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Causal patterns and chance in the narratives of Jorge Luis Borges

Suradech Chotiudompant

Abstract
The essay investigates how the narratives of Argentine writer Jorge Luis Borges explore the role of the human mind in problematizing, and intervening in, the causal pattern, thereby exposing the reader to an awareness that causal patterns are no longer a transcendental system, but an open-ended procedure in which our mind always has a part to play. The first part of the essay discusses how Borges, especially in his short story 'Emma Zunz,' views causality as a complex human construct. The second part analyzes Borges's treatment of chance in 'El jardín de senderos que se bifurcan' (The garden of forking paths) as an external factor that disrupts causal patterns in its distinct way. The essay aims to show that despite these attempts at causal destabilization, causal patterns are indispensable. This leads to a conclusion that our overt reliance upon causal patterns and covert suppression of chance, which significantly affect our representation of reality, come to be regarded as part of the human condition.

Science and contextualization

Jorge Luis Borges (1899–1986), arguably the most famous Argentine author, wrote most of his metaphysical short stories in the 1940s, especially toward the end of the Second World War. He was writing some of his stories at a time when there were still heated debates surrounding Albert Einstein's theory of relativity and its implications on morality. According to Eduardo L. Ortiz, Borges was well cognizant of such debates whilst in Europe in the early 1920s, and particularly in Buenos Aires in 1925 when Einstein visited the Argentine capital city. At that time, Einstein's...
concepts of time and space came as a shock to the general public since they disturbed accepted notions of universal time and space which could be traced back to Sir Isaac Newton. Even though Einstein's ideas might not be understood by everyone, his reflections inspired debates and controversies, encouraging the general public to think seriously about space and time. Roger Rosenblatt argues that:

all this has nothing to do with relativity, but it had much to do with Einstein's contemplation of relativity. Einstein became the emblem not only of the desire to know the truth but also of the capacity to know the truth.

Borges was probably one of the people at that time who found himself engaged in the debates. According to Ortiz, this can be seen in one of his poems, 'Líneas que pude haber escrito y perdido hacia 1922,' in which the narrator begins by describing a scene seemingly remote in time and space:

Silenciosas batallas del ocaso
en arrabales últimos,
siempre antiguas derrotas de una guerra en el cielo,
albas ruinosas que nos llegan
desde el fondo desierto del espacio
como desde el fondo del tiempo ...

(Silent battles of the sunset
in the outlying suburbs,
forever ancient defeats of a war in the sky,
meager dawns that reach us
from the deserted bottom of space
as from the bottom of time)

The description depends largely on our concepts of time and space. Words such as "ocaso" (sunset) and "albas" (dawns) denote distinctive concepts of time whereas "arrabales" (suburbs) and "derrotas" (defeats or ruins) signal certain types of space. For Borges, these concepts approach us from the ends of time and space, secret areas upon which his poem centers. Toward the end of the poem, the narrator wonders to what extent such concepts constitute him and whether there will be any key to the conundrum:
Borges's feeling of uncertainty increases at the end of the poem, since he is not sure whether he will be able to answer these questions, given his limited capacity to comprehend the universe. This tone of doubt can be cast alongside a sense of uncertainty in the general public at that time.

Causality and its limits

For Borges, this sense of uncertainty looms large in his work, as the development of contemporary science no longer assures human beings that a mysterious design of the universe is there to be revealed and comprehended; on the contrary, it problematizes such fundamental issues as space and time as well as raising questions as to what extent human beings can understand nature. Such questioning seriously undermines the belief that we can objectively view our surroundings, and may lead to a subjectivist stance in which the figure of the observer becomes crucial, particularly in his or her role of determining the act of observation and analysis. The focus can be regarded as shifting from external experiment to inward acts of cognition. This section concentrates on the fundamental issue of causality to discuss how the narratives of Borges explore the observer's incapacity to render reality in its absolute form.

Borges perceives the importance of the role of the human mind and how human cognition is deeply related to the object of mental analysis. This issue is complicated in the sense that human cognition cannot be analyzed on its own, as doing so would be likened to the act of lifting oneself by one's shoestraps. Furthermore, if the human mind occupies a major place in the construction of reality, what we perceive as reality may be derived from the workings of our inner self. By aligning his narratives with these lines of thought, Borges indicates one of the main paradoxes
that hovers about the complexity of the processes of conceptualizing knowledge. As a result, he questions the paradigm of causal connections that is believed to exist in nature, prior to human conceptualization.

