

## Emergence and Artificial Intelligence in the Performing Arts

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**Abstract:** Starting from a brief analysis of the validity and applicability as a cognitive tool of the concept of emergency in the examination of the theatrical phenomenon, we evaluate the aspects related to the radical novelty that emergence implies as a phenomenon of systemic self-organization. Thus, taking into account both the ostensible nature of theatrical process and emergency and their ambiguous nature, any theatre performance can be considered as characterized by emergency. At the same time, the unpredictability of emergence makes it difficult to establish which of the current trends of theatrical manifestation will be validated by the appearance of theatrical novelty. Obviously, the impact that information technology has in the field of performing arts seems to imply that novelty might come from this dimension of theatrical activity. However, even if we can note performances played by *actroids* or performances whose texts are created by robots, we should treat carefully the idea that emergence might occur from this direction. In fact, there is a similarity in reception between, for example, animation theatre and performances based on *actroids*. We can also notice a similarity between a text created with the means of artificial intelligence and the collage technique. That is why we ask ourselves if what Martin Scorsese observed, namely that some films that benefit from a substantial contribution of the film trick made with the help of computer technology can no longer be included in the concept of cinematography, does not have the same kind of impact in the performing arts. Thus, the emergence, in the performing arts, does not necessarily lead to the renewal of the system, but can also lead to the appearance of a parallel system, different from the existing one. It remains to be seen to what extent a performance can still be defined as a theatre performance when the spectator becomes a robot.

**Keywords:** emergency, theatre, film, spectator, artificial intelligence

The relatively recent scientific, philosophical, sociological, political and artistic description of how reality understood as emergence works has provided fertile ground for many debates. The concept seems to be positioned in the vicinity of strong notions such as: creativity, novelty, evolution, progress, organization, collectivism, aggregation, and so on. The fundamental context in which this idea is put into discussion is that of the study of complexity. However, many of these vicinities, actuated by the search for a complexity consisting in possible relationships between parts, between the component parts of a whole and the whole, and last but not least,

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between the parts and external elements, seem to remain only discursive artifices without an immediate reality in which they manifest themselves. Therefore, we propose to clarify, even if not exhaustively, how the concept works. The word has many meanings according to its contextual use and various meanings in different languages. We notice that from the point of view of philosophy and most scientific disciplines, it designates a process, a phenomenon, a behaviour, an attribute, a relationship. However, “The term ‘emergence’ often causes confusion in science and philosophy...” (Chalmers 2006: 244), because some meanings are not only different, but quasi-antagonistic. In fact, we do not deal with a single concept of emergence. “Typical uses of the term ‘emergence’ may well express cluster concepts with many different elements” (Chalmers 2006: 253). In his attempt to conceptually analyse the emergence, Chalmers distinguishes, for example, a strong emerging phenomenon from a weak emerging phenomenon. The phenomenon seems to be characterized by absolute unpredictability and relative or, rather, unexpected unpredictability. From this perspective, we notice that beyond its internal coherence, the phenomenon materializes in the environment taking the shape of emergence, but if we change the perspective and observe the same moment from the direction of the environment from which it originates we can say that we witness an *immersion* from another environment. Thus we advance the hypothesis that this concept of *emergence* is only a facet of a more complex phenomenon that can only be clearly understood in tandem with its other facet: *immersion*. We could probably say that we deal with two sides of the same coin: *immersion-emergence*.

Another attempt at clarification distinguishes: “... emergence as ontological liberality, emergence as multiple realizability, and emergence as interactive complexity” (Cunningham 2001: 74). From this point of view, we may recognize a phenomenon as having emerging dimensions if it can be included in one of these three types of manifestations. So, in order to be categorized as fully emergent, it should enter all three categories: not to be ontologically constrained, to be capable of manifesting its potential in various manifestations and interacting with both separate entities in the environment in which it is present as well as complying with the laws which govern the environment in which it is present. Now, this is the case in which we might be in a terrible confusion or impossibility as we could not really find any phenomenon to be included in these types of phenomena, or we could find that actually all phenomena are emergent. However, in this regard, perhaps we should think that phenomena have a lifespan. Considering the time dimension, we could state that the emergence is a time-limited state which some phenomena go through. A state that exists as long as it does not alter their coherence.

