# Figures of Chance I

## Chance in Literature and the Arts (16th–21st Centuries)

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First published 2024

ISBN: 978-1-032-35862-8 (hbk)
ISBN: 978-1-032-35863-5 (pbk)
ISBN: 978-1-003-32905-3 (ebk)

# Prologue

## Between Us and Chaos: Three Figures of Chance

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DOI: 10.4324/9781003329053-1



The funder for this chapter is Université de Lille and Université de Picardie-Jules Verne.

Routledge
Taylor & Francis Group
NEW YORK AND LONDON

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*Anne Duprat*

> How did they meet? By chance, like everyone else. What were their names? Is that any of your business? Where were they coming from? From just nearby. Where were they going? Does anyone ever really know where they're going?
> (Diderot, *Jacques the Fatalist and his Master*, 1778)

Why, in every period in its modern history since the Renaissance, does the West invariably rediscover the existence of chance? Convinced that what was referred to in the period preceding ours was something different, or that our predecessors were less enlightened than we are, we regularly announce the dawn of a new era of contingency. Wonderment and anxiety generally give way to doubt (is chance 2.0 more real than the last time we thought we saw it, or is it still the product of our observations?), followed by scholarly or philosophical resignation: there's no such thing as chance.

Admittedly, chance is not the only subject that has aroused such periodic fascination; it shares this privilege with all the unexpected manifestations through which reality proclaims its right to be perceived from time to time, despite, or outwith the framework of, theories that conceal it while claiming to reveal it (Rosset 1976, 1978). Among these manifestations, the special interest of random events can easily be explained by the epistemological benefit we can expect to gain from studying them. The emergence of a phenomenon apparently lacking a cause, which points to the inadequacy not only of our current knowledge of the world but also more broadly of the system of knowledge that served to explain it until now, gives us an opportunity to overcome this shortfall and access a new scientific paradigm able to contain it—until the appearance of a new irregularity sets the heuristic wheels in motion once more.

This highlights the extent to which the dialectic of chance and necessity—an example of what Kuhn described as the general structure of scientific revolutions (Kuhn 1962)—plays a part in the modern history of science. Renewed attention to the manifestations of chance and the emergence of

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new theories on its existence and effects foreshadow or signal the moment at which crisis hits a scientific paradigm. Establishing the new paradigm then brings things back to normal: once incorporated into a new system, chance disappears from the horizon of specifically scientific investigations, or at least takes a back seat, until the next time. This is what happened, for example, when Pascal's early musings in the last third of the seventeenth century ushered modern probability theory into the fields of mathematics, economics and statistics (Hacking 1975; Shapiro 1983). Enthusiastic scientific debates on the nature of chance that accompanied the emergence of probability theory in the first third of the eighteenth century gave rise to a new science of probability developed by the Bernoulli brothers, Thomas Bayes, and later Pierre-Simon Laplace and Siméon Denis Poisson, which contributed to the "taming of chance" from the 1830s onwards (Hacking 1990). Similarly, lively discussions on the nature of chance that accompanied the nascent developments of quantum theory in the inter-war period were followed in the 1950s by explanations of its role in new physics, biology, information theory and cybernetics (in mathematics, see Borel 1948; Ekeland 1988; Delahaye 2006).

But just when it seems to have been resolved in scientific debate, the question of chance retains its momentum in the moral and social sciences and, above all, in historical and artistic scholarship. One of the features of the modern phase of this history lies in the fact that from the Enlightenment onwards, philosophical, moral and historical investigations of chance *followed* the development of these new scientific formulations, whereas before the seventeenth century theological and metaphysical musings on chance *preceded* them, dictating what science could say about them. The theme of chance was not exceptional in this regard: as for any object of knowledge, promoting the modern experimental method meant reversing the relationship of authority between scientific discourse and moral and philosophical speculation. Above all, the most important phase in this history coincided, in the nineteenth century, for both the exact sciences and the social sciences, with the rise of the notion of determinism, in which the taming of chance played a central role. Clearly, in the case of chance even more than in other areas, this period firmly established the primacy of scientific knowledge over philosophical musings. Discoveries in the domain of statistics, materialised in the avalanche of numbers that cascaded into all spheres of human activity from the 1820s onwards and accompanied by new laws governing large numbers, were now tentatively applied to problems of social economics, history writing and moral investigations of freedom (see Atiyah 1981; Tucker 2000). As Adolphe Quételet wrote in 1835, "All the observations also tend to confirm the truth of this proposition, that everything that concerns the human species considered as a whole is of the order of physical facts"; if we manage to understand "the

causes according to which societies exist and endure", we will be able to determine their effects as we do in the physical sciences (Quételet [1835] 1991, 488–489).

