooked again, not as long as he had the pills. She could not quite get it into her head that the day she'd left him for San Narciso was the day she'd seen Mucho for the last time" (100).

Oedipa cannot believe that Mucho has changed so much: "She could not quite get it into her head that the day she'd left him for San Narciso was the day she'd seen Mucho for the last time" (Ibid):

· *Love is a location*

· Metaphorical linguistic expression: "My shrink, pursued by Israelis, has gone mad; my husband, on LSD, gropes like a child further and further into the rooms and endless rooms of the elaborate candy house of himself and away, hopelessly away, from what has passed, I was hoping forever, for love; my one extra fella has eloped with a depraved 15-year-old; my best guide back to the Trystero has taken a Brody. Where am I?" (105).

Oedipa thought that the love between Mucho and her was going to last forever. However, Mucho moves away from that love:

- *Dream is a location*
- *Network of communication is aa location*
- *Alternative to existlessness is a location*
- *Alternative to the absence of surprise is a location*
- Metaphorical linguistic expression: "Either you have stumbled indeed, without the aid of LSD or other in dole alkaloids, onto a secret richness and concealed density of dream; onto a network by which X number of Americans are truly communicating whilst reserving their lies, recitations of routine, arid betrayals of spiritual poverty, for the official government delivery system; maybe even onto a real alternative to the exitlessness, to the absence of surprise to life, that harrows the head of everybody American you know, and you too, sweetie. Or you are hallucinating it" (117-118).

One of the possibilities Oedipa considers is that she has found by chance a hidden reality.

- *Empty space is a difficult situation*
- *Empty space is realizing about difficulty.*
- Metaphorical linguistic expression: "Those, now that she was looking at them, she saw to be the alternatives. Those symmetrical four. She didn't like any of them, but hoped she was mentally ill; that that's all it was. That night she sat for hours, too numb even to drink, teaching herself to breathe in a vacuum. For this, oh God, was the void. There was nobody who could help her. Nobody in the world. They were all on something, mad, possible enemies, dead" (118).

The possibilities Oedipa considers are four and they all have the same probability of being true: "Those, now that she was looking at them, she saw to be the alternatives. Those symmetrical four" (Ibid). The impossibility of knowing what is happening makes Oedipa feels that she is helpless, in a void:

- *San Narciso is a container with no boundaries***.**
- Metaphorical linguistic expression: "There was the true continuity, San Narciso had no boundaries. No one knew yet how to draw them. She had dedicated herself, weeks ago, to making sense of what Inveracity had left behind, never suspecting that the legacy was America" (123).

Pierce's possessions seem extensive, boundaries disappear, and everything becomes, for Oedipa, a continuum in which Pierce's legacy is America itself.

4. Conclusion

As we have seen, integration of meaning is essential in human cognition studies, and narratives are highly complex acts in which new relations and meanings are able to emerge. Here we consider the literary text to be a poetic act, a dynamic open system which is dissipative, embodied, situated,

distributed and synergic. Integrating the interactive continuum mind, body and world, we recognize the biological and evolutive anchor of our thoughts, creativity and imagination. Therefore, the conceptual metaphors and image schemas presented in this essay form an incursion into the conceptual world of the author and the active processes of literary reception; this integrating architecture of meaning is an open window towards the experience of living a poetic act.

To these means, we have tried to show the spatial construction of the narrative, where locations, container and trajectories, and the dynamic relations emerging from them, conform the mental spaces where the sceneries of *The Crying of Lot 49* create an experience of constant emergence. From structuring source domains schematizing body actions –where Image Schemas are ubiquitous – the most complex and abstract aspects are conceptualized.

Moreover, we have tried to outline here how new advances in Cognitive Linguistics models together with Complex Theory concepts and the Neurobiology of Emotions can contribute to describe that the relational actions from Image Schemas and their inherently embodied and dynamic structures function as attractors profiling the chaotic but deterministic trajectory of narratives. Such as we have pointed out, the changing configurations in space conformed by Image Schemas might correspond with the occurring of changes in emotional states. With this in mind, we acknowledge that further research is needed to shed light in the invisible, emotional and prelinguistic processes of meaning emergence, and the bond between Natural and Human Sciences will be essential to accomplish this quest.

Complutense University of Madrid, Spain

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