In "Tlön, Uqbar, Orbis Tertius," Borges conjures up an imaginary terrain called Tlön and describes the Tlönian philosophical epistemology, which is based on an extreme branch of idealism (i.e., the belief that everything is generated from the mind). Given this belief, it is not surprising that Tlönians criticize the doctrine of materialism, the proposition that reality lies outside the human mind, because it assumes that objects have duration in time and thus occupy particular places, regardless of our cognition and perception. For Tlönian people, objects do not exist outside their perception and any continuation of their existence without human perception is deemed impossible. Therefore, the laws of causality are found to be unsustainable in Tlön, as they presuppose that every object and every event undergoes temporal progression and is engaged in deterministic interrelationships. Tlönian people consider causal laws to be what they simply call "association of ideas":

La percepción de una humareda en el horizonte y después del campo incendiado y después del cigarro a medio apagar que produjo la quemazón es considerada un ejemplo de asociación de ideas.⁹

(The perception of a cloud of smoke on the horizon and then of the burning field and then of the half-extinguished cigarette that produced the blaze is considered an example of association of ideas.)¹⁰

This belief resembles David Hume's idea of the construction of causality in reality. For Hume, the concept of causality is closely linked with that of identity. If the concept of continuing identity is proved to be false, the laws of causality are undermined as well; this is because these laws presuppose the continuing identity of objects and events:

We readily suppose an object may continue individually the same, tho' several times absent from and present to the senses; and ascribe to it an identity, notwithstanding the interruption of
the perception, whenever we conclude, that if we had kept our eye or hand constantly upon it, it would have convey’d an invariable and uninterrupted perception. But this conclusion beyond the impressions of our senses can be founded only on the connexion of *cause and effect*; nor can we otherwise have any security, that the object is not chang’d upon us, however much the new object may resemble that which was formerly present to the senses.\(^\text{11}\)

Following Hume’s argument, one sees how important it is for Borges to deconstruct such traditional definitions of identity and causality. By creating a scenario in the imaginary terrain of Tlön whereby the identity of being is not allowed to be sustained in time, Borges manages to demonstrate that identity and causality are linked, and that when identity is put into question, the laws of cause and effect are also undermined.

Another challenge to the laws of causality can be found in *Emma Zunz.*\(^\text{12}\) In this story, the eponymous character receives a letter saying that her father has passed away. Her father, Emanuel Zunz, has been living in Brazil under the name Manuel Maier because he was accused of embezzling funds from the Tarbuch & Loewenthal weaving mill, where Emma Zunz is working. Before departing for Brazil, Emanuel confided to Emma that Aaron Loewenthal, who is Emma’s current boss, was the real thief. After receiving the letter, Emma feels devastated: “Su primera impresión fue de malestar en el vientre y en las rodillas; luego de ciega culpa, de irrealidad, de frío, de temor; luego, quiso ya estar en el día siguiente.”\(^\text{13}\) (Her first impression was of a weak feeling in her stomach and in her knees; then of blind guilt, of unreality, of coldness, of fear; then she wished that it were already the next day.)\(^\text{14}\) She recalls her childhood, which she enjoyed with her parents, before the accusation drove their family apart. By that night she has conceived of a plan to take revenge for her father. She goes to work as usual on the next day and does not let anyone know of her father’s death. According to the narrative, no one suspects any change in her personality as she goes about her daily life at work. As a pacifist, Emma declares that she opposes any form of violence and, therefore, will not join a strike, the rumors of which are building up in the factory. On Saturday, she phones Loewenthal
that she needs to talk to him in private that night, insinuating that she has some news in regard to the strike. Loewenthal agrees to meet her in his office.

It is at this point that the narrative becomes increasingly complex. Emma reads a newspaper and finds out that a Scandinavian ship is to weigh anchor that night. After finishing her work on Saturday, she goes down to the docks where there are many places of ill repute. She steps into two or three bars and finally agrees to sleep with a man, probably a sailor from the Scandinavian ship. When Emma is alone again, she looks at the money that the man has left for her. She tears the money into pieces and then goes to see Loewenthal in his office. While Loewenthal is getting her a glass of water, Emma looks for a revolver that she believes he keeps in one of his drawers. She manages to find it and fires at Loewenthal when he comes back. Calling the police, Emma tells them her pretext for killing him:

Ha ocurrido una cosa que es increíble ... El señor Loewenthal me hizo venir con el pretexto de la huelga ... Abusó de mí, lo maté.¹⁶

(Something incredible has happened. ... Mr Loewenthal had me come over on the pretext of the strike. ... He abused me, I killed him.)¹⁷

Even though the excuse is in a way a manipulation of facts, it is convincing because Emma has indeed been sexually violated and, as a result, her emotion is real. What makes the case different is that Loewenthal is not the person who has committed the violation; it is an unknown sailor whom Emma chose on purpose. At any rate, Emma fulfills her aim: she manages to take revenge for her father by killing the man who once destroyed her family.

