



CONTEXTUALIZING PRINCIPLES OF CHAOS THEORY IN AFRICAN HUMANITIES: READING THE 'BUTTERFLY EFFECT' IN DEON MEYER'S *FEVER*

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ABSTRACT

The aim of this study is to implement the sensitivity to initial conditions, a principle of chaos theory. It entails that a small-scale fever can quickly become a large-scale pandemics. Its objective is to make a literary appropriation of experimental sciences. The theoretical framework of this reflection is chaos theory: scientific theory which holds that behind the façade of order lies a degree of disorder. Specifically to this work, the 'Butterfly Effect' supposes first the exploration of the initial health condition of Willem Storm, describing a state of perfect healthiness. Second, the work focuses on the outbreak of a fever indicating a small disturbance in the initial condition. Third, the reflection shows how, through convection and flow, the small fever erupting in Africa quickly becomes a global plague.

Keywords: convection, become, fever, flow, health, pandemics.

RESUME

Le but de cette étude est de mettre en œuvre la sensibilité aux conditions initiales, un principe de la théorie du chaos. Elle stipule qu'une petite fièvre peut rapidement devenir une pandémie à grande échelle. Son objectif est de faire une appropriation littéraire des sciences expérimentales. Le cadre théorique de cette réflexion est la théorie du chaos, une théorie scientifique qui soutient que derrière la façade de l'ordre se dissimule un degré de désordre. Plus précisément dans ce travail, l'Effet Papillon suppose d'abord l'exploration de l'état de santé initial de Willem Storm, décrivant un état de parfaite santé. Deuxièmement, le travail porte sur l'apparition d'une fièvre indiquant une petite perturbation de l'état initial. Troisièmement, la réflexion montre comment, à travers la convection et le flux, la petite fièvre qui a éclaté en Afrique devient rapidement un fléau mondial.

Mots-clés : convection, devenir, fièvre, flux, pandémies, santé.

INTRODUCTION

In late 2010 and early 2011, a great political tsunami shuddered the whole of the Arab world. From a quasi-trivial incident, the turmoil escalated into the massive collapse of some Middle-East regimes. Facts hold that a young unemployed and itinerant hawker named Mohammed Bouazizi set himself on fire. He acted so in protest against the local police forces of his village, Sidi Bouzid, who had expropriated him from his merchandise stalls for illegally occupying public property. The sequel to the events were gloomy. This isolated case of suicide set off a contagiously frenetic revolution in Arab countries. In Tunisia, the outbroken political upheaval caused the overthrow of President Zine El-Abidine Ben Ali. Then, it spread to Egypt, Libya, Bahrain, Syria, and Yemen. This example of domino effect is known as the 'Arab Spring'.

Curiously, this hot spring in Arab countries bears some resemblance to the 'Butterfly Effect', a scientific principle put forward by the American meteorologist Edward Lorenz in 1961. Working on weather prediction at Massachusetts Institute of Technology (M.I.T), Lorenz entered data in his Royal McBee LGP-30 digital computer. The following day, as he used the same data with a small modification by rounding off data to three decimal places (0.506) instead of the six decimal (0.5.06127) used the previous day, he came up with a different result. Lorenz then realized that small changes in initial conditions bring about large-scale changes in the long-term results. He also concluded that long-range weather forecasting would be impossible. The 'Butterfly Effect' therefore entered scientific parlance. The metaphor of a flapping of butterfly wings in Brazil sets off tornado in Texas best accounts for this.

