

Full Length Research Paper

# Ricoeur's narrative theory applied to science

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Ricoeur's narrative theory can be applied to scientific theories. Scientific theories as well as narrative plots represent a "synthesis of heterogeneous" based on productive imagination. On the other hand, narrative plots can be perceived as an answer to the "why?" questions as well as scientific explanations. In this paper it will be argued that an analogy between narrative and scientific paradigms can be made. In the 18<sup>th</sup> and 19<sup>th</sup> centuries, both narrative and scientific paradigms aspired to represent a mimesis of reality. However, in the 20<sup>th</sup> century, those realist aspirations were rejected or supplemented with an idea of fragmented and mind-dependent reality. This point of view opened the question of the role of non-existent (and non-referential concepts) in science. In literature, novels without traditional plots arose.

**Key words:** Emplotment, explanation, narrative, science, realism.

## INTRODUCTION

In this paper it will be shown how scientific reasoning may be perceived as a sustained metaphor. In the following lines a comparative framework that reflects the ways in which process of scientific investigation and creation of the plot are alike, will be developed. According to Ricoeur, symbolic systems "make and remake reality"<sup>1</sup>. He compares aesthetical grasping of the world in the literary narrative to the epistemological grasping of the world by scientific models. Ricoeur argues that both can be perceived as "sustained metaphors aiming at redescription of reality."<sup>2</sup> Both scientific investigation and literary plot development are founded on the process of productive imagination. According to Ricoeur, "imagination is 'productive' not only of unreal objects, but also of an expanded vision of reality. Imagination at work

– in a work - produces itself as a work."<sup>3</sup> Ricoeur emphasizes that both narrative plot as well as meta-phorical trope are founded on productive imagination. The productive imagination<sup>4</sup> creates the phenomenon of

semantic innovation in the theory of narrative and the theory of metaphor. This semantic innovation is "produced in the milieu of language and reveals something about what an imagination that produces in accordance with rules might be."<sup>5</sup> Productive imagination, thus, represents a sudden insight, which produces new logical kinds and new plots. It brings together previously heterogeneous terms and makes them homogeneous.

In the following lines it will be argued that productive imagination is also inherent to the scientific investigation. Thus, both scientific models and the work of fiction have heuristic force. They redescribe reality by invention of the new plots that is theories, which open new perspectives of reality and have a power to restructure semantic fields.

Ricoeur emphasis that productive imagination is the key element on which the plots are found. In this paper, it will be shown that the productive imagination represents a crucial element of the scientific theories, as well. This will be shown by comparing scientific and narrative paradigms in the history of science and literature.

## ARISTOTLE'S AND RICOUR'S UNDERSTANDING OF THE PLOT

Paul Ricoeur argues about interconnection between narrative and human experience. Ricoeur argues that the basic concepts that constitute our reality (such as

<sup>1</sup> Ricoeur, "The Function of Fiction in Shaping Reality" in *A Ricoeur Reader: Reflection and Imagination*, Harvester Whitesheaf, 1991, p. 117

<sup>2</sup> Ibid, p. 117

<sup>3</sup> Ibid, p. 123

<sup>4</sup> Ricoeur states: "Through this approach, we rediscover the basic aspects of the Kantian theory of schematism. (...) In brief, the work of imagination is to schematize metaphorical attribution. Like the Kantian schema, it gives an image to an emerging meaning. Before being a fading perception, the image is an emerging meaning." ( Ricoeur, "Imagination in Discourse and in Action" in *From Text to Action*, ( trans. by Blamey, K & Thompson, J. B. ) London, Athlone Press, 1991, p. 185

<sup>5</sup> Ricoeur, "On Interpretation", p. 8

“knowledge”, “culture”, “consciousness”, “intentionality”, “identity” and so forth) are founded on narrative.<sup>6</sup> Ricoeur’s conception of emplotment can be applied not only to the history, but also to the entire science. The plot of a narrative “grasps together” and integrates into one whole and complete story multiple and scattered events, thereby schematizing the intelligible signification attached to the narrative taken as a whole.”<sup>7</sup> Science also brings to language the diversity of human actions by submitting it to the unifying and intelligible order of scientific theories. Scientific theories can be compared to narratives, defined by Ricoeur.

