

The Goddess of Chance: Randomness from Ancient “Automaton” to AI-Art

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ABSTRACT. This paper examines how randomness contributes to the perception of creativity and autonomy in both natural and artificial systems, particularly in art practices. From ancient accounts of accidental inspiration to modern aleatory practices, the use of chance has long served to unsettle habitual patterns and generate new aesthetic possibilities. Historical automata already demonstrated how mechanical structures could transform irregular events into coherent forms, producing effects that appear spontaneous despite their construction. The paper extends this genealogy to contemporary generative-AI systems. Modern machine-learning models rely on stochastic components that render their behavior partly unpredictable. Uncertainty in data and learning dynamics contributes to outputs that surprise users while maintaining coherence. This structured unpredictability is central to why such systems are often perceived as creative or quasi-autonomous. The paper then discusses the tension between automation and autonomy: both notions describe processes that "happen of themselves" (as in Aristotle's idea of automaton), yet they appear to be opposed. From this discussion, a typology of different uses of chance and random phenomena is proposed, distinguishing different levels at which stochasticity can be harnessed by (artificial and natural) systems. Ultimately, the paper argues that attributions of creativity and agency depend on a balance between indeterminacy and structure.

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1. Introduction

Throughout history, randomness and chance have played a significant role in inspiring artistic creativity.² Pliny the Elder recounted how the Greek artist Protogenes found inspiration in the accidental mark of a sponge (1991). Later, Leonardo da Vinci, in his 1651 *Treatise on Painting*, encouraged artists to draw ideas from “stained walls” (Ugander & Epstein 2024). The value of randomness lies in its ability to disrupt habitual patterns, enabling us to explore possibilities beyond our usual behavioral and cognitive frameworks. Also during the creation process, chance events could contribute in giving a strong effect of energy and authenticity, as in Jackson Pollock’s drippings. Pollock engineered what we could call a *controlled loss of control* by letting gravity, fluid viscosity, and bodily momentum shape the lines, while regulating height, movement, and timing. The paint behaved partly on its own, at the same time he continually adjusted density and direction, turning those random events into a deliberate structure.

In the twentieth century, avant-garde movements such as Dada and Neo-Dada had also embraced chance as a deliberate method of creation. Artists like Tristan Tzara created poetry by drawing words from a hat, while Marcel Duchamp incorporated chance into his works, such as in *3 Standard Stoppages* (1913-14), where he allowed threads to fall and form unpredictable patterns. Later, Neo-Dada artists such as John Cage and Robert Rauschenberg similarly relied on aleatory techniques, like Cage's use of the *I Ching* to compose music and Rauschenberg's incorporation of found objects and random processes into his artworks.

These approaches reflect an intentional rebellion against traditional notions of authorial control and intentionality in art, expanding the boundaries of artistic expression, although the works produced were still the result of choices and procedures that they themselves had decided on and directed. The use of randomness in art can be interpreted as an attempt to allow “nature” to express itself, bypassing intentionality and relinquishing control of the individual artist. Chance enables the creation of works that look less artificial (that is, less like products of *human artifice*) by mimicking the spontaneous phenomena of physical nature (Mann 1990; Jaeger 2013). As Cage said: “My *intention* is to let things be themselves” (Cage & Tudor 1959). This idea partly

² Randomness and chance are often used interchangeably in the literature, particularly in discussions of artistic practices. Randomness, however, refers to the inherent unpredictability of outcomes, whereas chance refers to the probability or likelihood that a particular outcome will occur. For reasons of concision, we cannot explore this distinction in depth in this paper.

echoes the Kantian view that the true artist should become “like nature”, and more generally the Romantic notion of creativity as spontaneous and free. It also recalls ancient conceptions of the artist as a vessel or conduit for external (divine or transcendent) inspiration: the less individual control over the process, the more inspired the resulting work appears.

