

The challenge of improvisation

LAB 6

06 – 10 March 2023

**Conscious Improvisation:
a Deep and Functional Approach**

Conservatorio di Musica
'Santa Cecilia' Roma

RAPP-Reflection-based Artistic Professional Practice

Dr. Fiorella Battaglia

Head of the Ethics in the Wild Research Lab

Ludwig-Maximilians-University Munich - Philosophy Department

The challenge of improvisation

- It is hard to give an account of improvisation. I am only referring to how challenging it will be to explain what improvisation is. Here, I will not primarily consider the domain of arts and aesthetics but speak of improvisation as subject of philosophical inquiry.

“A spontaneous action where one acts in an unforeseen way“

- habitual and routine ways of action learned through practice and automatized to different extents (like driving cars and riding bicycles); makeshift, expedient, and “making-do”; unprepared and unpremeditated reactions to unexpected emergencies; and conscious invention and ideation through execution and realization, including through reshuffling and recycling pre-existing materials.
- Improvisation is a kind of agency that is structured and, at the same time, capable of adapting to changes in its surroundings. Accordingly, it is sometimes conceived of as the model of human action as such.

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The paper I am presenting is divided into three parts.

1. I am going to explain what improvisation is. My approach will broadly consider it as a fundamental feature of human intelligence.
2. Improvisation and AI. I am going to raise the issue of improvisation and AI because it has given new impetus to the discussion above. For example, when discussing the potential of ChatGTP, people are again wondering how many combining and recombining elements can be found in both machine and human improvisation.
3. A series of questions to guide us in our final discussion.

How to do this? (Methodology)

- In doing so, I will highlight all the difficulties that arise in taking this characteristic into account. One of the results will be that general theories of human action will be questioned and corrected such as rationality, emotions, etc. The philosophical quest for clarification is informed by a constellation of various themes, which are closely linked and shape the central topic of improvisation.

1. Clarification

- **Imagination and perception: the risk of deception**
- Independence from sensible data, when it is based on a solidly structured principle of reality, instead of depriving the imagination of its validity, highlights the aspects that link it to thought and opens up the possibility of accessing a state that is not inferior, but almost 'more' than reality.

1. Clarification

- **Imagination and emotions: when health and disease begin in the brain**
- From this brief summary we can see that the relationship with emotions is complex and not restricted to mere motivation for action. In fact, emotions allow us to record and store in our memory what is important to us, while at the same time alerting others and us to what we care about. They are therefore ways of channeling and expressing values. They show us the importance of things we were previously unaware of, they allow us to create new value systems to replace those we already know or to accompany them; in short, they allow the person to develop a better self-knowledge.
- They are then themselves something that demands to be experienced and take the form of motivations to act.

1. Clarification

- **Wandering mind', 'default mode', intrinsic activity**
- Nancy Andreasen in her book *Creativity and the Brain*, based in part on her own experiments, proposed a link between more intense 'resting' brain activity and an individual's creative abilities.

1. Clarification

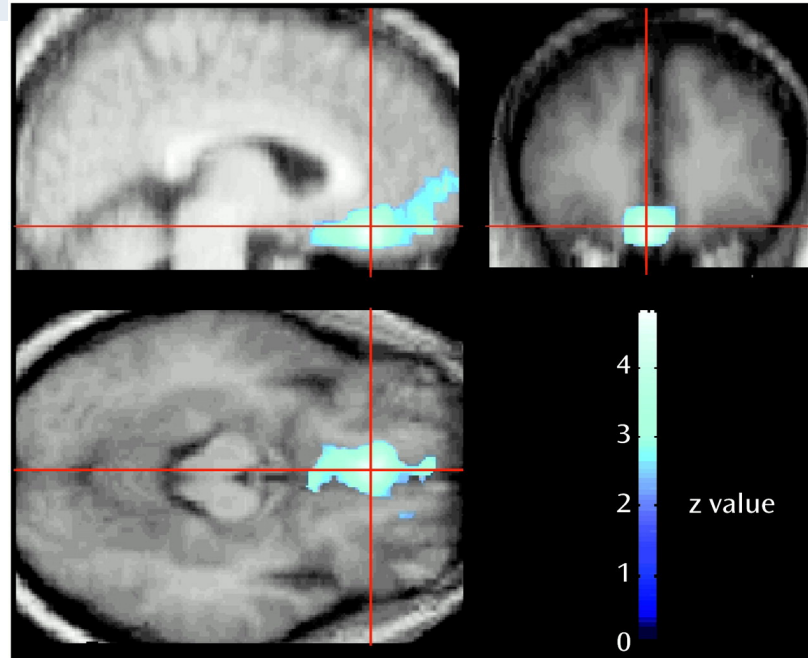
- **Cognitive science and the role of mental imagery**
- Contemporary cognitive science views mental functions as integrated systems that process information. This new perspective emphasises the common elements of the mental faculties: memory, imagination and reasoning are not autonomous, independent and separate abilities, but share a number of properties and mechanisms that are also shared by other faculties, such as perception.
- One of the merits of the cognitive sciences is that they have challenged the traditional catalogue of mental faculties and proposed new articulations and systematisations that, to some extent, overcome the ambiguities of the previous ones.