Ricoeur emphasizes that the notion of the plot is fruitful because its basic characteristic is intelligibility. Ricoeur defines the plot as “intelligible unit that holds together circumstances, ends and means, initiatives and unwanted consequences.”<sup>8</sup>

In his *Time and Narrative* Vol. 2, Ricoeur analyses Aristotle’s theory of plot (*mythos*): “Plot was first defined, on the most formal level, as an integrating dynamism that draws a unified and complete story from a variety of incidents, in other words, that transforms this variety into a unified and complete story. This formal definition opens a field of rule-governed transformations worthy of being called plots so long as we can discern temporal wholes bringing about a synthesis of the heterogeneous between circumstances, goals, means, interactions and intended or unintended results.”<sup>9</sup>

Aristotle’s notion of the plot should not be considered as static, but as an operation, “namely, the structuring that makes us speak of putting-into-the-form-of-a-plot (emplotment) rather than a plot.”<sup>10</sup> Ricoeur argues that Aristotelian *mythos* should be transformed and extended.<sup>11</sup>

According to Ricoeur “the Aristotelian theory of plot was conceived during an age when only tragedy, comedy, and epic were recognized as ‘genres’ worthy of philosophical reflection. But new types have appeared even within the tragic, comic and epic genres, types that make us doubt whether a theory of plot appropriate for the poetic practice of ancient writers still works for such new works as Don Quixote or Hamlet. What is more, new genres have appeared, in particular the novel, that have turned literature into an immense laboratory of experiments in which, sooner or later, every received convention has been set aside.”<sup>12</sup> However, this point of view is not correct. The narrative production of the

“Greco-Roman world was (...) enormously diverse. A catalogue by extant genre alone would have to include epic, hymn, lyric, narrative elegy and iambs; tragedy, comedy, satyr-play, and mime; history, biography, philosophy, oratory, fable, novel; and a host of experimental crossbreeds between.”<sup>13</sup>

On the other hand, Ricoeur does not emphasize that Aristotle makes a distinction between *logos* and *mythos*. “Both terms are polisemic in Aristotle’s actual usage: *mythos* means sometimes ‘plot’, sometimes ‘myth’, sometimes both, while *logos* (never formally defined) means ‘speech’ much more often than it means ‘storyline’.”<sup>14</sup>

Ricoeur emphasizes that Aristotelian plot is founded on causal connection.<sup>15</sup> It is a form where the episodes are linked together by the configuration.<sup>16</sup> According to Ricoeur, the abandonment of Aristotelian notion of *mythos* which is founded on completeness and unity represents “the abandonment of the criterion of completeness”<sup>17, 18</sup>

Ricoeur makes a distinction between *mimesis* 1, which he defines as a “pre-understanding of the world of action, its meaningful structure, its symbolic resources, and its temporal character”<sup>19</sup>; *mimesis* 2, which represents the configuring act of narration; and *mimesis* 3, which represents the refiguring act of narration. Thus, for Ricoeur narrative is the interpretive process, which begins with “prefigured experience” and ends with “refiguration” of our experience.

According to Ricoeur, the operation of emplotment is the part of *mimesis* 2. He argues that emplotment mediates by “drawing a configuration out of simple succession”<sup>20</sup>, which means that it connects heterogeneous narrative events in temporal succession with the central thought of intelligible whole, and, thus, creates a narrative unity.

Ricoeur emphasizes that it is the power of productive imagination on which the synthesis of heterogeneous elements in emplotment is based. Ricoeur argues that in metaphors and narratives the semantic innovation is closely linked to the productive imagination.

<sup>13</sup> Lowe, N.J., *The Classical Plot and the Invention of Western Narrative*, Cambridge University Press, 2004, p. 79

<sup>14</sup> Lowe, N.J., *The Classical Plot and the Invention of Western Narrative*, p. 15

<sup>15</sup> In his *Poetics*, Aristotle argues that the episodic plots are “defective”. He states that in episodic plot episodes “succeed one another without probable or necessary sequence.”

<sup>16</sup> Paul Ricoeur, *Time and Narrative* Vol. 2, p. 9

<sup>17</sup> “...One of the formal features of Aristotelian notion of *mythos* that has to be preserved (...) is the criterion for unity and completeness. *Mythos*, we recall, is ‘an imitation of an action that is whole and complete in itself.’ ( *Poetics*, 50b, 23-25) And an action is whole and complete if it has a beginning, a middle, and an end. (...) Then the configuration wins out over the episodic form, concordance overcome discordance.” ( *Ibid*, p. 20 )

<sup>18</sup> *Ibid*, p. 20

<sup>19</sup> Ricoeur, *Time and Narrative* Vol. 1 (trans. by McLaughlin, K. and Pellaver, D.), Chicago University Press, Chicago, 1984, p.84

<sup>20</sup> *Ibid*, p.66

<sup>6</sup> Ricoeur uses the term “narrative” in a generic sense. He respects the difference between the diegetic and dramatic modes.