Against the backdrop of these traditions, this paper concentrates on the following point: chance and randomness are also ways of triggering processes that “run on their own,” without direct human guidance, and they contribute to our impression of phenomena that we perceive as autonomous. In aesthetic production, autonomy is tied to the capacity to generate something new and to be *creative*. An autonomous entity is one whose behavior cannot be deterministically predicted; the possibility of exhibiting indeterminate behavior, at least from an observer’s perspective, is a necessary condition for that observer to regard it as somewhat autonomous. The issue, of course, is whether indeterminacy is a necessary (albeit not sufficient) condition for just the *impression* of quasi-autonomous behavior or whether it is more deeply connected to the idea of autonomy itself. In this sense, we could see a line of continuity linking avant-garde experiments, later developments in computer art, and today’s AI-generated art: the unpredictable element becomes a crucial ingredient in producing outcomes that appear creative and seem to extend beyond the explicit, hard-coded instructions provided by the programmer.

What interests me here is the phenomenology behind why one is tempted to react to these systems as if they were creative. Why do we attribute creative qualities to something we know operates through computational processes? Margaret Boden’s (2004) account of creativity offers a useful framework. She notoriously argues that we tend to call something creative when three conditions are met: something is new, surprising, and meaningful. Through this lens, it becomes clearer why generative AI systems sometimes appear creative. They produce novel outputs that often surprise us, especially given the opacity of their internal workings, and people frequently find these outputs meaningful. The use of chance and stochasticity, again, plays a substantial role, as will be argued.

2. Randomness and generative-AI

We are naturally inclined to attribute creativity (or even a degree of autonomy) to outcomes that resist strict prediction. By contrast, systems whose behavior is entirely predictable rarely appear to us as either autonomous or creative. However, unpredictability alone is not sufficient. Pure randomness or meaningless disorder does not evoke creativity or autonomy; it simply appears chaotic. What engages our imagination is unpredictability that nonetheless exhibits some level of coherence, structure, or significance. It is this combination (surprise coupled with intelligibility) that leads us to perceive an action or outcome as potentially creative or autonomous.

A simple example is the kaleidoscope: we are captivated by its shifting patterns produced by a combination of the random movement of colored fragments inside the tube. What fascinates us is not mere disorder but the way chance arrangements are transformed into symmetrical and coherent images by the mirrors inside the kaleidoscope. Although we do not ascribe creativity to it, part of the kaleidoscope's appeal lies in its ability to surprise us with unpredictable and visually meaningful outcomes. The geometric configurations it generates illustrate a blend of randomness and structure, a kind of *structured* randomness that produces unique patterns with every turn. Also, in the aforementioned works of the avant-garde artists working with aleatory processes, we can notice that they rarely relied on randomness alone. Instead, they work *with* randomness, guiding, filtering, and framing it to produce something that appears partially coherent. In their work as well, we have a dynamic relationship between indeterminacy and structure.

A more complex example of artifacts that harness randomness and give it structured meaning can be found in historical machines (*automata*) designed to produce aesthetic effects. For example, the Aeolian harp, already known in ancient Greece, was activated by the unpredictable movement of the wind, generating harmonies without human intervention, transforming a natural, chaotic force into structured sound. In antiquity, Hero of Alexandria's singing birds, powered by air pressure and water flow, also offered early examples of machines simulating organic expression through a mix of controlled mechanisms and stochastic variability. In contemporary times, Jean Tinguely's *Métamatics* (1955-1959) were kinetic

drawing sculptures that, while mechanically programmed, incorporated elements of indeterminacy in their movements, producing unpredictable scribbles.

In these examples, randomness is not opposed to structure but *embedded* within it, allowing the machine not just to repeat a programmed script, but to turn meaningless chance into structures the observers take as meaningful. Despite this capacity, they clearly remain tools, machines that harness chance and direct it along specific paths: calling them “creative” would be just a metaphorical use of the term. The creative figure, if any, is the designer or the artist who conceived them.