Two centuries later, the determinist paradigm had run its course and was replaced, especially from the 1990s onwards among scientists of complexity theory, by the promotion of the role that might, on the contrary, be played by chance in evolution and by the idea that order might emerge from noise and fluctuations.[1] On the other hand, the relationship between moral and philosophical speculation and scientific discourse remained unchanged. It is still based on the idea that improved knowledge of what chance actually is confirms the identity of the laws that govern the universe and those that govern our behaviour—and consequently that scientific discoveries relating to nature and the workings of random processes, whether in quantum physics or cellular biology,[2] might support the project for a human history in which our freedoms could be exercised in a more clear-sighted way. This is far from certain, however, as Jacques Bouveresse wrote in 1993:

> The fact that physical nature does indeed have a history, capable of development and innovation, which classical determinism allegedly made the mistake of ignoring or making unthinkable, unfortunately does not help us in any way to solve the fundamental problem that is posed when we ask ourselves if one day we will succeed in making our own [history].
> (Bouveresse [1993] 2005, 24)

The fascination inspired by manifestations of chance may thus merely, at best, be a productive urge to discover the real causes of apparently inexplicable phenomena, and at worst a tendency to wallow in the temporary mystery that surrounds them, as an artist, a writer of fiction or simply a lover of enigmatic stories (See also Conche [1989] 2012; Badiou 1988; Meillassoux 2006; Zusman 2021). These are two very different attitudes, but they share a fundamental trait: both acknowledge the unique importance of events with no cause and the aesthetic value of things that apparently emerge from nowhere. Of course, scientific enquiry aims to elucidate this mystery, and art, by making it into something to be enjoyed, gives it the *raison d'être* it lacked; both make it disappear. This disappearance is not, however, without consequence: it always leaves behind a representation of chance in which it is embodied. Admittedly, this is true of any object of perception or knowledge, but in the case of chance, the aesthetic and meaningful dimension of the representation turns out to be fundamental to its very constitution as an object. To paraphrase Valéry,[3] it is because it is noteworthy that chance gets noticed: chance is nothing more than a neutral aspect of reality that suddenly strikes us as being too good (only) to be true.

This book is thus devoted to the role played by artistic representations of chance in the idea we form of its reality. The aim is less to improve our understanding of how they help to maintain religious, philosophical or literary illusions and fallacies about what chance is than to attempt to understand the essential role its aesthetic dimension plays in our everyday perception of it and in the scientific theories that grow up around it. To perceive the artistic dimension of chance is to glimpse the beauty that resides in the inertia of things; it makes its literary, visual or cinematographic representation into a unique encounter with reality, marked by the emergence of an aesthetic structure that remains after the encounter has taken place, as if it were its outcome. Admittedly, by explaining chance or framing it as an artwork we make it disappear *per se*, but the system we implement in order to reveal it stays behind. The approach we adopt in order to interrogate the enigmatic nature of human events, the lacunae of history, the holes in the fabric of the world or the singularity of a phenomenon devoid of a cause leaves behind a structure: that of the work itself. This structure or framework no longer *contains* chance, but it retains something of the essential form of our enquiries relating to it.

This is why, among the art forms that represent chance or incorporate randomness into their means of production, literary, cinematographic, serialised and digital forms of fiction traditionally play a central role, insofar as they unfold these enquiries within a timeframe and give them a particular form. Fiction that stages coincidences, encounters, twists of fate and strokes of luck, which are the very substance of what makes literature compelling, recounts how characters face up to things that do not (yet) have a cause, inviting the reader to follow the process that leads them from uncertainty to a better understanding of the world, even if its meaning ultimately remains beyond their grasp or if it turns out that the only reality is contingency. Artworks that use randomness in their methods of production or reception (drawing lots, collage, combinatorial processes, multiple-choice reading) embark on a similar quest, this time at their point of creation. While the two techniques involve very different aesthetic choices—one a traditional mimetic narrative, the other the contemporary deconstruction of the artistic gesture—in both cases the work of fiction points to itself as the transitory, experimental structure through which we attempt to understand how the world works and frame it within an aesthetic experience, giving the inertia of things an agentive form.