<sup>7</sup> Ricoeur, *Time and Narrative* Vol. 2 (trans. by McLaughlin, K. and Pellaver, D.), Chicago and London, University of Chicago Press, 1985, p. X

<sup>8</sup> Ricoeur, “On Interpretation” in *From Text to Action*, ( tans. by Blamey, K & Thompson, J. B ) London, Athlone Press, 1991, p. 4

<sup>9</sup> Ricoeur, *Time and Narrative*, Vol. 2, p. 8

<sup>10</sup> Ricoeur, “On Interpretation”, p. 3

<sup>11</sup> Ricoeur, *Time and Narrative*, Vol. 2, p. 4

<sup>12</sup> Ricoeur, *Time and Narrative*, Vol. 2, p. 7

According to Herschel, productive imagination plays important role in the creation of a scientific theory. He makes a distinction between the context of discovery and context of justification.<sup>21</sup> “He departs from Baconian inductivism according to which we arrive at laws and theories by applying inductive rules and observations. Herschel maintains that there is a second way to arrive at laws and theories by creative hypothesizing. He gives the example of Ampere’s theory of electromagnetism. Ampere explained the attraction and repulsion between magnets by the existence of circulating electronic currents between the magnets. The empirical laws of electricity and magnetism known at that time could be arrived at by applying inductive rules on observations of electronic and magnetic phenomena. However, Ampere could not arrive at the theory of circulating currents by applying inductive rules on these empirical laws. He had to apply his creative imagination when he made the association between the magnetic phenomena and the phenomena of attraction and repulsion between electronic currents. Herschel maintains that this creative process is not governed by the rules.”<sup>22</sup> The context of scientific discovery points to creative imagination<sup>23</sup> which is not governed by the rules.

In the Rule of Metaphor, Ricoeur argues the relationship between *mythos* and *mimesis*<sup>24</sup> is equal to the relationship between heuristic fiction and redescription. Ricoeur compares emplotment to a metaphor. According to Ricoeur, both metaphor and emplotment represent the act of synthesis. Emplotment gathers ends, causes under the temporal unification of complete action. On the other hand, metaphor represents semantic innovation and synthesis of heterogeneous.<sup>25</sup> In both, metaphor and emplotment, semantic innovation can be ascribed to productive imagination. The same can be argued for scientific theories.

Ricoeur emphasizes that the term *mythos* must be understood as the “active sense of organizing the events into a system”<sup>26</sup>. On the other hand, Ricoeur emphasizes that *mimesis*, as a representation and not pure “copy”, must be understood as “the active process of imitating or representing something”<sup>27</sup>. Thus, *mythos* and *mimesis* are operations, they are not structures.

Ricoeur’s conception of emplotment can be applied to scientific theories. They can also be perceived as a “synthesis of heterogeneous”, because they grasp together diverse facts, observed phenomena, hypotheses and laws. For example, Newton’s theory of motion

embraces “Newton’s three laws of motion and the law of universal gravitation. It is these four laws that constitute the core of what we may call Newton’s theory of motion. (We can also include in his theory other claims he made about the nature of space and time as well.)”<sup>28</sup> This can also be argued about some other scientific theories (such as Einstein’s theory of relativity). They encompass a certain “number of basic laws; the laws encompass a vast host of facts; and the laws also explain these facts.”<sup>29</sup>

Verene (1993) compares scientific theories to the myths. He argues that both scientific theories and myths are forms of knowledge which share the same categories. They both represent symbolic frameworks which only differ in the employment and interpretation of these categories.<sup>30</sup> Subsequently, the essence of human thought is narrative plot.

Verene emphasizes that science, as we ordinarily understand it, represents *ratio*. However, *ratio* is, above all, *narratio*. “*Narratio* is the drive of the mind toward satisfaction in the telling something, that is, in the recreating of the thing in words, the representing of the genesis of the thing in question. This is contested in the metaphorical power of language, to *mythos*. *Ratio* is by nature an order of parts. *Narratio* is by nature a whole; a story is complete - beginning, middle and end.”<sup>31</sup>

## PLOTS PERCEIVED AS EXPLANATIONS

According to Aristotle, poetry is a *mimesis*, an imitation of human actions. However, Ricoeur does not mention that Aristotle’s *mimesis* represents an aesthetic phenomenon.<sup>32</sup> Aristotle’s account of *mimesis* does not represent an imitation of appearances, things and of *Idea*, as Plato’s account of *mimesis* does. “Aristotle compares aesthetic process (*mimesis*) with the process that takes place in the nature. While nature moves through internal principles, art moves through principles like plot, action, characters, diction, and there is a unity among them.”<sup>33</sup>

But this *mimesis* entails *mythos* “creation of a plot, a tale which shows signs of composition an order lacked by the dramas of everyday life.”<sup>34</sup>

Ricoeur emphasizes that *mimesis* should not be understood any more as pure imitation, a “copy”, but as

<sup>21</sup> This distinction is also emphasized by Reichenbach.

<sup>22</sup> Aharon Kantorovich, *Scientific Discovery: Logic and Tinkering*, Albany, NY, SUNY Press, 1993, p. 97

<sup>23</sup> There are also a number of authors who reject this point of view. See Atocha Aliseda, “Logics in Scientific Discovery”, *Foundation of Science* 9, 2004

<sup>24</sup> These terms Ricoeur takes from Aristotle’s *Poetics*.

<sup>25</sup> Both metaphor and emplotment represent synthesis of heterogeneous.