Parallels to the 'Butterfly Effect' are also apparent in a diversity of social or scientific fields. G. Ambika's article "Ed Lorenz: Father of the Butterfly Effect" (2015) confirms its original occurrence in meteorology. As for Norbert Schumacher's "The Butterfly Effect: Estimating 'Faux-New' Customers" (2006), emphasis is laid on how this chaos theory principle helps to estimate new customers in business. Schumacher also adds that it helps to evaluate new customers becoming visible through loyalty or database marketing program With Ernie W Sadau Fache, the sensitivity to initial conditions shifts to healthcare. His medical article "The Butterfly Effect in Healthcare: What Happens When Organization Tackles Unconscious Bias and Promotes Diversity of Thought?" (2019) reveals the success of a private medical clinic based on cultural inclusion of all ethnicities working at Christus healthcare system. In reference to the 'Butterfly Effect', this cultural inclusiveness is viewed as small initiatives that yield a great harvest of diverse thought, making the clinic very promising in the USA.

In African humanities, some novelists also labor the issue of the sensitivity to initial conditions in some of their works. This is of the South African novelist Deon Meyer. In 2016, he released an opus titled *Fever*. The work chronicles a disease that breaks out in Africa, develops at a quick step and becomes a major threat to humanity. Like Fache's article, the present work deals with the medical rendition of the 'Butterfly Effect'. Yet, while Fache emphasizes the positive impact of this principle applied to healthcare, this study ambitions to highlight the negative scope of the 'Butterfly Effect' applied to pandemics. Thus, the aim of this article is to show how a trivial disease can develop into a worldwide plague. The objective is to make literary appropriation of the Butterfly Effect, which is a scientific principle of chaos theory. The theoretical framework of this reflection is the chaos theory which holds that it "may happen that small differences in the initial conditions produce very great ones in the final phenomena" (Gleick, 1987, p. 312). In this work, a best way to analyze this scientific principle amounts to emphasizing good health as initial conditions in a first place. In a second place, individual sickness epitomizes the sensitivity to initial conditions. In the last place, the development of the sickness into a pandemics draws a parallel with the large-scale changes in the final stage.

1. Willem Storm's Body Healthiness: Narrating the Initial Condition of Dynamical Systems

In the science of chaos, the Butterfly Effect is deterministically inaugurated by a primal state called the initial condition. It is the early stage of the evolution of dynamical systems in chaos theory. It is the nascent stage that marks the moment when the 'Butterfly Effect' comes into existence. It hints at a period when dynamical systems are in a stable and patterned position. In this phase, systems are assumed to be homogeneous, far from stochastic trajectories. The initial conditions suggest that systems do not experience change. According to this determinism, systems comply with the same principles of the dominant Newtonian view of the predictability of the universe whereby the same causes produce the same effects. Things are ordered and stable when they are in a state of initial conditions. Yet, the initial condition as fictionalized in *Fever* does not concern the stability of universal and mechanistic laws promoted by Newton and Laplace. Admittedly, the initial stage of the butterfly effect in Meyer's novel chronicles the healthy condition of Willem Storm. It describes a time when the man is in a healthy state. Thus, his body is thought to be in excellent physical condition, allowing him to go about his daily activities that require immense physical efforts. Here, the initial condition of Willem Storm's physical shape allows movements and activities which not only demand contraction and dilation of muscles but also a regular and intense burst of energy.

A deeper insight on *Fever* reveals that the work proposes three main ways of reading the initial condition applied to Willem Storm. First, Meyer contends that walking is an activity that confirms the character's good health. It is because he is in shape that he moves on his feet by alternately setting each foot forward. The character being in initial condition suggests that he goes from place to place on foot. Through the narration of Nico, we clearly witness the huge physical efforts father and son deploy during their activities at Koffiefontein: "We walked back along the side of the trailer" (Meyer, 2017, p. 6). For the good management of their land, both of them often "walked, father and son, side by side" (Meyer, 2017, p. 6). Second, initial condition suggests the driving activities of Willem Storm. His good health enables him to often drive a truck with a "big Volvo FH 12 diesel engine" (Meyer, 2017, p. 5) from Koffiefontein to the Riet River, from Riet River to Vanderkloof Dam or the Orange River. For his survival and that of his son Nico in the South African veld, Willem Storm tours all these areas in order to get foodstuffs from local markets. Third, the man's good health condition can be seen in the strength he displays to lift things and objects that are not in their right places at home. From Nico's comments, one is informed of his father's physical efforts to provide electricity for their home: "my father carried the small Honda generator and electric pump to the fuel station's refilling manhole covers in their colour-coded-rows" (Meyer, 2017, p. 6), the boy evidences.