What is interesting in 'Emma Zunz' is not only Emma's complicated revenge scheme, but the shifts in causality throughout the course of the narrative. The outrage that propels her to kill Loewenthal is not caused solely by her father's death. It is difficult to credit that the death alone would drive her to shoot her boss. Her father has been living far from her for a long time, and therefore, their intimacy might not be so strong. The fact that her father's death is only communicated via a piece of paper increases a sense of unreality; it makes his death almost like a dream, which
cannot be easily proven.\textsuperscript{18} How can she carry out her plan if she cannot feel that his death is real? Thus, Emma needs to make it seem real to her. She needs to find another substituting cause that drives her to consummate her plot. In this case, she needs to be sexually violated so that her anger is intensified and, in a sense, made real.\textsuperscript{19} Having been violated by an anonymous sailor, she feels an emotional outrage that is strong enough for her to take revenge:

Ante Aarón Loewenthal, más que la urgencia de vengar a su padre, Emma sintió la de castigar el ultraje padecido por ello. No podía no matarlo, después de esa minuciosa deshonra.\textsuperscript{20}

(In Aaron Loewenthal’s presence, more than the urgency of avenging her father, Emma felt the need of inflicting punishment for the outrage she has suffered. She was unable not to kill him after that thorough dishonor.)\textsuperscript{21}

By identifying Loewenthal with the sailor, Emma cannot stop herself from killing him. The cause of the murder is shifted: it is no longer revenge for her father so much as for her own dignity. However, the effect is the same: Loewenthal is dead and the double causes of her revenge are justified. The shift in revenge causes can be seen as a paradox: while it emphasizes the efficacy of, as well as the need for, a cause, it also represents a challenge to the laws of causality, in the sense that human beings sometimes create certain causes to justify certain effects, without letting the laws run by their own deterministic course. Emma cannot let her revenge plot fail simply because she cannot feel that her father’s death is real; therefore, she needs to generate a more immediate substitute cause to justify her action. As the Tlönians believe, causal laws are shown here to be partially a human construct. This reading is supported by the strange description of the scene of Emma’s encounter with the sailor, which she uses to create her own constructed cause:

Los hechos graves están fuera del tiempo, ya porque en ellos el pasado inmediato queda como tronchado del porvenir, ya porque no parecen consecutivas las partes que lo forman.\textsuperscript{22}

(The arduous events are outside of time, either because the immediate past is as if disconnected from the future, or because the parts which form these events do not seem to be consecutive.)\textsuperscript{23}
The keyword here is “consecutivas” (consecutive). The event is portrayed as not “consecutive” with the rest of the events in the story which happen in the course of deterministic time. Emma’s intervention in the deterministic laws of causality marks this encounter as “inconsecutive” because it does not happen within the “natural” framework of causation. It happens because Emma wills it to happen. Borges, by allowing Emma to intervene in seemingly predetermined laws of causality, casts the legitimacy of such laws into doubt and brings up a bleak question: what if these laws are only a human construct?24

If ‘Emma Zunz’ problematizes the issue of causality by showing how much human beings play a part in it, Borges’s ‘Deutsche Requiem’25 also challenges our capacity to examine causality. Like ‘Emma Zunz,’ the story does not question the efficacy and power of causality; however, unlike ‘Emma Zunz,’ it displays the helpless entrapment of human beings within the ironclad chains of cause and effect. The protagonist, Otto Dietrich zur Linde, is sentenced to death because of his involvement in a concentration camp during the Second World War. However, he neither lies on oath nor repents his sin.26 In his reflective soliloquy, he asserts:

Me satisface la derrota, porque secretamente me sé culpable y sólo puede redimirme el castigo. … Me satisface la derrota, porque es un fin y yo estoy muy cansado. … Me satisface la derrota, porque ha ocurrido, porque está innumerabemente unida a todos los hechos que son, que fueron; que serán, porque censurar o deplorar un solo hecho real es blasfemar del universo.27

