



FRACTAL EXTENSIONS WITHIN THE LITERARY TEXT

Nicoleta Ifrim

The fractal theory relates to a specific view on the "natural consciousness", now focused on as inherently fractal, fragmented and broken up into irregular fragments.

For a fractal as a geometric figure not only has irregular shapes - the zig-zag world of nature - but there is lurking in the disorder a hidden order in these irregular shapes. The irregular patterns are self-similar over scales. The overall pattern of a fractal is repeated, with similarity, and sometimes even with exactitude, when one looks at a small part of the figure. It renders recursive structures. For instance, if one looks at the irregular shape of a mountain, and then he looks closer at a small part of the mountain, he will find the same basic shape of the whole mountain repeated again on a smaller scale. When you look closer still you see the same shape again, and so on to infinity. This happens within the Mandelbrot itself where there are an infinite number of smaller Mandelbrot shapes hidden everywhere within the zig-zaggy, spiral edges of the overall form.

As Mandelbrot points out, this idea of *recursive self-similarity* was originally developed by the philosopher Leibniz, but it also can be related to Goethe's organicist view. Another basic principle that gives essence to the fractal perspective is that entropic disorder plays a constructive way in creating order. A new approach has been born, as it requires, as N.Katherine Hayles said, „a shift from the individual unit to recursive symmetries between scale levels” (Hayles 1990: 13). That means that the research discourse is now focused on the similarities which are replicated across the scale levels of a system, be it existential, social or cultural. The phenomena associated to the scale-dependent symmetries are characteristic to a fractal point of view.

Therefore, the necessary coexistence of the two ways of approaching fractals in literature brings about the concept of *continuity in rupture* which appears to be the only productive critical pattern suiting the purposes of our approach. Thus, what mathematics and the science of fractals have finally revealed can be applied in interpreting literature, namely that: the "microcosm" (the literary text) which is smaller or at a lower-level, is essentially similar to the "macrocosm" (the real world) which is larger and/or higher-level; the latter is not somehow superior to the former by virtue of size or level; the dynamics of literary development are such that the macrocosm springs from and is grounded in the microcosm, not the other way around (the fictionalised real world). What Blaise Pascal, the French mathematician and philosopher, observed over three centuries ago can now be truly noted: "Nature (n.b. literature) imitates herself. A grain thrown onto good ground brings forth fruit; a principle thrown into a good mind brings forth fruit. Everything is created and conducted by the same Master - the root, the branch, the fruits, the principles, the consequences."

In our view, literature is a fractal object due to the following arguments: it is subjected to specific tensional fields such as unforeseeability, deviation, ambiguity, its critical interpretation displays reader-centrism and hazard, being structured as a *fragment made up of fragments*, the literary work creates a *fluctuating geometrical space* (different interpretations,

open ends, puzzle-like structures, disseminated characters), the fractal potentiality can be applied in re-interpreting classical works, the contemporary literature becomes an intermediate fractality within the infinite possible fractalities such as the historical, cultural or artistic ones.

One can also notice that fractality is complementarily bi-dimensional. There is an *overt* fractal literarity as well as a *covert* one. The former occurs especially in the postmodern literature, where the skeptical solution of the modernists, who witnessed the failure of their utopias, is replaced by *the resurrection of the secondary, the fragment and the marginal, by disregarding hierarchies* so that new sensibility might be said to be fractal, *post-dichotomist* and *post-reductive* (Monica Spiridon). The latter is implied by literature in general as its intrinsic feature.

Under these circumstances, the literary work reveals itself as a *continuum* which renders the multiplication of the same root-theme, also structured by means of a collage of *mises en abyme* that can make up a liminal subtext developing the main textual idea in infinite variations and inversions. Being a „major mechanism of textual self-reflection“, as Stephanie Sieburth puts it, the *mise en abyme* technique can be defined as a „textual segment which constitutes a microcosm, a schematic, condensed version of the entire text as macrocosm“ (Sánchez 1992: 259). This concept is compatible with the idea of a fractal, as both relate to a textual representation whose complexity can be best approached by regarding at its inner self-similarity across textual levels. The recursive symmetries of the text-system turn into a puzzle of mutually referential fragments with no dominating voice. From this point of view, Sieburth describes the novel as a dynamic, non-linear system, predominantly fractal, as it grows out of the infinite replicas of the main story, thematic variations that always reflect the textual whole. The critic illustrates these ideas within Clarín's novel, *La Regenta*, where she notes that the