In this respect, literary fiction is a direct transposition of the aesthetic and epistemological programme of the word "hasard/hazart" as it appeared in the late Western Middle Ages.

The numerous studies periodically devoted to the treatment of chance since the nineteenth century, whether it be in literature, philosophy or the exact sciences, generally begin with a critical examination of the

constellation of terms and notions that refer to it, from the commonplace (chance, destiny, fate, fortune, luck, risk, providence, serendipity) to the more specialised (probability, randomness, stochastics). This essential lexical overview might be accompanied by a study of their historical evolution, an analysis of the remarkable migrations of everyday words into specialised use and vice versa (probability, noise, chaos) or, less frequently, by partial discussions of the differences in the vocabulary of chance from one language to another, focusing in particular on the importance of false cognates (Eng. *hazard* ≠Fr. *hasard*, Eng *chance*≠Fr. *chance*, It. *caso*≠ Fr. *cas*) created by the divergent evolution of the meanings of certain terms in closely related languages.

The most important feature of these preliminary attempts at definition is, of course, the observation of how labile the concept is in relation to its lexicon, whether it is looked at in terms of its evolution or synchronically. Each period, each culture and each discipline defines chance, the blind spot of meaning, causality and agency, according to its particular needs in these domains. In different studies, chance is never referred to in a stable way using a single word; instead, it lies at the intersection of several words, like the entropic underside of everything that assembles, structures and organises the universe. From these mobile lexical constellations nonetheless emerge several distinct logical patterns that have shaped the etymology of vocabularies of chance in European languages. Three key figures come to the fore: on the one hand that of the *encounter*, on the other that of *flow*; and between them, that of the *artefact* (*dispositif*).

The commonest figure, and doubtless the most widely represented in lexicons, is that of the encounter between a subject and an event that crosses their path, as in the example given in Aristotle's *Physics* (II, 5, 196b–197a). The dynamic that drives the event may come from above—from the heavens, from the gods, from the cosmos: chance is then what "befalls" us—Lat. *casum*, It. *caso*, M.Fr. *cha-ance*, *choir* et *é-choir*, Ger. *Zufall*. It may come to meet us, like the Greek Tychè (Τύχη), which embodies our encounter (Gr. τυγχάνω) with what the world sends our way, or like all the derivatives of "adventure", whose Latin source *adventurus* refers to "something that happens" (cf. "advent"). Or it can arise (Lat *orior*) from underfoot along the road: Fortune herself (Lat. *fors*, Eng. *fortuitous*) appears before us as if from nowhere. This figure of the "encounter", always marked by the dynamic that projects the unexpected, involuntary and cause-less event towards the subject, is the one that expresses all the epistemic and phenomenological values of chance. Here, chance is clearly defined as what happens *to us*, what we perceive as such, like Bergson's tile which would be indistinguishable from any other tile if the wind didn't blow it off the roof just as we are walking by.

Standing opposite the figure of the *encounter*, which is characterised by notions of meeting and intersection, is that of *flow*, of automatic movement (*automaton* denotes chance in Aristotle's *Physics*) that has no origin, purpose or direction. From the Greek *clinamen* to the English *randomness*, derived in the 1560s from the French *"randir"* (to run), this second lexical constellation, which complements the first, refers to chance as something uncontrollable that runs free and unfolds independently of our intervention. This is objective chance, whose latest form is entropy (Gr. "turning", transforming) which effectively describes the "turn" events take when things are left to run their course, independently of exterior determination and human observation.[4]