(I am pleased with defeat, because secretly I know I am guilty, and only punishment can redeem me. … I am pleased with the defeat because it is an end and I am very tired. … I am pleased with defeat because it has occurred, because it is irrevocably united to all those events which are, which were, and which will be, because to censure or to deplore a single real occurrence is to blaspheme the universe.)28

Zur Linde’s statement bespeaks his own belief in the doctrine of predestination, the belief that God has already destined the fate of all human beings before their birth. It implies that the chains of cause and effect can neither be broken nor altered. According to the story, it is not zur Linde’s fault that he works for Nazis or kills
innocent people in the concentration camp; it is rather his luckless destiny that ordains him to perpetrate his tragic course of action.\textsuperscript{29} The moral of the story does not lie in the horror that the protagonist inflicts upon the innocent so much as in the helplessness of zur Linde against the will of God, whose indecipherable design takes the form of impenetrable laws of causality.

If Borges challenges causal laws because they are partially a product of the human mind (as in Tlön’s case) and also partially influenced by human will to change it (as in Emma Zunz’s case), it does not mean that he challenges the efficiency and validity of causal laws, as he still believes that the doctrine of causation is valid and can be used to explain natural phenomena. However, problems arise when one tries to predict effects since human cognition is not able to handle and register the infinite number of events that have happened in the universe and distill definite causes, hence the bleak picture of predestination Borges portrays in ‘Deutsches Requiem.’ These short stories of Borges debunk the mythical status of objective knowledge by exposing the reader to the rather shaky foundation upon which the production of knowledge is based. The doctrine of causation needs to be looked at in a new light due to the active intervention of human cognition at every level of interrogation.\textsuperscript{30}

\textbf{Chance and pattern}

We have seen that causality is crucial in that it enables human beings to conceptualize and produce knowledge. Nevertheless, the irony is that causal patterns not only facilitate but mediate and influence the production of knowledge. Chance is an external factor that disrupts these patterns. In this part, I will first analyze the role of chance in Borges’s narrative and identify his attitude toward chance before going on to discuss the significance of pattern as a whole.

In the domains of science and philosophy, chance has long been an object of study but was given rather inadequate consideration by scientists and scholars in earlier periods. According to David Ruelle, chance fascinated such thinkers as Blaise Pascal, Pierre Fermat, Christiaan Huygens, and Jacques Bernoulli, but the calculus of
probabilities was long considered to be a minor branch of mathematics.\textsuperscript{31} This is because chance is viewed as subversive. Because chance defies fixed laws and paradigms, it disrupts causal determinism, frustrating any attempt to find a regular pattern to describe natural phenomena. To understand the concept and value of chance better, it is worthwhile to introduce another element that lies at the heart of contemporary science, noise. Noise is an umbrella concept that is privileged because of its disruptive nature. Michel Serres proposes this definition:

\begin{quote}
Noise is not a phenomenon, all phenomena separate from it, figures on a ground, as a light in the fog, as any message, cry, call, signal must each separate from the hubbub that fills the silence, just to be, to be perceived, sensed, known exchanged. As soon as there is a phenomenon, it leaves noise, as soon as an appearance arises, it does so by masking the noise. Thus it is not phenomenology but being itself.\textsuperscript{32}
\end{quote}

According to Serres, we do not conceptualize our existence and our surroundings in an empty space, devoid of meaning and substance. On the contrary, the background within which, and the channels through which, we rationalize are full of noise. Noise, therefore, lies at the center of representational practices, functioning as a repressed foundation which makes possible any reproduction of the real. Serres reverses the part noise plays in nature: instead of being marginalized, noise becomes the main background within which both nature and our cognition are shaped. However, more often than not, noise is denied and the causal patterns of knowledge production that abandon the notion of noise altogether are overemphasized. This imbalance leads to the unheralded emergence of noise that can challenge the validity of such patterns.

Placed in this picture, chance is regarded as part of the noisy background, prompt to disrupt deterministic patterns that are imposed upon the universe. In ‘Chance, complexity, and narrative explanation,’\textsuperscript{33} William Paulson distinguishes between two modes of explanation, the algorithmic and the narrative, loosely based on our conventional divide between scientific and literary discourses. The development of an algorithmic explanation, like that of classical science, centers around the use of pattern, which is derived from the repetitive occurrence of events in a recognizable scheme.
This leads to the notion of predictability that characterizes the algorithmic. The narrative mode, by contrast, emphasizes the unpredictable or the random, as it is established upon the conviction that events are not repeated in any perceivable pattern. Therefore, narrative is "the mode of understanding appropriate to a largely open, contingent, unpredictable world."\(^34\) The algorithmic mode of explanation is a long-established route that classical scientific discourse traditionally adopts, whereas narrative is a mode of comprehension mainly developed for an open world, full of random, unpredictable events. It privileges the role of chance that occurs in communication, be it speaking or writing.