„meaning of any given fragment constantly shifts, changes, even inverts, depending on which other fragment is juxtaposed with it (...). Continual dialectic of diversity and similarity, and the freedom of juxtaposition resulting from the breakdown of the text's linearity, cause *La Regenta* to be a constantly changing body, whose meaning is never static and determinable, but always being created and dissolving as different segments are juxtaposed.“ (Sánchez 1992: 260)

Dällenbach's second type of *mise en abyme* comes into discussion here, namely the *repeated reflection*, as the inner textual sequence not only reflects the enclosing text, but in its turn includes a fragment which reflects infinitely the reflecting level. Mandelbrot's fractals are made up in the same way, as they can be projecting a multitude of specular metaphors that share the infinite return of quasi-identical forms.[1] Elisabeth Sánchez says that

„the internal mirror, regardless of the aspect of the text at which it is aimed, may create the impression of a faithful copy, but the duplication will always be inexact – a bare outline, a condensation, a partial reflection, perhaps even a polar opposite. The textual mirror provides only the suggestion of identity, but minds bent on finding identical structures will indeed find them, perhaps at the expense of noting the differences. For this reason, I think that the difference I outlined between the self-reflecting text as defined by the *mise en abyme* and the quasi-self-similar, mind-boggling structures which constitute a typical fractal is not so much a difference in kind as one of emphasis. The shift in emphasis, I believe, corresponds to the transition between structuralism and poststructuralism. Because our understanding of literary texts has evolved since the time Dällenbach pinned down the *mise en abyme*, our use of the term has also evolved, and it has evolved in the direction of the fractal. Our textual mirrors are no longer smooth-surfaced, static reflectors emitting images of unified, regularly self-embedding and enclosed structures. They have become turbulent and fractured, and the images they

project are of a text which is fragmented, dynamic, unpredictable, indeterminate, open, and much more complex than many of us had once imagined. *Fractal*, then may be the better term (...). Within these textual bounds, an infinite number of texts is possible. This is the beauty of the fractal: it allows for the possibility of infinitude circumscribed within a finite area." (Sánchez 1992:261-2)

Or, in the same sense,

"All elements in the novel are part of a network of relations and not entities complete in themselves. Characters are shown to be merely particular instances of recurring patterns, while the text can be seen to break up into mutually reflecting segments which, like the characters, participate in an interrelated whole. I realize, of course, that all literary texts are networks of relations, but [...] *La Regenta* invites us to become aware of its reflexive structure as well as of the relational nature of its characters." (Sánchez 1996:6)

Another novel, *Pedro Páramo*, makes Elisabeth Sánchez note that

"In such a novel as *Pedro Páramo*, where boundaries dissolve and imagined wholes break up into fragments that echo each other and one another without ever quite connecting (except, perhaps, in the mind of the reader), the notion of fractal spaces – spaces that lie in the interstices of our thought categories – is made to order. We might say that Rulfo has produced an artistic object that looks very much like a fractal in its unwieldy surface structure, and that he has intentionally increased the complexity of his work by first breaking the story into bits and pieces, which in turn may contain smaller, self-similar bits and pieces, and then ordering the segments in such a manner that they reveal much more about his story, and in fewer words, than a traditional sequential ordering would. Whereas it is possible to view the novel as a mosaic to be pieced together, or as a broken mirror, I prefer the metaphor of the fractal, precisely because it brings the idea of the mirror into play by inviting readers to look for recursive symmetry, at the same time that it suggests a comparison with the mosaic, whose fractured pieces readers must reorder one by one if they hope to discover a recognizable form hidden within fragments." (Sánchez 1996: 232)

The act of reading itself seems to bear spectral and fractal features as well. In this perspective, the text to be interpreted surpasses its traditional linear and static characteristics to turn into a process,