As it comes out, the initial condition of the Butterfly Effect as applied to Willem Storm in Meyer's *Fever* depicts a health condition in a stable state, exempt from any disturbance. Being in good health also means for the character to do the same activities on a regular basis, without a break. Being in good health also means for Willem Storm to walk distances every day, to drive his Volvo FH 12 truck and also to lift things from one location to another premise. In this logic, Meyer suggests that as long as the man is in good health condition, he will keep doing these activities all week long. Thus, by dint of doing the same things day in day out, the actions of the man seem to depict a routine. They seem to describe a pattern that keeps repeating regularly, a course of actions that develop at a steady pace in the way of an empiric procedure. In *Fever*, Nico is aware of their routine life, and this sclerosis seems to affect him in an undescrivable manner: "The day passed just as the previous day had done, and the one before that, to the dull drone of the big Volvo FH 12 diesel engine, and the muffled rumbling of sixteen wheels on the long, enclosed trailer behind it. Outside, a predictable, [...] landscape slid by" (Meyer, 2017, p. 5), the boy seems to lament.

The resemblance of the days of the week punctuated by Willem Storm's repeated activities therefore make Nico realize that their life is imprisoned into the law of the same occurrence, which makes everything predictable even afar. Since the day before, things to do the next day can already be predefined and predetermined. A few days before, they can already know what will happen on a certain date on the upcoming days. That is to say that with the initial conditions, one can make realizable projections on future actions to be carried out. This insight is consistent with Patrick Brady (1990, p. 70) who defines chaos as "low-level deterministic [...] dynamics". Here, low-level means that chaos involves few variables, thus making prediction possible in dynamical systems. Likewise in *Fever*, one can argue that the good health of Willem Storm is a low-level deterministic paradigm in the sense that he plans activities for the next day and with the certainty that they will be carried out relying on his physical vitality. The routine life is also another marker of low-level determinism in that things are implemented following the way they were predicted long before. According to Isaac Newton, the universe evolves following the regular and predictable patterns of a clock which makes that events occur repeatedly and at an exact same pace. Following the trajectories of a clock, things happen stably, repeatedly, predictably and casually. Julian C. R. Hunt (1995, p. xvii) calls this "Newtonian-Laplacian clockwork view of the universe". This Newtonian paradigm is nothing but what Stephen H. Kellert (19993, p. 145) terms "the clockwork hegemony" of the universe. It means that according to Newton, the movement of dynamical system that counts most is the one which duplicates the linear movement of a clock. This is in the same line of thoughts with Willem Storm who keeps doing the same activities on a regular basis because of he is in a stable initial condition.

From the foregone, it comes out that characters in Meyer's *Fever* are determined by the initial conditions of the Butterfly Effect through a healthy body that helps carry out repeated actions, that is, a life of routine that makes prediction possible. Yet, in chaos theory, nothing is permanent. No state is taken for granted. The most orderly systems are often disturbed by a stochastic condition which makes things change. In the framework the Butterfly Effect, when the initial condition is submitted to sensitivity dependence, stability is even disturbed by the slightest perturbation. Thus, a strong health condition may lose its orderly state and shift to a morbid condition.

2. The Fever Outbreak: A Small Disturbance in Willem Storm's Initial Health Condition

In chaos theory, the initial condition is not a permanent state. It can be just a transitory stage that can quickly be shaken by spasms of stochastic turbulence. Once the initial condition is submitted to the law of sensitive dependence, the deterministic order gives way to a series of disordered behaviors marked by series of irregularities. When an orderly dynamical system experiences a trivial perturbation in the course of its evolution, it then experiences disorder. Its orderliness then shifts to a random behavior. Such a system that initially appeared to be ordered therefore manifests deep configurations of disorder and erratic standards. Thus, the system that was emblematically deterministic becomes unpredictable.