The narratives of Borges are, in a sense, also an acknowledgement of chance and exemplify Paulson’s notion of the narrative explanation. Borges’s 'El jardín de senderos que se bifurcan'\(^35\) (The garden of forking paths) can be read as a testimony to the emergence of chance in the universe. The plot of the story is, according to Borges, inspired by a real historical text, Liddell Hart’s *The History of the World War*, as shown by the introductory paragraph.\(^36\) However, the historical framework is not only used to set the tone of the story, it is also used as a pattern which unpredictable chance disrupts. According to Hart, torrential rains were the reason why British divisions delayed their offensive against the Serre-Montauban line for five days. Yet for Borges, a story told by Dr Yu Tsun subverts Hart’s version of history, breaking the causal pattern that Hart uses to explain the course of the war. For Yu Tsun, the delay was caused by his successful communication to the Germans about the town where the British stored their artillery. The communication would not have been successful, had Yu Tsun not found and killed a man whose name exactly corresponded to that of the town: Albert. Finding the name of the victim and Yu Tsun in the newspaper, the Germans were able to bomb the town, causing the British to defer sending weapons to mount the offensive. Yu Tsun’s discovery of Albert’s name can be regarded as a mere chance, something that cannot be prophesied. Yet this contingency became an important event in the subsequent chains of cause and effect since it enabled the Germans to bomb the secret location. Borges’s story, therefore, conforms to Paulson’s theory of the narrative explanation, in which the unpredictable is privileged

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and has an important function in constructing another level of meaning.

The chance encounter between Yu Tsun and the victim not only enabled Yu Tsun to communicate the secret to the Germans, but had further consequences. Stephen Albert happened to be a sinologist who was interested in the work of Yu Tsun’s ancestor, Ts’ui Pen. The work was called El jardín de senderos que se bifurcan, “una novela que fuera todavía más populosa que el Hung Lu Meng”37 (a novel that might be even more populous than the Hung Lu Meng).38 For Albert, “el libro es un acervo indeciso de borradores contradictorios. ... en el tercer capítulo muere el héroe, en el cuarto está vivo”39 (the book is an indeterminate heap of contradictory drafts. ... in the third chapter the hero dies, in the fourth he is alive).40 The confusion of Ts’ui Pen’s masterpiece at the level of plot is, to a certain degree, a criticism of our monolithic conception of “un tiempo uniforme, absolute”41 (a uniform, absolute time),42 as Ts’ui Pen believes in:

infinitas series de tiempos, en una red creciente y vertiginosa de tiempos divergentes, convergentes y paralelos. Esa trama de tiempos que se aproximan, se bifurcan, se cortan o que secularmente se ignoran, abarca todas las posibilidades.43

(an infinite series of time, in a growing, dizzying net of divergent, convergent and parallel times. This network of times which approached one another, forked, broke off, or were unaware of one another for centuries, embraces all possibilities.)44

Ts’ui Pen’s conception of time is transgressive and reveals the complexity of the universe by showing how other events which may have forked from the same cause are also happening in other temporal dimensions. This radical concept of time can also be applied to the plot of the short story itself as Albert self-consciously attempts to read it:

en algunos existe usted y no yo; en otros, yo, no usted; en otros, los dos. En éste, que un favorable azar me depara, usted ha llegado a mi casa; en otro, usted, al atravesar el jardín, me ha encontrado muerto; en otro, yo digo estas mismas palabras, pero soy un error, un fantasma.45

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(in some you exist, and not I; in others I, and not you; in others, both of us. In the present one, which a favourable fate has granted me, you have arrived at my house; in another, while crossing the garden, you found me dead; in still another, I utter these same words, but I am a mistake, a ghost.)

Had all events followed their dire deterministic courses, the branching of events that leads to an unceasing pullulation of situations would not have happened since all events would abide by the laws of causal determinism. However, Borges’s narrative shows the reader that reality does not occur that way: the noisy character of reality, in which all sorts of contingencies are possible, can explain why a series of events fork out. The exact location where events fork is where noise disrupts the deterministic chain of events. ‘El jardín de senderos que se bifurcan,’ therefore, is representative of Paulson’s narrative mode in which contingency plays a significant role.