<sup>26</sup> Paul Ricoeur, *Time and Narrative* Vol. 2, p.33

<sup>27</sup> Ibid, p.33

<sup>28</sup> Scientific Theory, <http://www.eequalsmcsquared.auckland.ac.nz/sites/emc2/tl/philosophy/scientific-theory.cfm>

<sup>29</sup> Ibid.

<sup>30</sup> Verene, D, F, “Metaphysical Narration, Science, and Symbolic Form”, *Review of Metaphysics* 47, September 1993, p. 118

<sup>31</sup> Ibid, p. 132

<sup>32</sup> This can be perceived in the Aristotle’s definition of the tragedy, where *mimesis* represents a central term.

<sup>33</sup> Baktir, H, “The Concept of Imitation in Plato and Aristotle”, [sbe.erciyes.edu.tr/dergi/sayi\\_15/10\\_baktir.pdf](http://sbe.erciyes.edu.tr/dergi/sayi_15/10_baktir.pdf)

<sup>34</sup> Ricoeur, *The Rule of Metaphor*, trans. by Czerny, R, McLaughlin, K and Costello, J, Toronto and Buffalo, University of Toronto Press, 1975, p. 244-245

“redescription”.<sup>35</sup> Aristotle in his *Poetics* argues about the intelligible character of the plot (*mythos*). He argues that events follow one another “by necessity and probability”. He maintains that events in plots arise from the structure of the plot itself - as consequences from antecedents.

Velleman (2003) in his essay “Narrative Explanation” argues: “If Aristotle is right, then plot must convey understanding in the same way that it qualifies as a plot to begin with – namely by providing each event with antecedents from which to follow as a necessary or probable consequence. And the understanding conveyed by a plot, in that case, would be no different from that conveyed by other genres of explanation.”<sup>36</sup>

Velleman gives Forster’s example: “The king died and then the queen died” is a story. (...) “The king died and then the queen died of grief” is a plot...”<sup>37</sup> Velleman agrees with Forster’s opinion that if we consider the death of the queen as part of a story, we would ask “and then?” On the other hand, if this event is considered as part of a plot, we would ask “why?”<sup>38</sup> He argues that this is the fundamental difference between these two aspects of novel. He emphasizes that the answer to the question “why?” is an explanation: “Hence Forster conceives of a plot as a form of explanation and he seems to have causal explanation in mind, since the element that make for a plot, in his example, is the queen’s grief, which is a causal link between her death and the king’s.”<sup>39</sup>

However, Foster’s point of view is problematic. “The king died and then the queen died” cannot be an example of the story. It is incorrect, that is a historical account. The story is broader notion than the plot and in the Forster’s example plot represents broader conception than the story, which is flawed.

Explanation is defined as the answer to the “why?” question in the science and philosophy of science. Hempel in *Aspects of Scientific Explanation* claims: “To

explain the phenomena in the world is to answer the question “why?” rather than only the question “what?” is one of the foremost objectives of empirical science.”<sup>40</sup> Niiniluoto in his essay “Inductive Explanation, Propensity and Action”<sup>41</sup> argues: “Explanations can be regarded (as complete or partial) answers to *why?*-questions.” “Of particular importance is the ‘argumentative’ Hempelian tradition. Its followers aim to model empirical why-questions, whose answers are scientific explanations in the form of arguments.”<sup>42</sup>

Velleman argues that when Forster conceives a plot as a form of explanation, it is the causal explanation that he is referring to: “The element that makes for a plot, in his example, is the queen’s grief, which is a causal link between her death and king’s.”<sup>43</sup> According to Forster, plot without causality makes no sense: “What counts as a single event in the summary of a plot – birth, death, marriage, separation, reunion – is invariably a complex of many events causally related. Without such chunks of causality, there would be nothing out a soup of physical occurrences, out of which no plot could ever precipitate. Hence the idea of plot without causality is absurd.”<sup>44</sup>

Hempel (1965) argues that one of the logical conditions of adequacy of scientific explanation is causality.<sup>45</sup> This, a plot as scientific explanation contains both - an answer to the question “why?” and causal relation between the events. Ricoeur maintains: “To make up a plot is already to make the intelligible spring the accidental, the universal from the singular, the necessary or the probable, from the episodic.”<sup>46</sup> “To understand the story is to understand how and why the successive episodes led to this conclusion, which, far from being foreseeable, must finally be acceptable with the episodes brought together by the story.”<sup>47</sup> “The intelligible character of plot can be thought out in the following way: the plot is the set of combinations by which events are made into a story or - correlatively, a story is made out of events. The plot mediates between the event and a story. This means that nothing is an event unless it contributes to the progress of a story. An event is not only an occurrence, something that happens, but a narrative component (...) I shall say that the plot is the intelligible unit that holds together circumstances, events, and means, initiatives, and unwanted consequences (...) ... it is the act of taking