Debates of this kind now concern generative AI. These systems not only seem able to go beyond the intentions and skills of their users but can also produce outputs with a considerable degree of unpredictability (see Manovich, Arielli 2024). This unpredictability contributes to the impression that such systems are not simply tools but entities that, to some extent, detach themselves from the user. If AI systems were perfectly controllable and customizable, as probably professional users might prefer when using AI tools, they might lose their appeal as quasi-autonomous and creative entities. On the other hand, if they were just generating random and meaningless jumble, they would not be considered particularly interesting as well. Again, we like to call those systems “intelligent” when they behave in the middle ground of unexpected but also meaningful outputs (see Hauhio 2023, for a typology of unpredictability in Generative AI).

This leads to a conceptual tension: being *automatic*, mechanical, rule-based, programmed, and being *autonomous* appears, in principle, to be at odds. An automaton follows fixed rules; an autonomous agent can decide, adapt, or act freely. Under which circumstance *automata* could be considered (at least partially) *autonomous*? Artist Mario Klingemann’s work offers a good example of this tension. He often describes AI as nothing more than an instrument, just “like a piano” for the piano player or for the composer. From this perspective, the artist is fully in control, and the system is simply an expressive but passive tool. At the same time, Klingemann also stands behind the project BOTTO, described as a “decentralized autonomous artist”. Launched in 2021, BOTTO produced about 350 new pieces weekly, which were then voted on by a community of 5,000 people. In return, these votes determined an aesthetic ranking that influenced BOTTO’s successive creations. In this process, Klingemann sees the human’s role as just a guardian, guiding BOTTO (by giving it evaluations) but allowing it to freely (that is,

randomly) generate new images, constrained by the evaluations. According to the artist, this approach resembles the act of releasing a child into the world, much like parents do, educating them and trusting it will continue as its creator/educator intended (Nair 2022).

Now, unlike earlier automata or programs with predetermined workflows, randomness is an inherent and essential feature of machine learning and the training of neural networks. This unpredictability arises from the use of stochastic procedures in both the learning and the generative phases like, for example, sampling from probability distributions, so-called noise injection, weight initialization, data shuffling, and training strategies such as *dropout*, that is, randomly masking the output of a number of neurons to improve generalization (for an overview, see Altarabichi et al. 2024). Here, randomization allows the system to learn from data by avoiding biases, “local minima”, to tackle information from different perspectives (like a scientist using different randomized samples from a population) and preventing it from being repetitive and predictable in its outputs.

On a general level, generative systems can be described as high-dimensional probability distributions: they model patterns in their training data, and each output is a particular sample drawn from that statistical field. A language model, for example, chooses its next token by weighing several plausible text continuations and selecting one according to a sampling rule. The stochastic element is directly visible to users when they use the same prompt repeatedly and obtain different outcomes, each reflecting a distinct point within the model’s latent space.³

One relevant example in this context are systems based on diffusion models, like MidJourney. During training, the model is exposed to large sets of image-text pairs. Each image is progressively corrupted by adding Gaussian noise over many steps, until it becomes indistinguishable from pure noise. The model’s task is then to learn to *reverse* this corruption: at each step, it predicts how to remove a small portion of noise, recovering an estimate of the cleaner image. By repeating this over thousands or millions of examples, the model acquires a statistical mapping between textual descriptions and visual structures, encoded in the parameters of the neural network. Conversely, at generation time the model starts from random

³ In most machine-learning systems, the “randomness” involved is not physical randomness but a mathematically generated approximation. Computers rarely rely on genuinely unpredictable events, such as a coin toss or radioactive decay. Instead, they use pseudo-random algorithms: procedures that produce sequences which look irregular but can be reproduced exactly if one knows the initial seed.

noise and a text prompt conditions the *denoising* steps: at each iteration the network predicts which features should be kept, modified, or introduced to steer the noisy input toward an image compatible with the prompt. Through this iterative refinement (typically a few dozen to a few hundred steps) the model moves from high-entropy noise to a stable configuration that gives the visual interpretation of the text.