Meyer's *Fever* hopefully duplicates the sensitivity to initial conditions put forward in experimental sciences. Admittedly, Willem Storm used to be healthy over a long period until a dog bite radically changes his initial health condition. Hence, he goes from physical healthiness to a morbid situation. According to little Nico, as soon as he sees a dog float in a pool of light, leap at his father's throat with jaws agape and long fangs bared, he knows that things portend no good. With six other wild dogs sinking their fangs into his shoulder, Nico's father comes up with a bacterial infection, culminating in a temperature: "You've got the Fever, Papa. I can tell" (Meyer, 2017, p. 11), the son reminds the father of his morbid condition. As one can see, the dog bite is the variable in the starting condition of Willem Storm. It describes the sensitivity to the initial health condition of the man. In fact, it is only when the man gets bitten by the wild dogs that his health shifts to illness. The man is so extremely sensitive to the dog bites that he comes up with a fever. He is so liable to the small variation in his starting health condition that his present state is negatively impacted. Willem Storm is prone to the bacterial bites. That is the reason why he is now fever-ridden.

Admittedly, such dogs' bites in *Fever* is the single parameter that makes a healthy state modified. And the subsequent disease runs parallel to a periodic and predictable paradigm that radically changes for an aperiodic model of erratic behavior. Robert Shaw (1984, p. 1-2) calls this "chaotic transition". Basing on Shaw,

one can argue that Willem Storm's health is in a chaotic transition. It supposes that the linear trajectory of his healthy condition is abruptly broken off by a random variable, causing fever in his body. This man once in good shape now losing his physical vitality right after being infected with a bacterial fever is said to be in a chaotic transition. This transitional chaotic model implies that the character goes from healthiness to illness. Metaphorically, because of a stochastic variable that disturbs his body, Willem Storm is projected from health antechamber to illness lounge. Specifically, the chaotic transition means for Willem Storm, no more walking, cessation of driving activities and incapacity of lifting objects in the house because the fever does not allow. This standstill suggests that instability replaces stability, randomness takes over from orderliness. This motionlessness also suggests that predictability is changed for unpredictability and determinism is subverted by erratic behaviors. Willem Storm being in a chaotic transition also predicates that the 'Newtonian-Laplacian clockwork view of the universe' comes to an end. This evidences the end of the regular and predictable quotidian activities he used to carry out when he was healthy. Such activities that are in the image of a clock making events occur at an exactly repeated motion and at an exact similar pace. Health in a chaotic transition epitomizes the subversion of 'the clockwise hegemony'. This thus predicates that character is no more able to devote himself to daily works done on a regular and predictable basis. Now that an aleatory variable undermines his physical vitality, the man is compelled into hibernation. The fever gets him completely bed-ridden. In *Fever*, Nico's comments on his father's handicapped condition underscores strong feelings of anxiety. He suggests that before the dog bites, everything was perfect. Yet, ever since the wild dogs leap at his father's throat and shoulder with bacteria running in his blood stream, Nico opines: "Everything was different now, after yesterday, after the dogs. And now, with Pa's fever" (Meyer, 2017, p. 12) to his dismay.

In his literary appropriation of the science of chaos, Meyer uses the narratives of *Fever* as a pretext to reveal the interplay between order and disorder. For the chaologist South African writer, order and disorder are paradoxically assumed to coexist, so that stability calls for instability, and good health calls for illness. Picking up the threads of his analysis, he contends that there is no news that a healthy person falls ill. For Meyer, there is nothing wrong with the fact that a Willem Storm goes from an initially healthy condition to acute fever. The character's uncontrollable shivers and profuse sweating after a long period of physical vitality is part of the logic of the coexistence between order and disorder, the novelist concedes. Yonka Krasteva (1997, p. 64) upholds the view when she documents that "order and disorder are to a great extent inseparable conditions". Leaning on Krasteva, one can argue that in chaos theory, no dynamical system remains in a permanent condition for long. A supposedly kind of ordered system is very often thought to descend into an erratic abyss as soon as a random variable interferes with its initial condition. So,

there is always chances that a seemingly ordered system may fall into disorder because of the occurrence of an aleatory event in its starting point.