Nevertheless, what seems to disturb the understanding of this concept is the way in which it is considered a principle of evolutionary leap. Noam Chomsky, referring to the problems raised, for biologists, by the emergence of human spoken language,

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defines the concept as follows: "... the appearance of a qualitatively different phenomenon at a specific stage of a complexity of organization" (Chomsky 2006: 62). As we can notice, when used in this way, the concept receives an ambiguous reference as regards the action of traversing an environment to enter another environment. Also, this use which seems somehow inaccurate because it does not clearly mark all the references necessary for conceptual understanding, may lead to formulations such as: "... the fundamental laws of emergence: the behaviour of individual agent is less important than the overall system" (Johnson 2004: 148). We do not know for sure whether the phenomenon, as an individual agent of complexity, acquires a different quality, in principle, superior, or the complexity acquires it, or both. However, to the extent that individual agents cannot be more important than the overall system, neither can the overall system be more important than individual agents for the emergence to have a source and to occur.

Probably the fundamental problematic of understanding the emergence may be formulated as follows: if, after the occurrence of the emergent phenomenon, the agents which contributed to its emergence lose their autonomy and melt into a new entity, then the emergence becomes independent, not only distinct from the surrounding entities, but also from its component parts. Should emergence be synonymous with synthesis? Or can emergence be recognized as such as long as it does not become a synthesis? This presupposes that the relationships between its component parts are clearly established and functional and do not need to merge into an indistinct synthesis in which the parts can no longer be recognized. This debate arises because the emergence seems to be closely linked to the assumption that in all cases it is reduced to the aspect of the collectivization of the component parts. Based on this relationship between the parts, the phenomenon is considered to be greater than the sum of its parts.

The concept of emergence is something of a curiosity, in that philosophers' attitudes toward it differ so radically. To some, the claim that things can be *greater than the sum of their parts* express an unproblematic relation among perfectly ordinary entities or properties. To others, it express a mystifying relation almost magical entities or properties. This dramatic discrepancy is largely attributable to the fact that three quite distinct, though rarely distinguished, concepts of emergence circulate the philosophical literature across a wide range of topics. Since these concepts are not equally defensible, the failure to distinguish them has given the concept of *emergence*, as a genus, something of a bad reputation (Cunningham 2001: 62).

This *reputation* lacking the integrity of the concept which proves to be one that tries to force the collecting of several ideas about reality under the guise of a single notion, can also be derived from the attempt of using it as a way of representing reality. Thus, if we consider

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the statement: "... the brightness of a white light made up of two lights is summative; the color of a light made up of two different coloured lights is emergent" (Beardsley 1958: 84), and try to establish the same conceptual balances by referring, for example, to creativity as productivity within social groups, we observe that it cannot be established as a principle of manifestation. If we equate, in a first phase, the white lights with the creative individuals within a group, let's say a group of individuals who work on a performance, we can assume that the union of the individual creativities of the actors is summative. But if, in a second phase, we refer to the actor's creativity, scenographer's creativity, composer's creativity, playwright's creativity, director's creativity, and so on, we can say that, like the coloured light, the sum of their creativities is emergent. Is the work on a performance both summative and emergent? But what if, in the case of a team working on a performance, we can't speak even in the first phase of a linear summation? What if one actor's creativity compromises or even reduces the other actor's creativity? How can they be summed up? However, during rehearsals, a way should be found for the creativities of at least two actors to work together. But what if the creativity of the scenographer or director affects the actor's creativity to the point of annihilation? Or vice versa? Can we still speak about an emergence, in the sense that these different creativities work together? In a theatrical group, creativity often means subjecting all the individual creativities to a single creativity which belongs to that individual in the group who has the strongest will. If, on the one hand, it is true that taken together the creativities of all those involved in an artistic production can be considered emerging in the sense that together they achieve something they could not achieve independently, on the other hand, the creative potential of each individual is altered by this collaboration, teamwork, from the very fact that one has to take into account the presence of the other. Therefore,

When it comes to creativity, the available literature repeatedly demonstrates that groups rarely achieve the level of the sum of the individuals (McGrath, 1984). The question, of course, is why groups are so suboptimal in performance (Nemeth & Nemeth-Brow 2003: 63).