Many artistic practices involving machine learning actively take advantage of the fact that these systems do not behave in a fully deterministic way. There is epistemic uncertainty inherent in any probabilistic model: every prediction rests on incomplete knowledge of the underlying data-generating process (Sivertsen et al. 2024). Artists who work with AI systems treat these uncertainties not as defects to be eliminated but as material to be shaped. In line with earlier strands of digital experimentation, such as *glitch* practices, which exploited computational failures, they draw attention to the irregularities and breakdowns that occur inside the learning process. Some intentionally halt training before a model stabilizes, producing under-fitted systems whose outputs waver between recognizability and indeterminacy. What developers would normally classify as errors or artifacts becomes, in this setting, a resource. Ambiguity, drift, and malfunction are deliberately used and transformed into aesthetic procedures, allowing technical imperfections to function as generators of form.

3. External and internal randomness: “neural noise” and creativity

Now, it would be naïve to think that the use of stochastic processes is merely a technical feature of machine learning in an otherwise deterministic world. By employing such processes, AI systems operate in ways that resemble many real-world phenomena, including the brain. This also leads to a distinction between *external* sources of chance and randomness, which arise from the contingencies of an environment and the circumstances in which an organism, a person, or an artificial system may find itself, and *internal* forms of noise and indeterminacy that characterize the functioning of natural organisms at their biological and neural levels. Quantum mechanics, evolutionary biology, and neuroscience provide extensive evidence for stochastic behavior that cannot be reduced to a hidden layer of deterministic structure. Uncertainty is not a measurement defect, nor simply the outcome of insufficient modeling. It is a functional component of many physical and biological systems: quantum events exhibit

indeterminacy even under ideal measurement conditions; mutations arise with probabilistic distribution; and neural activity displays endogenous fluctuations that contribute to flexibility and adaptive behavior. Whether randomness is ultimately ontological or epistemic remains open, but treating it as mere observational error obscures its established role in shaping natural phenomena and cognitive processes.

Ilya Prigogine (Prigogine & Stengers 1984) offered one of the clearest scientific accounts of how irregularity can support organized complexity. He pointed out that some biological systems require stability, for example the heart's rhythm, while others, such as the brain, depend on intrinsic variability. Too much regularity in neural activity can even produce pathological states like epilepsy. For Prigogine, this shows that irregularity is not simply disorder but a necessary condition for the emergence of complex structures and adaptive behavior. How a system is shaped, constrained, or situated influences the kinds of instabilities that can develop, and therefore the forms of order that may emerge from them. In this sense, instability becomes a resource rather than a flaw. Based on studies of brain activity, Prigogine proposed that the nervous system itself has been evolutionarily selected for this intrinsic instability. Biological evolution, in his view, can be understood as the history of systems that remain poised away from equilibrium and capable of generating new forms of organization.

Today, internally generated neural variability, often termed "neural noise," is increasingly recognized as more than mere disturbance: it underlies intrinsic flexibility and spontaneity in neural systems. Such variability arises from stochastic processes (random synaptic input, network fluctuations), so that even with constant external inputs the brain's activity remains partly unpredictable. Noise permeates every stage of sensory processing, decision-making and motor output (Stein et al. 2005; Faisal et al. 2008). Although this imposes fundamental limits (for example on precision in sensory thresholds or movement), noise can also be functionally harnessed by neural circuits, for instance in so-called "stochastic resonance", a phenomenon where the addition of noise can enhance the response of a nonlinear system to a weak signal. McDonnell and Abbott (2009) argue that it would be more surprising if the brain did not exploit such randomness than if it did. In that sense *endogenous* noise can act as an additional signal source.

More importantly, the constructive role of noise and chaos in the brain provides a critical foundation for both creative behavior and agency, fundamentally linking unpredictability to