With the privileging of chance and the use of what Paulson calls the narrative mode, Borges attempts to challenge the simplistic idea of reality as following a rigid deterministic course. As his narrative suggests, such a view of reality is oppressive, especially in its deliberate endeavor to exclude noise or contingency from the processes of conceptualizing knowledge. The issue is made more complicated when there are attempts to demystify the existence of chance via scientific methods, thereby missing out on the essence of chance which defies any form of representation. Paulson also warns against this case:

Like science, the rational order of critical demystification can be oppressive in its attempts to control chance. It is no surprise, then, that resistance to it can take forms of both ludic disruption and dour fatalism.

If ludic disruption and dour fatalism are ways to oppose rationalization, both of them also form another level of opposite extremes, as two different attitudes of thinkers trying to deal with chance whilst preserving its mystic status.

Borges’s attitude toward chance and the human incapacity to comprehend its appearance in reality can be regarded as somewhat pessimistic. In ‘El jardín de senderos que se bifurcan,’ even though Yu Tsun is impressed by Albert, learning that Albert has devoted time and energy studying the work of his ancestor, he nevertheless
kills Albert and accuses fate of letting him fall into a situation in which he is unable to avoid killing the sinologist. The murder of Albert can be seen as fatal revenge, since Ts'ui Pen was also murdered by a foreigner. Therefore, Albert's death is inevitable as it seems that fate has already designed his lot. After Albert's murder, it is no wonder that Yu Tsun's feelings are of "innumerable contrición y cansancio" (inestimable contrition and weariness), not only because of killing a man who could have been his friend, but also because of his incapacity to overcome fate. It can thus be argued that Borges views chance with pessimism since it engenders fatalism, which in a sense is analogous to the nightmarish labyrinth within which Yu Tsun is trapped. For Borges, chance is a cause of despair since it makes us realize how much we are trapped in the labyrinth of fate, in which anything can happen to us without any perceivable reason.

Representational limits of causality and the inevitability of pattern

Borges explores both internal and external factors that make causal patterns complex, as human cognition plays an active role in influencing these patterns and there is always a possibility of chance disrupting them. In this light, causality for Borges is a highly intricate issue that needs to be redefined since the patterns which we use to conceptualize and construct our knowledge are not transparent and straightforward. Nevertheless, this does not mean that the notion of pattern should be disregarded. This section will consider how the attempts of Borges to transgress the limits of causality still rely on the notion of pattern, a dependence which in itself signals a certain limitation in the human condition.

It is worthwhile here to go back to Paulson's differentiation between the two explanatory modes, algorithmic and narrative. Even though Paulson privileges the latter to a considerable extent in his essay and goes so far as to regard noise (i.e., chance in this context) as one of the main features that distinguishes literary from scientific discourses, he believes that the narrative mode still depends to a certain degree on one of the main features of the algorithmic, namely pattern. If the narrative is constructed out of pure aleatory elements, nobody will understand it:
Narrative is not pure aleatory succession. If it were, narratology could have been laughed out of existence a long time ago. When most literary scholars refer to narrative they mean pattern, they mean recognizable, repeatable (though not generally rigid) schemata for organizing events into wholes that have such features as familiar plots and beginnings, middles, and ends.\textsuperscript{52}

Pattern represents an indispensable tool to organize elements of disorder in the text so as to enable the reader to comprehend the text. In the short stories of Borges, one can also perceive a dialectic between the algorithmic and the narrative: these stories do not mention the emergence of chance in passing, but attempt to come to terms with its existence. For Paulson, this means subjecting chance to the explanatory powers of the algorithmic:

To the extent that narrative moves in the direction of the incompressible, random succession, it ‘explains’ less and less, or rather it cannot be recognized or accepted as ‘explanation’. The psychological concept of explanation bespeaks an unwillingness to accept ‘it just happened that way’ as a meaningful statement \textsuperscript{53}

In other words, by agreeing to represent the role of chance and its implication in textual terms, Borges needs to allow elements of reason and the non-random to come into play.