"a fractal in motion, an evolving shape (...). Whether we are attempting to represent our diachronic movement through the text or our synchronic overview of its parts, we always must do so by imagining or drawing *forms in space*, and, as we have seen, the form that best captures the temporal doubling (the spiral) is much more complex than it first seemed. It is more complex because we have become aware that it is possible to focus on different aspects or levels of the text and to chart their behavior over time. When we recognize the correspondences in behavior between the parts and levels (the repetitions with variations), we return to a synchronic reading. In this we are very much like the fractal geometers who likewise have shifted their attention to consider what is going on between scale levels." (Sánchez 1993: 203)

Or

„we can draw maps of our temporal movement through the text, following the plot of a novel, for example, or tracing patterns of imagery or recurring themes; or we can draw a model of relationships among parts or between parts and the whole. There are many ways that a literary text can be represented as a form moving through space or as a

form that the critic has frozen momentarily in order to examine the relationships between its parts. We should not forget, however, that our diagrams will be mere approximations of the infinitely rich and complex process of reading—of constructing a world through our interpretation of verbal signs and continually restructuring that world as our reading progresses.” (Sánchez 1993: 198-9)

Note

1) See also Antofi S.: *The Poetical Discourse* - Galati, Romania, Europlus Publishing House, 2005

References

- Hayles, N.H. (1990). *Chaos Bound: Orderly Disorder in Contemporary Literature and Science*, Ithaca: Cornell University Press.
- Sánchez, E. (1992). "La Regenta as Fractal" in *Revista de Estudios Hispánicos*, 26, 259.
- Sánchez, E. (1992). "Order/Disorder and Complexity in La Regenta: A Case for Spiraling Outward and Upward", in *South Central Review. The Journal of the South Central Modern Language Association*, 13, 4, 6.
- Sánchez, E. (1993). "Spatial Forms and Fractals: A Reconsideration of Azorín's Doña Inés", in *Journal of Interdisciplinary Literary Studies: Innovative Approaches to Hispanic Literature*, 5, 2, 203.

Abstract

Against the background of contemporary morphogenetic sciences, the theory of fractals brings up a new perspective on natural objects generating different processes which can no longer be discussed in terms of the Euclidean geometry. B.Mandelbrot, the founder of this theory, said that various natural forms have irregular, fragmented structures so that Nature bears a higher qualitative level of intrinsic complexity than the one rendered by the Euclidean geometry. Thus, the theory of fractals bears a deeper level of structuring world which turns into a multi-faceted complexity of forms and meanings. Mandelbrot shows mathematically and graphically how nature uses the fractal dimensions and what he calls self-constrained chance to create the complex and irregular forms of the real world.

Resume

Dans le contexte général des sciences morphogénétiques contemporaines, la théorie des fractales ouvre une nouvelle perspective sur les objets naturels, en générant des procès qu'on peut plus analyser dans les termes de la géométrie euclidienne. B. Mandelbrot, le créateur de cette théorie, soutient que les différentes formes naturelles ont une structure fragmentaire et irrégulière, et que l'espace naturel relève un niveau qualitatif intrinsèque de complexité tout à fait différente de celui montre par le filtre euclidien. Ainsi, la théorie de fractales développe une image ordonnée du monde dans un univers avec des multiples facettes des formes et significations. Mandelbrot démontre à l'aide des mathématiques et graphiquement la manière dans laquelle la nature utilise la dimension fractale pour re-crée les formes complexes et irrégulières de l'univers.

Rezumat

În contextul general al științelor morfogenezeice contemporane, teoria fractalilor oferă o nouă perspectivă asupra obiectelor naturale, generând diferite procese care nu mai pot fi analizate în termenii geometriei euclidiene liniare. B.Mandelbrot, fondatorul acestei teorii, afirmă ca variatele forme naturale au structură fragmentară și iregulată, încât spațiul natural relevă un nivel calitativ intrinsec de complexitate total diferit decât cel evidențiat prin filtrul euclidian. Astfel, teoria fractalilor dezvoltă o imagine a lumii ordonată într-un univers multifacțat de forme și semnificații. Mandelbrot demonstrează matematic și grafic modul în care natura folosește dimensiunea fractală pentru a re-crea formele complexe și iregulate ale universului.