<sup>35</sup> Ricoeur argues that *mythos* can be equated with *mimesis* in his books and articles ( *The Rule of Metaphor* ), “Metaphor as Representation”, “What is Text?”), which he wrote prior to the *Time and Narrative*, where he entirely derives his conception of *mythos* and *mimesis*. This means that he does not equate *mythos* ( which he in the *Time and Narrative vol.1* defines as configuration – mimesis 2 ), with *mimesis* ( which, as he shows in *Time and Narrative vol. 1*, includes mimesis 1 ( prefiguration ), mimesis 2 ( configuration ), and mimesis 3 ( refiguration ) ). What he has in mind when he equates *mythos* with *mimesis* in the *Rule of Metaphor* is that “mythos is in service of mimesis” (Ricoeur, 1975, 245): “And ought we not to add that this lyric mythos is joined by a lyric mimesis, in the sense that the mood created in this fashion is a sort of model for “seeing as” and “feeling as ”? (Ricoeur, 1975, 245) “But lyric mimesis, which can be taken if desired as an “outward” movement, is the very work of the lyric mythos; it is the consequence of the fact that the mood is no less heuristic than fiction in the form of story. The paradox of the poetic can be summed up entirely in this, that the elevation of feeling to fiction is the condition of its mimetic use. Only a feeling transformed into myth can open and discover the world.” (Ricoeur, 1975, 245)

<sup>36</sup> Velleman, “Narrative Explanation”, *The Philosophical Review*, Vol. 112, No. 1, 2003, p.2

<sup>37</sup> Velleman, “Narrative Explanation”, p.2

<sup>38</sup> Ibid, p.2

<sup>39</sup> Ibid, p. 2

<sup>40</sup> Hempel, *Aspects of Scientific Explanation and Other Essays in the Philosophy of Science*, New York, Free Press, 1965, p.245

<sup>41</sup> Niiniluoto, “Inductive Explanation, Propensity and Action” in *Essays on Explanation and Understanding*, ed. By J. Manninen and R. Tuomela, D. Reidel Publishing Company, Dordrecht, Holland, Boston, USA, 1976, p.338

<sup>42</sup> Aliseda, “Logics in Scientific Discovery”, *Foundation of Science*, No. 9, 2004, p. 341

<sup>43</sup> Velleman, *Narrative Explanation*, p.2

<sup>44</sup> Ibid, p.4

<sup>45</sup> Hempel, *Aspects of Scientific Explanation and other Essays in the Philosophy of Science*, p.247

<sup>46</sup> Ricoeur, *Time and Narrative* Vol. 2, p.41

<sup>47</sup> Ibid, p.66-67

together - of composing - those ingredients of human action which, in ordinary experience, remain dissimilar and discordant.”<sup>48</sup>

Ricoeur argues that emplotment is the correlate of genuine narrative understanding. He gives three relative points: 1) the works of culture operate in terms of family resemblances, which operate on the level of emplotment, which makes the order of paradigms possible; 2) this order of paradigms may be the product of the productive imagination, which constitutes this schematism; 3) this order includes traditionality.<sup>49</sup>

According to Ricoeur, there is no fundamental difference between historical events and events framed by the plot: “The indirect derivation of the structures of history starting from the basic structures of narrative, (...) allows us to think that it is possible through the appropriate procedures of derivation to extend to the notion of historical event the concepts of singularity, contingency, and absolute deviation imposed by the notion of emplotted event.”<sup>50</sup>

Ricoeur argues that narrative is often perceived as “too elementary and too poor as a mode of articulation to claim as explanatory.”<sup>51</sup> Ricoeur argues that for proponents of this opinion narrative has only “an episodic character” and not “a configurational one’.”<sup>52</sup> He maintains that the question is whether the recon quest of configurational features of narrative can give the narrative understanding explanatory value. Ricoeur tries to find the solution to this problem in founding a new type of dialectic between historical understanding and narrative competence.<sup>53</sup> He introduces the term “singular causal imputation”<sup>54</sup> which accomplishes transition between narrative causality and explanatory causality employed in science.

Ricoeur’s examination of the referential character of narratives and metaphors brings him to the conclusion about the poetics as a redescription of reality. Poetics is a *mimesis* (imitation) of human action, based on fiction (*mythos*). “But this very fiction brings to light structures of life that are more essential than those revealed by ordinary discourse. Poetry redescribes life at a higher level, by means of the tension which is created by ordinary life and fiction. Metaphor instructs and enables man to look at his reality in a new way so that he perceives deeper structures and higher possibilities of life.”<sup>55</sup> The explanatory power of metaphor of narratives (and metaphors) is based on construction. The essence

<sup>48</sup> Ricoeur, *Hermeneutics and Human Sciences*, p. 3

<sup>49</sup> Ricoeur, *Time and Narrative* Vol. 2, p. 19

<sup>50</sup> Ibid, p.208

<sup>51</sup> Ibid, p.143

<sup>52</sup> Ibid, p.143

<sup>53</sup> Ricoeur introduces the concept of “singular narrative imputation”, which accomplishes transition between narrative causality and explanatory causality employed in science.