*Inefficiency* probably refers to the fact that in a group the creativity of each of its members cannot in any case reach one hundred percent of its potential. In fact, the management of a group should take into account the possible maximization of individual creativity in such a way that it does not affect the cohesion of the group. In this case, the emergence, in excess of the sum of the parts, may be impossible to occur. But if such a particular situation can be identified, can't others be identified? We only conclude that operating on this concept seems to have not only a *bad reputation* in that it can lead to confusion, but it could even be dangerous in the sense that it can lead to a misunderstanding of reality. At the same time, if we look at it from the perspective of the performing arts, the emergence, described as something greater than the sum of the parts of a whole, can also imply the consideration of illusion, of

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perceptual distortions. The illusion often seems to be described as the reception of something greater than the sum of the parts. In this case, the difference between what is in itself and what is observed could be attributed to the concept of emergence.

Evidently, the concept of emergence is also present in the theatre. There has been talk lately of the impact of information technologies which lead also in the theatre to an unexpected and radical change. The impact that information technology has in the field of performing arts seems to make the novelty to be expected to come from the dimension of technology. Still, even if we can speak about performances played by *actoroids*, according to Sam Williams when referring to the performance *Uncanny Valley*, 2019, a Munich's Kammerspiele production, or *IA: Can a Robot Write a Play of Theatre?*, a performance whose text is written by robots, 2021, Švanda Theatre, Prague, or even *Beyond the Fence*, the world's first computer generated musical of 2016 directed by Luke Sheppard at Arts Theatre in London's West, which benefited from computer assistance in its writing, we should treat with caution the idea that emergence can arise from this direction, even if an understandable enthusiasm could make us automatically fall into this temptation.

In fact, there is a similarity, in reception, between, for example, puppet theatre or shadow theatre performances and performances which rely on *actoroids*. Fundamentally an actoroid is a puppet. And "... puppets are more like no-living objects, the puppet, brought to life, is always a metaphor" (Ghani 2016: 15). The resemblance of the robot to the human individual could provoke our imagination making us assume that the emergence consists precisely in replacing the actor with a stage robot. But what is a puppet other than an artificial figure? From the perspective of the reception involved in the phenomenon of emergence, the same effect and unnatural sensation can be generated in the audience by using either an actoroid or any element brought to life with animation. For these reasons, we cannot consider that the use of actoroids on stage can be a radical novelty. It is possible that the temptation to consider this an emergence stems from the fact that, as Jerzy Grotowski remarks, in another context, "... many people have difficulties distinguishing technique from aesthetics" (Grotowski 2008: 31). At the same time, we ask ourselves: can an actoroid be a technical or an aesthetic realization? Obviously, it depends on the director's vision. Can it be a technical and aesthetic realization? It depends on the way it is scenically conceived. However, a radical novelty, which reveals a new dimension in the theatre, does not seem to be. In fact, as Grotowski observes:

We are all a product of the meeting of our tradition with our needs. These are things that one cannot transplant from one place to another without falling into clichés, into stereotypes, into something that is already dead the moment we call it into existence (Grotowski 2008: 31).

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But can there still be a fourth variant which emerges from a synthesis of technique and aesthetics to such an extent that both become unrecognizable? An ideological-conceptual realization? But, in this case, does the emergence still exist in itself or is it only perceived as an emergence? We consider it too much to claim that *Uncanny Valley* is about “... the brokenness of human-centred subjectivity...” (Williams 2019). We bring a mechanism on stage, a robot, what do we do? Do we replace the actor, as a living being, in a different way than the puppet does in the theatre of animation? The spectators expect to see a human being, an actor/actress, and instead they see an actoroid; do the spectators feel their *human-centred subjectivity* shattered? Maybe yes, maybe no. It is, without doubt, a relative technical innovation, but we cannot claim that it is that surprising novelty of the emergence. And this is because we cannot see the living actor, as a human being, reduced only to a machine that learns by heart a text that he delivers to the audience. But if we understand the actor as an automaton just because he recites a prefabricated text then we could extend the concept to all individuals belonging to the human species because we all use words learned from others, without probably inventing any of our own words. Which is nonsense.

If we take into consideration the writing of a dramatic text through a computer program, we ask ourselves to what extent can we speak about an emergence which at least in terms of surprising novelty is claimed? In the case of the performance *Beyond the Fence*, 2016, considered to mark a new stage in the theatre, we learn that it “... has more in common with advertising than art” (Souppouris 2016), or that “... it’s bland and a bit silly” (Gardner 2016). However, if we analyse the technique by which it was made, we notice that the software was involved in what we can call documenting. Ultimately a man composed the lyrics and the music for the performance:

The first step was to feed it thousands of musicals. From there, the software analysed lyrics to chart the emotional course of each musical’s acts. It then averaged this out to show when a story should hit beats of love, danger, hate, happiness and so on. This provided a definitive structure for the plot and set the tone for the music. [...] There’s no software that can put all of these elements together and turn them into a musical. That requires a human (Souppouris 2016).