In *Fever*, Willem Storm's bacterial temperature after the wild dogs' bites suggests the ambivalence of man's life. One does not experience healthiness forever. The notion of ambivalence holds that man's life is made up of periods of good health and moments of morbid states. Health and disease being extremely related conditions should reminds man that being well also means that disease is in store because of the fragility of life. Being healthy is never a permanent condition. Maladies are camouflaged in their hideout, ready to strike at any time. For a heavyweight athlete who proudly shows off his muscles, or for an outstanding competitor in the US wrestling corporation, all it takes is a little flu or indigestion to stay bed-ridden for days and miss out important fixtures. The professional life of top athletes are punctuated by ambivalence. There is certainly physical health which grants titles, trophies and personal distinctions. But alongside that, they also have to cope with injuries that negatively impact or ruin professional careers that were nevertheless promising.

Thus, a small injury can have a great drawback for an athlete. Parallelwise in chaos theory, in tiny perturbation can lead to a great upheaval. By causal effect, Willem Storm's fever in Meyer's novel is thought to branch out to other people in other parts of the world following the principle of the sensitivity to initial conditions. It holds that in a dynamical system a small perturbation at the beginning can have unexpected greater consequences in the final state. This could happily be rendered by the paraphrased saying that a flapping wing of a butterfly in South Africa causes tornado in the West.

3. A Butterfly's Flapping Wing Setting off a Tornado: Willem Storm's Fever Triggering a Global Plague

In the received scientific meaning of chaos theory, the best way to understand the 'Butterfly Effect' is through the contention that a small change in the starting condition of a dynamical system causes a large-scale sequel in the long term. This means that when an arbitrary perturbation interferes with a system, its normal trajectory may lead to great aleatory conditions. Also noted is that in experimental sciences, this sensitivity to initial conditions is understood as a stochastic variable which changes the incipient state of any dynamical system. Thus, this brings about spectacular changes in the final stage of that system. Interestingly enough, Ben Okri's trilogy¹ is renowned for lavishly making an issue of chaos theory and some of its principles. As in emulation, Meyer's *Fever* is one of Anglophone African works of fiction which celebrates Edward Lorenz's 'Butterfly Effect'. In this South African novel, the literary appropriation of this principle of chaos theory runs parallel to the

¹ The Famished Road, Songs of Enchantment and Infinite Riches

scientific elaboration. Metaphorically, the 'Butterfly Effect' is akin to a situation in which one event sets off a chain of additional greater happenings. It can also be set in the context of a falling domino that leads to the successive fall of all the other aligned dominos, so as to cause a great mess in fine. In *Fever*, the domino effect is suggested by that the small trouble (fever) with Willem Storm emerging in South Africa and which quickly branches out to different parts of the world, becoming a worldwide plague.

The narratives of *Fever* render a mythified version of the fever outbreak in the storytelling fashion. It seems that owing to mouth-to-mouth transmission, the original story of Willem Storm's fever gets eroded. Now in an African context, oral tradition holds that a bat contaminated a man sitting under a mango tree (supposedly Willem Storm) with its infection. It reads: "The bat was sick. Diarrhoea caused it to defecate on the face of the man under the tree, his eyes, or his nose, or his mouth" (Meyer, 2017, p. 16). According to the legend, Willem Storm quickly infects his wife and many other members of his local African community. The virus keeps spreading through South Africa and keeps mutating. For Meyer, one of the most outstanding features of the 'Butterfly Effect' is its capacity of spreading from one setting to remote premise. According to *Fever*, the spread of the disease from Africa to the West is predicated upon human encounters and contacts. The author observes that it is through human contacts that a small disturbance that breaks out in one continent can spread to other continents just in a short while. One can read:

One of the family members of the man under the mango tree worked at an airport in the nearby city. The family member was incubating the perfect virus. He coughed on a passenger; just before the woman took the flight to England. In England there was a big international sporting event. All the first-world countries had a protocol for deadly, infectious diseases. Even most of the developing countries had extensive plans for such an incident' (Meyer, 2017, p. 16-17)

As we can see, the 'Butterfly Effect' finds its most searching treatment here. The small fever emerging in South Africa has actually reached out to the world with a huge death toll. The flapping wing of a butterfly in the Third-World actually sets off a dangerous tornado in the world. Comparatively to Africa where it killed only a few people, the fever conversely takes a heavy toll of human lives in the rest of the world. Facts give evidence to such butchery. A character informs: "Despite the protocols [...] the Fever wiped out 95 per cent of the world population. All within a few months" (Meyer, 2017, p. 52). Its acuteness is once again revealed through this: "Ninety-five per cent, or fifty million, were wiped out by the virus and its successors" (Meyer, 2017, p. 53). The author uses such facts as a pretext to predicate that the fever is comparable to a serious tsunami. Owing to its velocity and its acuteness, many people are killed in the West, and in the world. The fever is so murderous that in spite of all protective measures, it continues its quick spread, not only wiping out 95 percent of the world population but also killing fifty million.

Meyer also contends that the spread of the fever and its highly murderous character can be accounted for through some concepts of chaos theory. First, insisting on the globalization of the disease, he puts forward that its occurrence at individual level becomes a worldwide plague by means of what Gleick (1989, p. 43) calls "convection". The chaologist opines that in the atmosphere, it is through the phenomenon of convection that some currents created in air masses spread bushfire or sun-burnt land. By a similar principle, the spread of Willem Storm's fever from South Africa to the world could be accounted for by the convection paradigm. Like currents that transmit fire, the family member of Willem Storm who incubates the virus and the English female passenger he coughs on are thought to be the driving belts that transmit the fever virus to the rest of the world. Convection is more meaningful when it evolves at a quick pace.

Second, Meyer also adds that the transmission of the disease from a local setting to a global premise takes place in the context of absolute quickness. He lays down that convection does not take place in a standstill context or total immobility. For him, convection is successful on the condition that contamination is done at a quick pace. Concerning the fever, the narratives of the novel inform: 'The Fever was a serious tsunami. Too rapid, too deadly' (Meyer, 2017, p. 52). Also noted is that: "It spread easily through the air" (Meyer, 2017, p. 16). The fact that a disease moves at a quick step is akin to the principle Leonard A. Smith (2007, p. 65) terms "flow". According to the chaologist scholar, "a flow provides the velocity of X for any point in the space" (Smith, 2007, p. 65). For Willem Storm's bacterial temperature in *Fever*, the fact that the illness rapidly expands at the speed of a tsunami and spreads easily through the air is the manifestation of flow. In fact it is the flow that gives the disease such velocity of X. The flow is the factor that stimulates the disease to move at a very fast pace. Flow is also understandable through the human movements, human promiscuity. It is because people are still in contact on a daily basis that the virus keeps moving at a quick step. When a person incubating the virus rubs shoulders with a group of people, he immediately infects them. As this group meets other people, the virus is therefore passed on to them so that in a very short while, many people get infected. Thus, if the fever moves quickly, it can perfectly become worldwide.