adaptive complexity. In perceptual and cognitive tasks, identical stimuli yield variable responses, implying a role for randomness in decision-making (Pisarchik & Hramov 2023). This noise-related variability serves to enhance exploration: the brain deviates from fixed rules to probe new options. Youvan (2024) remarks that noise helps “cognitive processes explore multiple strategies”, which allows the system to escape solutions that are locally optimal but suboptimal in general. Computational models show that variability in neuromodulators (e.g. dopamine) causes an agent to occasionally deviate from its policy and try new actions. In behavioral experiments, on unpredictable reward schedules, rodents’ choices appear statistically random as if they were using an internal random generator to match environmental uncertainty. Gómez et al. (2024) suggest that the inevitable neural randomness in internal processing integrated into organisms, “facilitates flexibility in behaviour,” thus extending the system's exploratory repertoire. These internal fluctuations prevent stagnation of behavior, periodically pushing it into novel regions of state space. A living organism does not inspect its surroundings through exhaustive, systematic measurement. It *roams*, moves, pauses, turns, hesitates, follows stimuli, gets distracted. By contrast, a traditional machine does not roam or wander; it scans systematically and exhaustively.⁴

Of course, noise must be calibrated on a balanced level: too much randomness degrades performance, while too little limits adaptability.

When actions depend partly on brain-internal noise, the organism’s behavior cannot be fully predicted from external cues: outcomes appear initiated “from within.” Spontaneous neural variability is implicated in creative cognition: by perturbing habitual patterns, noise provides the raw randomness needed for insight and novelty. Neural noise’s unpredictability can also be factored into accounts of volition and allows avoiding a purely deterministic model of the mind (Štukelj 2020). In engineered systems, the parallel is clear, as we stated before: modern neural networks are deliberately trained with stochastic methods that are used because they improve generalization and learning. This built-in stochasticity is essential for the novelty of generated content. Across brains and machines, therefore, intrinsic randomness generates the unpredictability that is phenomenologically linked to freedom and creativity.

⁴ This line of thinking highlighting the importance of open, responsive systems that reorganize themselves through interaction, connects with enactive approaches in cognitive science, which hold that cognition arises from the ongoing exchange between organism and environment. For enactivists, perception and action depend on the ability to remain responsive to subtle variations in the organism’s surroundings.

4. Autonomous automata

The relation between “automata” and “autonomy” carries a certain tension, as said. Automata are built to follow procedures; autonomy is associated with self-direction. In contemporary generative systems these categories start to blur, the contrast between mechanical rule-following and the impression of independent agency becomes less stable.

In this regard, it is interesting to focus on the conceptual origin of these apparently opposite terms. Autonomy, derived from "autos" (self) and "nomos" (law), implies self-government and self-directed action; automaton derives from "autos" (self) and "maton" (acting), often used to describe entities that move on their own or events that seem to happen without purpose or intention. The ancient Greek noun *automatismos* is defined as “that which happens of itself, by chance”, the verb *automatizo* means to “act of oneself, act offhand or unadvisedly”, “[to] act spontaneously”, [to] happen of themselves, casually”. Similarly, *Automatia* was an early name for Fortuna, the goddess of chance.⁵ Aristotle, in the second book of his *Physics*, introduces the term *automaton* to describe a set of phenomena that includes *tyche* (fortune). He portrays these phenomena as forces that disrupt the teleological order, essentially embodying random or chance events in nature⁶. These are not random in the modern sense of complete disorder, but events that are unusual or coincidental, that is, that present some kind of accidental order or significance. They arise spontaneously, by coincidence, without design or rational intention. This notion connotes non-intentional events that *resemble* goal-directed actions or bring about unexpected outcomes. So, chance events in Aristotle’s account amount to certain unusual *meaningful accidents*.

His notion of *automaton*, referring to events or processes that "happen of themselves" without explicit intention, offers a framework for understanding the perceived autonomy of AI agents today. Although Aristotle suggests that chance events in physics lack discernible causes, hinting at a form of autonomy, these phenomena still emerge from natural processes and fall short of

⁵ See Chiodo 2022.