<sup>54</sup> Ibid, p.182

<sup>55</sup> Amdal, G, *Explanation and Understanding*, University of Oslo, 2001, p.44

of explanation consists in constructing the connections which unify “scattered events” into intelligible whole. “A story does more than recount events; it recounts events in a way to renders them as intelligible, thus conveying not just information, but also understanding. We might therefore be tempted to describe narrative as a genre of explanation.”<sup>56</sup> To explain how a social event occurs as a consequence of an action of a given agent is to locate the action (and thus the social event) in a plausible narrative; to explain a correlation between repeatedly occurring pairs of social events is to provide a set of narratives which purport to give an intellectually satisfying account of how the correlation between the events is socially generated.”<sup>57</sup> Abell (1987) emphasizes that to explain a social event means to describe the action which brought it about. He argues that these actions are often “context-sensitive”.<sup>58</sup> Arguing that causal explanation can be employed in human science, Hempel emphasizes that proponents of the opposite opinion argue that this cannot be the case, because events involved in the human sciences have “uniqueness and unrepeatability, which make them inaccessible to causal explanation”.<sup>59</sup> Hempel argues that: “Every individual event in the physical sciences, no less than in psychology or the social sciences is unique in the sense that it, with all its peculiar characteristics does not repeat itself.”<sup>60</sup> He argues that, nevertheless, individual events can be explained by general laws of causal explanation.

## EMPLOTMENT IN SCIENCE

In *Time and Narrative* Vol. 2, Ricoeur examines if there is a system of paradigms in the history of literature. According to Ricoeur, the theory of literature is not found on the contingent set of literary artefacts. Ricoeur argues that the logic of narratives exists. However, it is not ahistorical, but transhistorical in the sense of cumulative, non-sequential order.<sup>61</sup>

Ricoeur in his *Time and Narrative* Vol. 2 emphasizes that Aristotle in his *Poetics* differs two kinds of plots: episodic plot “in which the episodes follow one another (...) in no probable or inevitable sequence and simple plot in which episodes happen one because of another with necessity and probability. “The key opposition is here”: one thing after the other and one thing because of the other (“in a causal sequence”) (...) One after the other is merely episodic and therefore improbable, and because of the other is a causal sequence and therefore probable.”<sup>62</sup>

<sup>56</sup> Velleman, *Narrative Explanation*, p.1

<sup>57</sup> Abell, *The Syntax of Social Life: The Theory and Method of Comparative Narratives*, New York, Oxford University Press, 1987, p.3

<sup>58</sup> Ibid, p.4

<sup>59</sup> Hempel, *Aspects of Scientific Explanation and Other Essays in the Philosophy of Science*, p.253

<sup>60</sup> Ibid, p.253

<sup>62</sup> Ibid, p.41

Realist novels in XIX century represent a request for *verisimilitude*. The realist method in literature was influenced by the positivism in XIX century. Positivists argued about the universality of the method employed in natural sciences. They emphasize that scientific explanation is causal explanation. In his *Course de Philosophie Positive* (1830), August Comte represents positivism as universal scientific theory and method of scientific knowledge. Realist writers were influenced by this theory as a whole, and the opinion that the method of the natural sciences must be applied to humanities as well. Realist novelists aspired to achieve this scientific ideal of objectiveness, neutrality and certainty. They tried to find and describe the economic, social, political, psychological, etc. causes of the events and characters they represented in their novels. They argue that these causes are not transcendental. They emphasized that all phenomena are founded on causality. Thus realist literature attempts to represent reality objectively. Realist method in literature as well as in science is based on the causal explanation. Realist subordinate the plot to the realist method based on the revealing of the characters. The plot in realist novels is built on the system of the causal relations and the net of sociological and psychological motivation.

Philosophical realism represents unified claim that mind-independent reality exists and that science can obtain knowledge about it. In the contemporary science, the representatives of scientific realism argue that scientific theories are "typically approximately true"<sup>63</sup> and that central terms employed in these theories are referential.<sup>64</sup> "Scientific realism is a doctrine that science describes the real world: that the world actually is as science takes it to be and that its furnishings are as science envisions them to be."<sup>65</sup> According to realists, scientific progress is cumulative. They argue that the success of science shows that entities postulated by scientific theories do exist.<sup>66</sup> According to realists, scientific terms refer. They argue that rejected theories refer to the same concepts as the current ones do. Thus, Dalton's electrons are the

<sup>63</sup> Martin Carrier, "What is Wrong with the Miracle Argument?", *Studies in the History and Philosophy of Science*, 22, p. 23

<sup>64</sup> Scientific realism does not only embrace these two statements. It includes other claims: "The approximate truth of scientific theory is sufficient explanation of its predictive success." (Jarret Leplin, "Introduction", *Scientific Realism* (ed. by Leplin, J.), Berkeley and Los Angeles, University of California Press, 1984, p. 1), "The theoretical claims of scientific theories are to be read literally, and so read are definitely true or false." (Ibid, p. 2), etc. There are also different forms of scientific realism: epistemic, semantic, metaphysical, ethical, etc. There are also strong and weak versions of scientific realism. However, they are all united in the claim that mind-independent reality exists.