Third, the huge death toll on human lives subsequent to the generalization of the fever rides on what Smith (2007, p. 22) calls "exponential growth". To his mind, exponential growth occurs when on a regular basis a small disturbance grows exponentially quick in a chaotic system. It is through exponential growth in *Fever* that Willem Storm's small viral temperature that victimizes only a few people in Africa sets off a global plague that exterminates ninety-five per cent of the world population. It goes without saying that in the manifestation of the 'Butterfly Effect' in Meyer's novel, cause and effect are engaged in a disproportionate relationship. It is because there is an unbalance between cause and effect that a trivial fever breaking

out in a local setting branches out to the rest of the world. A disease that emerges under a mango tree in South Africa, according to the African oral tradition, and quickly becomes a universal issue is in synch with the insight of Brady (1990, p. 77) that "chaos theory [...] raises the question of extrapolation from one field to another". Admittedly, a simple fever that becomes a worldwide problem destroying lives is the illustration of the flapping wing of a butterfly in the Third-World country that is extrapolated into a huge and murderous tornado in the world.

In the narratives of *Fever*, Meyer affirms that the 'Butterfly Effect' is understood as a succession of large-scale perturbations from a small one. It means that the sensitivity to initial conditions goes beyond the scope of the local South African disease that infects the whole world. By general admission, the 'Butterfly Effect' as portrayed by Meyer stretches out to other perspectives different from the medical and human paradigm. In fact, the Meyerian understanding of the sensitivity dependence brings about unknown outcomes. Thus, a small perturbation in initial conditions not only causes a great health issue but it also extends to unexpected industrial and economic problems. This helps us posit that in the process of its chaotic trajectory, Willem Storm's fever not only becomes a worldwide plague but it also affects the world economic and industrial system. One may argue that from the human paradigm the evil also destroys economic and industrial standards.

As a proof, reading *Fever* reveals that by causality effect the small unhealthiness of the man under an African tree sets off a worldwide plague that, in its turn, causes the collapse of the industrial sector of the world. A weary character evidences that the catastrophic plague causes "industrial explosions, fires, chemical pollution, radioactive contamination" (Meyer, 2017, p. 52). We see how a worldwide disease can even drive an unrelated sector to collapse. Additionally, Meyer argues that the worldwide fever brings the world economic tissue to collapse. He puts that, in its evolution, the illness attacks even the foundations of the business sector. He adds that just like with Ebola years before, the international community takes restrictive measures so as to embank or hold back the pandemics: "Until England and America and all of them began to cancel flights and impose states of emergency" (Meyer, 2017, p. 55).

In Meyer's opinion, the best way to account for the extrapolation of the disease from the human scope to the industrial and economic perspectives is to refer to chaos theory. In fact, chaoticians have developed a principle that explains the dislocation of a phenomenon from its original field to a different other one. Brady (1990, p. 73) calls it "fractals", that is, "an irregular shape repeating itself on varying scales". Specifically to *Fever*, the fact that the sickness gets out of the healthcare domain and expands to both the industrial and economic fields is the perfect illustration of fractal. There is fractal because the disease takes an irregular shape repeating itself on varying scales such as the sectors of industry and economy. In the corpus, industrial explosions, the occurrence of chemical pollution and radioactive contamination is the

proof that consequences of the fever repeat themselves on the industrial scale. Also, the total collapse of the airline sector with flights cancelation, due to the generalization of the fever, is an example of fractal. Here, fractal shows how the evil of the plague stretches to the economic field causing bankruptcy, temporary unemployment and job losses.

CONCLUSION

Throughout this study, we have endeavored to show that the 'Butterfly Effect' in Meyer's *Fever* first deals with the initial health condition of Willem Storm, which describes a state of perfect healthiness. Second, the work focuses on the outbreak of a fever indicating a small disturbance in the initial health condition. Third, the reflection shows how, through convection, flow, exponential growth and fractals, the small fever erupting in Africa quickly becomes a global health crisis. Reading the 'Butterfly Effect' here has helped us realize that literature has no limitations in terms of the themes addressed in works of fiction. Likewise, African writers should inspire from this to give a new orientation to their craftsmanship. Dealing with scientific issues in works of literature could be a turning point in the evolution of humanities. Feeding scientific principles, medical terms or even biological language to literary texts could allow the emergence of new aesthetics in the process of literary production.

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