The novelty lies in the fact that it could be used as an instrument in the work of the one who composes the text and the music. But did the robot compose a dramatic text? In the end, no. Is this performance an example of emergence? As in the previous case, maybe only from the point of view of the conceptual perspective, and probably of the PR.

In 2021 the premiere of the *Může robot napsat divadelní hru?* (*Can a Robot Write a Play?*) takes place. “This is the first play with the vast majority of the script –

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about 95% - written by artificial intelligence” (Rosu 2021: min. 1: 12-1: 19), states one of the members of the team, which worked on the performance. Can we say that in this case we deal with an emergence? For this, the remaining 5% should be evaluated in order for a robot to write a play in its entirety. What seems strange about accepting as an emergence the writing of a play by a robot is the fact that the creative team includes someone who does literary work, that is takes care of the final text. Thus the robot is in a close relationship of collaborative writing with this *member* of the team who is conventionally named *author*. At the same time, here we confront with another problem. What does the author of a play do? What does he create? A dramatic text? Does he only arrange words into sentences? What does the playwright’s work consist in? Furthermore, we are told the following:

... the computer gets some basic stage directions with a hint of what the situation is, who the characters involved are, and so on. Then we – humans -- suggest the first line and the robot starts to generate text based on verbal association from there (Košťáka 2021: min. 0:36-0:47).

Hence the question: Does the playwright’s work reduce to an arrangement of words in monologues and dialogues? Doesn’t he also visualize situations and characters? And doesn’t he do more than that? We should consider the following statement: “... the art of the storyteller or the playwright does not merely consist in concocting jokes” (Bergson 1998: 28), made by the philosopher who defines the comic as “... something mechanical encrusted on the living...” (Bergson 1998: 26). Therefore, can the claim that this performance was based on a text written by an artificial intelligence be verified or not? What if the robot couldn’t write 95% of the play? What is the criterion which determines the proportion? The number of words? And yet, what if novelty as emergence should be sought elsewhere? What if it is in the human-machine interaction, machines which have become more and more effective over the last two centuries? What if the emergence consists in a kind of acceptance of the machine as an extension of the living or even as a fundamentally ontic structure? But, in this case, does the human-machine communication, already described, in detail, in numerous works of fiction, still be viewed as an emergence? Is an already announced emergence still a surprising novelty as by definition emergence should be? Trying to determine what kind of emergence can be identified in the three above-mentioned performances, a strong or weak emergence according to Chalmers’ categories, or an emergence as ontological liberality or as multiple realizability or as an interactive complexity according to Cunningham’s categories, we propose to distinguish a functional emerging phenomenon from a non-functional emerging phenomenon. Thus, in our opinion, these three performances are in the category of performances which can be included in the non-functional emergence category, which

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is only in reception.

At the same time, we mention here a recent debate in the world of entertainment, more precisely in the world of film. Debate initiated by Martin Scorsese who states: "... Marvel movies [...] I don't think they're cinema" (Scorsese 2019). However, Tom Holland replies, "... people who have made the kinds of movies that are 'Oscar-worthy' and also made superhero movies – and they will tell you that they're the same, just on a different scale" (Holland 2021). Francis Ford Coppola also intervenes, strengthening Scorsese's position: "... Martin was kind when he said it's not cinema. He didn't say it's despicable, which I just say it is" (Coppola 2019). Jodie Foster, Roland Emmerich, and others, also support this position. And Ridley Scott states that these films "... are mostly saved by special effects..." (Scott 2021).

So, in the world of film, famous creators noticed something that seems to be an emergence: from the combination of graphics software and raw footage, something, which can no longer be called cinematography, is created. Something new. Nevertheless, in the above mentioned debate, the idea of emergence is denied. Those who are involved in making films, which benefit in excess from special effects, refuse to accept that their products do not belong to cinematography. If in the case of the three theatre performances, an emergence, which does not seem to have occurred, is claimed, in the case of the film, the recognition of the emergence is refused, probably because a real emergence makes the novelty completely different than we expect. Are we ready to accept the consequences? If we could not notice a functional emergence, in the theatre, perhaps when the spectators will be replaced by robots we will deal with a functional emergence. But then will we still speak about theatre? Or, if it is still called theatre, the so-called traditional theatre will probably be reconsidered as anti-theatre.

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