Between these two opposed dynamics of the *encounter* and *randomness* stands a third mediating figure, sharply distinct from the other two in that it refers not to a movement but to an object: namely, chance as an *artefact*. This refers to an artificial structure created specifically in order to make the transition from the first figure to the second, from the subjective to the objective, from perceived chance to chance in itself, and from the uncertain to the undetermined. Imported in the thirteenth century or thereabouts into all the vernacular languages of Europe from the Arabic *al-zahr* (الزّهر) via the Spanish *azar* (twelfth century), *hazard/hasard* is an abstract term whose etymology has not been established with certainty but which doubtless denoted a game of dice, as did the Latin word *alea*. One of the likely origins of the Arabic word is the flower, *az-zahr (*زهر*)* depicted on one side of the die. Unlike what happens with the figures of the encounter and randomness, in the case of *hazard/hasard* and *alea* the original sense of the word and what it refers to are thus clearly disconnected. The die is an instrument, a technical object that mediates between the subject and the world, created to make the free movement of the universe visible. Depending on the hypotheses we formulate about the world, dice or jacks[5] may be used as divinatory instruments translating the will of the gods, as experimental apparatus in science, or for pleasure, as a game. In all cases the instrument has a seismographic purpose (Köhler [1973] 1987): it serves to make chance visible by producing, in the form of throws, material and usable examples of its mysterious activity in the world.

This is what gives art, especially literature and narrative forms, its central role in the system that makes it possible to visualise chance, to articulate the appearance of its manifestations over time and to describe the paths we follow in order to decipher it. Admittedly, as philosophers and mathematicians remind us, concrete manifestations of chance must not be confused with its abstract principle, which lies in the absence of necessity. This principle in turn cannot, however, be presented in the absence of events, stories, plots or images. On the one hand, this means that literary and artistic representations of chance maintain, inform and organise the

illusion that surrounds its existence; chance is fictional insofar as it is the product of our temporary or permanent ignorance of the causes of a phenomenon. Tracing the history of imaginary representations of contingency in Western literature means looking at the various ways in which art has anxiously or gleefully interrogated the opacity of the world and attempted to give it a meaning, while science and philosophy busied themselves with shedding light on its mystery. On the other hand, however, it is also the fundamentally fictional, transitory and intentional nature of chance that makes the visual and narrative arts the primary arena in which it emerges. Chance is presented there more than it is represented, and the aesthetic dimension of its perception, far from being illusory, appears as essential to determining what it is, because it exists only for us.

This twofold observation is the starting point for the two parts of the present collective enquiry into artistic and literary representations of chance.

The first part is diachronic. "Chance in Literature and the Arts (16th-21st Centuries)" offers a series of analyses devoted to the principal stages in the evolution of representations of chance in European and US literature. This history reveals the regularly alternating disruption and reorganisation of representations that punctuate the way chance has appeared in art since the Renaissance. Periods of creative effervescence characterised by the innovative incorporation of randomness into representations or by the invention of disruptive creative techniques that destabilised entrenched poetic structures were generally followed by periods during which academic principles took root, making these same techniques into fixed, artificial stereotypes until a new way of playing with chance and representing its activity in the world was discovered.

Taking account of the many studies, published since Erich Kohler's seminal essay in 1973 (Köhler [1973] 1987), that have shed light on fundamental aspects of this history, focusing on French,[6] German, Romance, English and American literature[7] or investigating its relationship with material or economic history and more broadly the history of science and art,[8] the first part looks at how interactions between philosophical and artistic approaches to contingency evolved in each period concerned. Written by some fifty researchers in French, English, Spanish, Italian and German literature, as well as specialists in comparative literature and the history and philosophy of art and science, and supervised by specialists of each period studied (Olivier Guerrier, Anne Teulade, Guiomar Hautcœur, Zoé Schweitzer, Caroline Jacot-Grapa, Fiona McIntosh-Varjabédian, Anne-Gaëlle Weber, Martine Lavaud, Danielle Follett, Alison James, Sébastien Wit and Alexandre Gefen), the first six chapters highlight fictional modes of representation of chance in Western art and literature and place them in their historical perspective, from Renaissance poems to contemporary cyber-literature.