Borges’s image of the garden of forking-paths represents an attempt to impose an overtly orderly image of the artificial garden upon the world of chaos.\textsuperscript{54} Significantly enough, his use of the garden image also points toward a need for order, since without order, one simply cannot discuss chaos or realize its implications. The garden of forking paths can be construed as an attempt to rationalize chaotic developments in the framework of order. For Borges, the garden is in fact a book, thereby directly playing upon the idea that an act of writing is an act of rationalization, an endeavor by a writer to make sense of chaos that surrounds his or her existence. In this light, to write is therefore to reconnoiter events in a causal manner, no matter how coincidentally they are related, in order to understand life better and to gain comfort knowing that there is at least some sense behind all this chaos.

Both Emma Zunz and Otto Dietrich zur Linde rewrite their lives, as they try to make sense of these lives when confronted with contingent events, and try to steer their lives back to a more reliable
course of determinism. In this light, story-telling becomes a matter of urgency as both of them strive to articulate their ordeals in different ways. Perhaps what they fear most is the existential void, a realization that there is no such thing as reason and causation. That is why both of them try to ‘imagine’ causality in their own distinct ways to allay this fear and to delude themselves that they are locked in a predestined, reliable universe whereby every event follows its deterministic course, not dissimilar to a trustworthy clockwork left to run on its own. For both of them, causal determinism means solace.

By exploring causal patterns, Borges’s narratives test representational limits, attempting to present the unpresentable in causality itself, which in this context is chance and background noise which constantly undermine the oppressive view of reality as rigidly deterministic.\textsuperscript{55} Causality has its own limitations, as Borges takes great pain to elaborate; his narratives acknowledge such representational limits of causality and posit a new way to approach the reality behind it, one in which causal patterns are no longer monolithic or strictly deterministic but distinctively hybridized. This is shown by his textual representation of causality which acknowledges the interactive relationship between pattern and chance.

\textit{Notes}


6 Borges, 'Líneas que pude haber escrito y perdido hacia 1922,' p. 51.
7 Borges, 'Lines that could have been written and lost round about 1922,' p. 31.
13 Borges, 'Emma Zunz,' p. 564.
15 Borges hints that, by replaying a sexual scene she might have seen between her parents, her revenge might be interpreted also as vindication for the sexual violation of her mother. For more details, see Bella Brodzki, "She was unable not to think": Borges' "Emma Zunz" and the female subject, Modern Language Notes 100, 1985, pp. 330–47; and Juan Duchesne Winter, 'Después de la perdida de la justicia. Una lectura zizekiana de 'Emma Zunz,' Variaciones Borges 10, 2000, pp. 185–202.
18 The sense of unreality that clouds her father's death is extensively analysed in Beatriz Sarlo, 'El saber del cuerpo. A propósito de 'Emma Zunz',' Varaciones Borges 7, 1999, pp. 231–47. Sarlo (p. 233) asserts that Emma's treatment of the situation is in excess: 'Emma lee la carta in exceso, interpretándola a la luz de una historia que, para ella, es la única verdadera. ... El exceso conduce a la hiperinterpretación: la carta le dice a Emma más de lo que está escrito efectivamente en ella.'
19 Carter Wheelock argues that Emma lets her body be violated because she needs to assume the disgraced status of her father. I think Wheelock's argument is partially right but he still disregards the sense of unreality of the whole situation, especially the fact that Emma is driven to perpetrate the revenge simply because of a letter, the content of which is not guaranteed to be right. For Wheelock's argument, see his The Mythmaker: A Study of Motif and Symbol in the Short Stories of Jorge Luis Borges (Austin and London: University of Texas Press, 1969), pp. 139–43.
20 Borges, 'Emma Zunz,' p. 567.
22 Borges, 'Emma Zunz,' p. 566.
24 Emir Rodríguez Monegal's reading of the story confirms my thesis that Borges
attempts to deconstruct the essentialist attitude people have toward causal laws. For Rodríguez Monegal, identity is the central focus of the story: '[Emma Zunz] had been raped; the identity of the rapist (and the fact that she consented willingly) was irrelevant. What matters is the fact that an action committed by one man can be atoned for by another. It is the identity between men, not the differences in their personalities and individual acts, that is the real subject of the story.' See Rodríguez Monegal, *Jorge Luis Borges: A Literary Biography* (New York: Paragon, 1978), p. 411. As we have seen, the issue of identity, along with that of causality, has a close affinity with our cognitive process. If the first issue of identity is deconstructed, that of causality is likely to suffer the same plight.