1. Clarification

- **Imagination as a tool for the study of emotional neuroscience**
- Certain regions of our brain do not 'discriminate' between the endogenous mental representation of reproductive imagination and the sensory-perceptual experience that can be directly referred to, that is, to an external afferent mediated by the senses.
- Starting from this assumption, neuroscientific research has moved on to consider the relationship between imagination and emotion.

From: Neural Correlates of Imaginal Aggressive Behavior Assessed by Positron Emission Tomography in Healthy Subjects

American Journal of Psychiatry



aPET data are superimposed onto the averaged MRI scan of the 15 subjects and displayed at the voxel of peak deactivation in the transverse, sagittal, and coronal planes. The color scale indicates the z scores for comparisons of rCBF in the neutral and aggressive conditions, with the peak of deactivation in white ($z > 3.29$, equivalent to $p < 0.001$, two-tailed, is considered significant). For the peak deactivation in the left medial frontal gyrus (Brodmann's area 11), the coordinates in the Talairach space (30) are $x = -4$, $y = 32$, $z = -12$, and the z score is 4.86.

1. Clarification: some conclusions

- Imagination is not a deceptive form of reality; on the contrary, it is itself a source of experience. It enhances our ability to act in the world and can be seen as a form of 'training'.
- Its performative quality has been recognised by neurorehabilitators and athletes, who base the recovery of performed motor skills and the execution of better performances on the exercise of imagined motor skills.
- Imagination is also a fundamental element of many cognitive processes, so much so that the theory of pictorialism considers 'mental imagery' to be the basic building block with which thoughts are constructed.

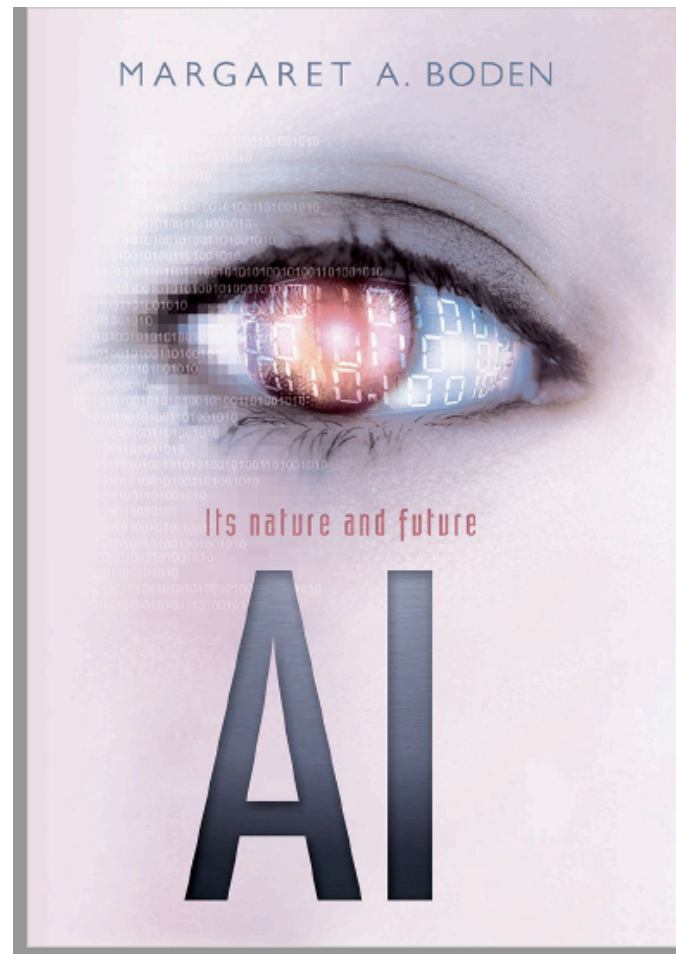
1. Clarification: some conclusions

- Imagination also has close, though not fully resolved, relationships both with the ordinary creativity of every individual who develops his or her logical thinking and intuitions, and with the 'genius' creativity of artists or scientists.
- In this sense, imagination is the way by which thought becomes creation, as far as can be imagined from deception or illusion.
- Finally, the aspects that link emotion and imagination are fascinating. In our view, imagination is capable of producing a response in the brain that is very similar, if not identical, to that produced by a perceptual experience.
- To imagine in this sense is to generate 'from within' an emotional experience that we usually attribute to a response to an external stimulus.