<sup>65</sup> Nicholas Rescher, *Scientific Realism: A Critical Reappraisal*, Dordrecht, D. Reidel Publishing Company, 1987, p. 4

<sup>66</sup> On the other hand, antirealists emphasize the argument presented by Laudan, "pessimistic induction". The essence of this argument is Laudan's claim that in history of science there are many theories which were once empirically successful, but that were eventually discovered to be neither referential nor true.

same as Bohr's. Realists emphasize that improving a theory, and thus scientific success, would not be possible, if theoretical change implied the changing of theoretical terms and subject matter.<sup>67</sup>

Ricoeur emphasizes the problem of *verisimilitude*<sup>68</sup>, which represents an effort to bring novel close to reality. From this effort depended the fate of the plot. The aim of the authors of eighteenth and nineteenth century novels such as Defoe, Richardson, Flaubert and James was not just to achieve *verisimilitude* with reality, but also the illusion of reality. Ricoeur points to similarities between the views of realist novelists and the conviction of empiricist philosophers of language who held "that language can be purged of every figurative and decorative element and returned to its original vocation - the vocation, according to Locke, to convey the knowledge of things."<sup>69</sup> Ricoeur argues that "verisimilitude is not just resemblance to truth, but also semblance to truth."<sup>70</sup> However, representation of reality in science as well as literature is only artificial and it undermines realist aspirations.<sup>71</sup> Nicholas Rescher (1987) argues that "No doubt 'reality itself', whatever that may be, is real enough, but our 'empirical reality' - reality as our science conceives it - is a fiction. Our scientific description of reality is a mind-devised, man-made artefact that cannot actually be accepted at face value."<sup>72</sup> Realism creates paradigms which are as artificial as those it criticizes.<sup>73</sup>

According to Ricoeur, traditional novels are replaced by inconsistent and fragmented novels. Ricoeur argues: "But this plea for a fragmented, inconsistent fiction is not justified any differently than was the plea for naturalistic literature. The argument for verisimilitude has merely been replaced. Formerly, it was social complexity that called for abandoning the classical paradigm; today it is

In modern and postmodern literature, there are novels without plots. Twentieth century novels have no presumed

<sup>67</sup> On the other hand, Laudan states: "The realist conception of reference is a rather liberal one, according to which the terms in a theory may be genuinely referring even if many of the claims the theory makes about entities to which it refers are false." (Larry Laudan, "A Confutation of Convergent Realism", *Philosophy of Science* 48, p. 24

<sup>68</sup> Ibid, p.10-11

<sup>69</sup> Paul Ricoeur, *Time and Narrative* Vol. 2, p. 11

<sup>70</sup> Ibid. p.13

<sup>71</sup> "If indeed resemblance is only a semblance to truth, what then is fiction under the rule of this semblance but the ability to create the belief that this artifice stands for genuine testimony about reality and life? The art of the fiction then turns to be the art of illusion. From here on, awareness of the artifice involved undermines from within the realist motivation finally turning against it and destroying it." ( Paul Ricoeur, *Time and Narrative* Vol. 2, p. 13 )

<sup>72</sup> Nicholas Rescher, *Scientific Realism: A Critical Reappraisal*, p. 7

<sup>73</sup> This point of view is close to another critique of realism in literature and art: "It became clear to some realists, however, as they attempted to represent the 'real world' in art, that all they could represent is what structuralist theories called a 'reality effect', that they were placing humans in complex system of social relations and material conditions which could be represented only by signs, and then only briefly and selectively." (John Lye, Some Notes on Realism, 1997, <http://www.brocku.ca/english/courses/2F55/realism.html> )

incoherence of reality that requires abandoning every paradigm.”<sup>74</sup>

Conventions and the authors attempt to abandon every established paradigm. It is hard to recognize the emplotment of novels from the twentieth century, or even characters or temporal organization. Ricoeur emphasizes that an eclipse of realism does not mean an eclipse of the narrative. Ricoeur argues that plot will be transformed in the future, but this does not mean the death of narrative. According to Ricoeur, narrative function will not die, it will only be “metamorphosed”<sup>75</sup>. Ricoeur compares emplotment to a metaphor. According to Ricoeur, both metaphor and emplotment represent the act of synthesis. Emplotment gathers ends, causes under the temporal unification of complete action. On the other hand, metaphor represents semantic innovation and synthesis of heterogeneous.<sup>76</sup> In both, metaphor and emplotment, semantic innovation can be ascribed to productive imagination.