⁶ “But is it not equally strange that, however freely men admit that every kind of luck [tyché] and everything that ‘happens accidentally’ [automaton] can really be assigned to some definite cause, still, while accepting this venerable argument for the elimination of chance from their thoughts, they nevertheless invariably distinguish, in fact, between things that do, and things that do not, depend upon chance [automaton] or luck [tyché]? (196a12–17)” Aristotle (2018).

genuine autonomy in the fullest sense. True autonomy goes beyond unpredictability and accidental spontaneity, it requires agency and the ability to *initiate* action. While *automaton* in Aristotle’s context primarily describes natural or mechanical occurrences devoid of purpose, it aligns with how we might describe AI systems: as entities that appear to operate independently, producing outputs that often surprise or surpass human expectations. Modern AI systems, especially those based on deep learning, exhibit behavior that can feel "self-driven," not because they possess genuine autonomy or intentionality, but because their underlying mechanisms involve stochasticity, complexity, and emergent patterns.

Aristotle stresses the role of random “meaningful accidents” also in the domain of the tragedy. In his *Poetics* (Book IX), Aristotle emphasizes how unexpected events can become especially meaningful in storytelling, but that coincidences in tragedy are most impactful when they seem to have an underlying design or purpose (an “air of design”), despite their apparent randomness, like, for instance, Oedipus meeting and killing Laius at a crossroads without knowing who he is. The encounter is accidental, but it retrospectively binds the whole plot together, giving chance the force of necessity.⁷

In essence, it’s not the inherent randomness of spontaneous phenomena that surprises us; if it were the case, we’d find every random sequence of coin tosses or dice rolls surprising and creative. Rather, what captivates us is the apparent significance of these occurrences – when chance events seem to possess an *air of design*. The way Aristotle defines the idea of the automaton closely resembles those automata that are not merely mechanically determined, but, like the examples we’ve discussed, seem to generate meaningful outcomes by chance, through a spontaneous coming together of events. In other words, they transform mere randomness into something meaningful by means of what to a user or an external observer may appear as an “happy accident” (Epstein et al. 2022).

7 “Such an effect is best produced when the events come on us by surprise [...]. The tragic wonder will then be greater than if they happened of themselves or by accident (“τοῦ αὐτομάτου καὶ τῆς τύχης”, “tou automatou kai tēs tuchēs”, translates also to “by chance and fortune” or “by accident and luck.”); for even coincidences are most striking when they have an air of design.” (Aristotle 2013, *Poetics*, Book IX).

5. The uses of chance: a typology

As we have seen, the way in which randomness or chance is transformed can take different forms. Randomness can serve as a source of inspiration or be incorporated into systems that channel it into coherent structures (as in the kaleidoscope or in ancient automata), or it can stem from the presence of aleatory mechanisms internal to the system itself. To sum up these different cases, we can sketch a tentative typology of how randomness comes into play in a system. By distinguishing these types, we can better grasp how certain chance-based processes, when framed or constrained in specific ways, can give rise to the impression of creativity, spontaneity, or even agency:

1. Purely random events	Completely accidental, without intention or structure.	Examples: Dice rolls, static noise.
2. Random events with projected meaning	Humans impose meaning or take inspiration from accidental patterns.	Leonardo's wall stains, pareidolia, seeing shapes in clouds.
3. Spontaneous structured events (Aristotle's <i>automaton</i>)	Spontaneous events naturally occurring without external intention but having inherent coherence or structure; they happen "by themselves" and seem internally caused.	Formation of crystals, sand dunes shaped by wind, a stone that by pure accident perfectly fits into a wall.
4. Systems intentionally converting randomness into structured outputs	Artifacts designed to channel random inputs into coherent forms.	Kaleidoscope, Aeolian harps, wind chimes, Hero's pneumatic automata.
5. Systems imposing learned patterns	Models trained on meaningful data that reorganize random inputs (e.g., noise, probabilistic sampling) into	GPT models, diffusion-based AI art generators.

onto randomness (modern AI models)	structured, meaningful outputs through learned statistical regularities.	
6. Systems governed by endogenous stochastic mechanisms	Systems whose behavior emerges from randomness generated within the system itself, independent of learned patterns; unpredictability is a consequence of internal probabilistic rules or physical noise rather than external random inputs.	Biological neural noise, stochastic cellular automata, probabilistic state-transition systems, noise-driven physical or computational models.