The second part, "Chance in Theory and Practice", looks from different interdisciplinary angles at the main questions raised by the intervention of art and fiction (including not only literature but also film and games) in the philosophy and theory of chance. Here, as with the historic evolution covered in Part I, we see that the role of random processes in art waxes and wanes, and that a similar fluctuation can be observed in exchanges between artistic practices and scientific theories of chance. Narrative forms, film and poetry constantly turn to the entropic power of chance to re-energise their relationship with reality, meaning and formal creativity, but as soon as it is incorporated into a new poetic system, the disruptive potential of the aleatory technique loses its edge and becomes part of the new normal. By the same token, in the dialogue between science and art, the aesthetic dimension of chance is omnipresent when a fault line appears in a field of knowledge that is undergoing a reappraisal—for example, the emergence of empirical approaches in the early modern era, the birth of probability theory in the late seventeenth century, the advent of new physics in the 1920s and the development of deep learning applications in the twenty-first century. The aesthetic dimension plays a central role in the transition towards new paradigms before disappearing once their mechanisms have entered the doxa.

Seven chapters based on conversations between literature experts, philosophers, scientists, sociologists, artists and historians (supervised by A. Duprat, John Pier, Karin Kukkonen, Enrica Zanin, Divya Dwivedi, Olivier Caira et Valentina Bisconti) deal with the role of chance in relationships between time, narrative and causality; in theories of complexity and narratology; in cognitivist approaches to creativity; in ethical literary discourse; in the confrontation between metaphysical and scientific formulations of chance; in games; and in theoretical approaches to chance in linguistics.

The aim of these chapters is clearly not to provide a continuous history of representations of chance in modern Western literature, nor a systematic or exhaustive analysis of the relationships between scientific theories and artistic representations of chance. Several of these chapters contain analyses of forgotten theories and marginal, hybrid or ephemeral artistic practices designed to capture and represent the noise of the world—who remembers Jean Bouchet's *Labirynth de Fortune* (1522) or Anton Francesco Doni's *Sorti* (1554)? Each of these works, however obscure today, helped to modify and enrich the idea we have of our relationship with chance, insofar as it depends on the artificial devices we create in order to entrap it: dice, jacks, parlour games, multi-branched stories, wind harps, algorithms and strange attractors.

*Figures of Chance I and II* thus sets out to help answer the question: why do we regularly rediscover the "existence" of chance with the same sense of fleeting astonishment? Doubtless because this quest shines a light on the

murky underside of our rational, efficient and meaningful representations of the world and points to their constant state of reappraisal. As it does this, it helps us to see the role fiction plays in these representations and to measure its effectiveness and its illusive power.

## Notes

1 See Prigogine and Stengers 1979. For the idea of a direct extension of science and the systems and theories of complexity into semiotics and cultural studies see Lotman 1990; Morin 1994. See also Abrioux 1994, 2010.
2 See Monod 1970; Ruelle 1991, as well as publications in France dealing with the controversy in the question of determinism in the 1980s, e.g., Thom 1980, 119–132; Thom 1993.
3 Valéry 1944: "Chance does nothing in the world—except get itself noticed".
4 Traditionally used to describe the physical manifestations of chance or their technological and cybernetic simulation, the figure of randomness is far from dominant in contemporary descriptions of chance. The vocabulary of probability and stochastics, which clearly refers to chance as the product of a calculation and a conjecture, points to how the epistemological dimension is incorporated into even the most objective descriptions of the physical universe.
5 According to Gaffiot's Latin-French dictionary (1934), Latin *sors, sortis* may also have originally denoted the divinatory instrument itself—the pebble, tablet or strip of wood that was dropped into the urn—rather than being a derivative of the verb *orior* (to arise) referring to the drawing of lots.
6 On the Renaissance and the neo-classical period, see Kavanagh 1993; Thirouin 1999; Demonet 2006; Lyons 2011; Guerrier 2016; Lyons *et al.* [2019] 2016. On the contemporary period, see James 2009; Monginot 2015; Wit 2019; Casajus 2022.
7 For US literature see Shapiro 1983; Patey 1984; Newsom 1988; Jordan 2010; Currie 2013; Brendecke and Vogt 2017; Grener 2020.
8 For history see Hamilton 2007; Meiner 2008; Puskar 2012. For history of science see Daston 1988. For art see Buttay-Jutier 2008; Troche 2015.

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