26 There is a strongly religious subtext of the story, given the fact that Borges begins the story by quoting a section of Job from the Bible. For more details, see Ramsey Lawrence, 'Religious subtext and narrative structure in Borges' “Deutsches Requiem”,' *Variaciones Borges* 10, 2000, pp. 119–38.


29 For Jaime Alazraki, zur Linde's destiny can also be interpreted as an analogy to that of Germany in the sense that they live and fight for their ideal, the condition of which is their own destruction. See Alazraki, *La prosa narrativa de Jorge Luis Borges: temas – estilo* (2nd edition, Madrid: Gredos, 1983; first publ. 1974), pp. 116–21.

30 Borges opens up a philosophical topic that has a direct relationship with science: the difference between "the world as it is" and "the world as it is perceived." In science, these two concepts have been developed into two fields of knowledge: natural science and human science, with difference in their foci. While natural science stresses the priority of the natural world, deeming that all mental and spiritual realities are grounded in physical, material realities, human science privileges the role of the cognitive process of human beings. While our conception of science has long been shaped by the epistemic and ontological priority of natural science, human science has been relatively unpopular. By emphasizing the importance of human cognition in his narratives, Borges questions the privileging of the concept of natural science that belies the development of modern science and asks us to revise the rather disparaged status of human science. For more details on the difference between human science and natural science, see Charles Harvey, 'Natural science is human science. Human science is natural science: never the twain shall meet,' in Babette E. Babich, Debra B. Bergoffen, and Simon V. Glynn, eds., *Continental and Postmodern Perspectives in the Philosophy of Science* (Aldershot: Avebury, 1995), pp. 121–36.


33 The essay is published in *SubStance* 74, 1994, p. 5–21.
34 Paulson, 'Chance, complexity, and narrative explanation,' p. 9.
37 Borges, 'El jardín de senderos que se bifurcan,' p. 475.
39 Borges, 'El jardín de senderos que se bifurcan,' p. 476.
41 Borges, 'El jardín de senderos que se bifurcan,' p. 479.
43 Borges, 'El jardín de senderos que se bifurcan,' p. 479. His italics.
45 Borges, 'El jardín de senderos que se bifurcan,' p. 479.
47 Paulson, 'Chance, complexity, and narrative explanation,' p. 20.
48 For more details on the theme of revenge and chase, see Elisa Rey, 'El héroe, el traidor y el laberinto. A propósito de "El jardín de senderos que se bifurcan",' Logos 16, 1980–81, pp. 207–13.
49 Borges, 'El jardín de senderos que se bifurcan,' p. 480.
51 For Paulson, noise generates textual ambiguity and it is this ambiguity that distinguishes literary discourse. Taking his cue from Jurij Lotman's The Structure of the Artistic Text, he argues that the reader is required to create new codes in reading a poetic text since noise is incorporated in the text. For more details, see Paulson, 'Literature, complexity, interdisciplinarity,' in N. Katherine Hayles, ed., Chaos and Order: Complex Dynamics in Literature and Science (Chicago and London: Chicago University Press, 1991), pp. 37–53.
52 Paulson, 'Chance, complexity, and narrative explanation,' pp. 11–2.
53 Paulson, 'Chance, complexity, and narrative explanation,' p. 15.
54 For more details of chaos and order in the works of Borges, see Alazraki, La prosa narrativa de Jorge Luis Borges, especially pp. 52–64. Alazraki also acknowledges the impossibility of human beings to order the world of chaos and attributes this failure to chance, which symbolises the inscrutability of divine power.
55 In this light, their narratives can be classified as "cybernetic fiction," a kind of literature which seeks to escape from the oppressive control of modern scientific laws. David Porush, one of the pioneering scholars researching on this area of study, bases his idea of cybernetics on Norbert Wiener's study, which seeks laws of communication that apply equally to living beings and machines. See Wiener, Cybernetics: Control and Communication in the Animal and in the Machine (Cambridge, Massachusetts: MIT Press, 1948). Porush's cybernetic fiction signifies
an attempt by human beings to represent that part of them that cannot be presented. For him, it "defeats the powerful implications of the cybernetic paradigm by making readers feel that there is something left over – some irreducible, inexpressible, and unquantifiable substratum of meaningful silence beyond or beneath cybernetic analysis – in human communication, even when it occurs through so complex and controlled a 'servo-mechanical system' as the literary text." See David Porush, 'Cybernetic fiction and postmodern science,' New Literary History 20, 1989, pp. 379–80. See also Porush, The Soft Machine: Cybernetic Fiction (New York and London: Methuen, 1985).