In modern novels there is an emphasis to the consciousness of the characters.<sup>77</sup> In the science of XX century, early defenders of Copenhagen interpretation argue that objects don't exist apart from being measured. They maintain that since measurements are done by conscious human beings and that, subsequently, objects cannot exist independently of human consciousness.

It seems that the question of *verisimilitude* is abandoned in the contemporary philosophy of chemistry. The concepts employed in chemistry such as “atomic orbital” and “electronic configurations” are denied objective existence by quantum mechanics. However, these concepts serve as useful approximations. According to Wooley<sup>78</sup> and other authors, “the concept of molecular structure, which is so central to modern chemistry, is nothing but a metaphor having no objective reality at quantum mechanical level.”<sup>79</sup> Consequently, some authors in recent articles in philosophy of chemistry, suggest that the question of realism regarding scientific terms in chemistry should be revised. According to Paneth, chemists must abandon a realist position, if they are to make any sense of some scientific terms

<sup>74</sup> Paul Ricoeur, *Time and Narrative*, vol. 2, p. 14

<sup>75</sup> *Ibid.*, p. 28

<sup>76</sup> Both metaphor and emplotment represent synthesis of heterogeneous.

<sup>77</sup> Joyce, Kafka, Wolf, etc.

<sup>78</sup> “Wooley claims that the structure of the molecule ( or the relative positions of the nuclei ) is introduced somewhat artificially in calculations by invoking the Born-Oppenheimer approximation which assumes that only electrons move within a rigid framework defined by the positions of the nuclei, which are assumed to be fixed in space. This approximation is based on the large differences in mass between electrons and nuclei, with the assumption that electrons can respond instantaneously to changes in position of the nuclei (...) Wooley and others have claimed that a purely quantum mechanical description (...) does not require the attribution of any structure to molecules.” ( Eric Scerri, “Philosophy of Chemistry - A New Interdisciplinary Field?“, *Journal of Chemical Education*, Vol. 77, 2000, p. 524 )

<sup>79</sup> *Ibid.*, p. 524

employed in chemistry. According to Paneth<sup>80</sup>, chemist should take the “intermediate position” between “naive realism” and a “metaphysical view”. Scerri (2000) argues that Paneth's idea that chemists should take an intermediary position between realism and metaphysical point of view<sup>81</sup>, resolves the main question how some entities are real in chemistry, but not in quantum mechanics.<sup>82</sup>

Ricoeur mentions that scientific theories can be interpreted as sustained metaphors aiming at a redescription of the world. Scientific theory describes reality through the construction of imaginary model that is said to represent that reality. Ricoeur argues that scientific theories as metaphors reveal something new about reality that was not discovered in the foregoing analysis.

## Conclusion

In the previous lines it is shown that there is a basis for the argument about similarity of narrative and scientific theory insofar as they both employ productive imagination in the use of emplotment. Consequently, narrative plots can be compared to scientific explanations as they both represent an answer to “why” questions.

Ricoeur's narrative theory is significant, because he shows the narrativity of history, science and human experience as a whole. Ricoeur derives his idea of the plot from his critique of Aristotle's account of the plot. As it is shown in this article, Ricoeur oversimplifies Aristotle's theory of the plot and he neglects some important distinctions Aristotle makes.<sup>83</sup> However, Ricoeur succeeds to build his own theory, which portrays human beings as narrative beings. Ricoeur's conception of the plot and *mimesis* does not represent aesthetic phenomenon, but epistemological and hermeneutical phenomenon. He emphasizes the power of the realm of the symbolic and fictional.

Ricoeur argues that the “meaning-effect” produced by metaphors, narratives and scientific theories is the same, although metaphors traditionally belonged to the theory of tropes, and narratives to the theory of genres. This meaning effect is contained in the semantic innovation produced in the level of discourse. “With metaphor the innovation lies in the producing of a new semantic pertinence by means of an impertinent attribution.”<sup>84</sup> Ricoeur claims that semantic innovation of the narrative lies in the invention of the plot, which is as a new metaphorical meaning also a work of synthesis. The

<sup>80</sup> Fritz Paneth, one of the founders of radiochemistry.

<sup>81</sup> Paneth derives this conclusion from his arguments about dual nature of chemical elements. He argues that elements can be perceived as basic substances ( metaphysical point of view ) as well as simple substances ( realist perspective).

<sup>82</sup> Scerri, “Response to vollmer's Review of Minds and Molecules”

<sup>83</sup> Such as the distinction between *mythos* and *logos* as it is already mentioned.

<sup>84</sup> Ricoeur, *Time and Narrative*, Vol. 1, p.IX

creation of a scientific theory also lies in the invention based on the productive imagination. Those innovations “make” and “remake” reality.<sup>85</sup> They “reorganize” the world and refer in a productive way to reality.

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<sup>85</sup> “The function of fiction in shaping reality” in *A Ricoeur Reader: Reflection and Imagination*, p. 117