Type 5 refers to systems in which randomness is introduced from outside (through noise, sampling procedures, or probabilistic inputs) and is subsequently organised by patterns acquired during training. In this sense, AI systems in type 5 essentially automate the human operation described in type 2. They complete or reshape random inputs into outputs that conform to learned distributions by automatizing the process of pattern recognition and projection that, in type 2, was carried out subjectively by the human mind. By contrast, type 6 includes systems in which randomness arises from internal mechanisms: their behavior remains unpredictable because stochastic processes are part of their operation, and this would be the case even in the absence of any learned structure.

Type 6 also includes fully autonomous agents, extending to living organisms. This holds regardless of how much agency we attribute to organisms of different levels of complexity, whether a plant, an insect, or a mammal. In the context of artistic experimentation, just as some artists work with AI tools, others engage with type 6 natural systems by incorporating entities that possess their own natural agency, such as animals or plants. Examples include artworks where growth chambers encouraging specific types of vegetation to bloom, installations cultivating bacteria or fungi, or performances where artists interact with animals. These artists “use” nature, complex, spontaneous mechanisms guided by intrinsic principles rather than

artistic design. In this way, they free natural elements within their work, allowing them to unfold with minimal intervention.⁸

In this sense, AI systems remain tools whose behavior is shaped and interpreted by the people who use them. They are “serendipity machines”, their output may contain unexpected elements, but these arise within a framework set and controlled by human operators, who decide how to work with such contingencies. Treating them as agents in the same way we speak of living organisms would amount to a merely metaphorical usage.⁹ In the context of AI, we are not dealing with entities that we may “let go” into the world, giving them autonomy also in goal setting and to make the machine’s action completely unpredictable. Granting such autonomy would require building systems with objectives, motivational dynamics, impulses, and “needs” whose satisfaction could drive action. Instead, current efforts focus on keeping machine aims *aligned* with human purposes. We may already possess the technical capacity to create semi-autonomous artificial organisms, but there is little interest in pursuing that path. A crucial point here is that projects like Klingemann’s Botto might *simulate* what we might call autonomous creativity. This impression doesn’t stem from genuine autonomy but from how these systems use structured but also indeterminate processes. Botto performs something like a constrained exploration: it moves in a sort of “random walk” through a latent space defined by its training data, continuously adjusting based on human feedback. The results aren’t fully planned but they’re not purely random either, they occupy a middle ground.

In sum: when we encounter indeterminate or unpredictable behavior, we tend to see those systems as somehow creative, or even autonomous. Predictability feels mechanical; unpredictability, when it produces meaningful results, feels more like creativity. This reflection ultimately points to a larger philosophical issue: the connection between *agency* in general (or better: ascribed agency) and the role of unpredictability and randomness. Any expression of agency or creativity presupposes a background of indeterminacy, at least from the perspective of a specific observer. There must be something unpredictable, something open or contingent, for a system to show that it is not merely repeating a fixed pattern, but actively engaging with

⁸ Some might argue that treating living organisms as “agentic tools” already constrains their autonomy—an ethical issue that, in strong formulations, recalls practices of captivity or even slavery, since their agency is redirected toward artistic purposes rather than their own.

⁹ For a similar view, see Young and Terrone’s (2025) comparison between the use of generative AI systems and the practice of gardening, where images are “grown” rather than executed through strict control. Their account highlights the mix of guidance, loss of control, and indeterminacy that shapes the outcome.

circumstances, even improvising (Bertinetto&Grüneberg 2023). As an attributional quality ascribed by an observer, agency depends on indeterminacy, which in turn appears as partial openness to chance.

Not every chance event and randomness gives rise to the perception of agency. We usually don't attribute agency to mere accidents or chaotic phenomena. But we also don't see it in systems that behave in fully predictable, mechanical ways. What we do tend to perceive as creative, or even as autonomous, is something that stands in between: behavior that appears to respond flexibly to circumstances, that shapes or gives form to what is unexpected. (Perceived) agency thus resides in the ongoing negotiation between indeterminate events, contingency, and the capacity to steer or harness chance.

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