2. Improvisation and AI

- Creativity, considered as the ability to produce idea or artefacts that are new, surprising, and valuable – is the acme of the human intelligence, and necessary for human-level Artificial General Intelligence (AGI). But it's widely seen as mysterious.
- It is not obvious how novel ideas could arise in people, never mind computers. (Margaret Boden 2016).

Margaret A. Boden 2016



Margaret A. Boden 1998



Artificial Intelligence 103 (1998) 347–356

**Artificial
Intelligence**

Creativity and artificial intelligence

Margaret A. Boden

School of Cognitive and Computing Sciences, University of Sussex, Brighton, Sussex, BN1 9QH, England, UK

Abstract

Creativity is a fundamental feature of human intelligence, and a challenge for AI. AI techniques can be used to create new ideas in three ways: by producing novel combinations of familiar ideas; by exploring the potential of conceptual spaces; and by making transformations that enable the generation of previously impossible ideas. AI will have less difficulty in modelling the generation of new ideas than in automating their evaluation. © 1998 Elsevier Science B.V. All rights reserved.

1. Why AI must try to model creativity

Creativity is a fundamental feature of human intelligence, and an inescapable challenge for AI. Even technologically oriented AI cannot ignore it, for creative programs could be very useful in the laboratory or the market-place. And AI-models intended (or considered) as part of cognitive science can help psychologists to understand how it is possible for human minds to be creative.

Three main types of creativity

- **Combinational** creativity involves novel (improbable) combinations of familiar ideas.
- **Exploratory** creativity involves the generation of novel ideas by the exploration of structured conceptual spaces.
- **Transformational** creativity involves the transformation of some (one or more) dimension of the space, so that new structures can be generated which could not have arisen before.

1. Combinational creativity

- It involves novel (improbable) combinations of familiar ideas. Let us call this “combinational” creativity. Examples include much poetic imagery, and also analogy-wherein the two newly associated ideas share some inherent conceptual structure. Analogies are sometimes explored and developed at some length, for purposes of rhetoric or problem-solving. But even the mere generation, or appreciation, of an apt analogy involves a (not necessarily conscious) judicious structural mapping, whereby the similarities of structure are not only noticed but are judged in terms of their strength and depth.

2. Exploratory creativity

- It is less idiosyncratic (individual, distinctive), for it exploits some culturally valued way of thinking (e.g. styles of painting or music, or sub-areas of chemistry or mathematics). The stylistic rules are used (largely unconsciously) to produce the new idea—much as English grammar generates new sentences.
- The artist/scientist may explore the style's potential in an unquestioning way. Or they may deliberately push and test it, discovering what it can and cannot generate. It may even be tweaked, by slightly altering (e.g. weakening/strengthening) a rule. The novel structure, despite its novelty, will be recognized as lying within a familiar stylistic family. Exploratory creativity is the type best suited to AI.

3. Transformational creativity

- It is a successor of exploratory creativity, usually triggered by frustration at the limits of the existing style. Here, one or more stylistic constraints are radically altered (dropped, negated, complemented, substituted, added . . .), so that novel structures are generated which could not have been generated before. These new ideas are deeply surprising, because they're seemingly impossible.
- They're often initially unintelligible, for they can't be fully understood in terms of the previously accepted way of thinking.
- However, they must be intelligibly close to the previous way of thinking if they are to be accepted. (Sometimes, this recognition takes many years.)

3. Some questions

- Given that improvisation is, in general, a mode of action where success is not guaranteed, and given the mostly harmless character of failure in the arts – where they are usually not as disastrous as they might be in scientific, social, and political experiments – art remains the ground most conducive to the flourishing of improvisational practices.
- This makes improvisation in the arts also the most fertile ground for philosophical reflection and analysis of related ontological, phenomenological, ethical, and aesthetic issues.
- Do you agree with this claim by Bertinetto and Ruta ?

3. Some questions

1. How might we articulate the notion and grasp the phenomenon of improvisation in different artistic practices and from different philosophical perspectives?
2. What are the ontological and phenomenological properties of improvisation in the arts?
3. What are the peculiarities of improvisation in terms of creativity, artistic normativity, and aesthetic taste and judgment?

3. Some questions

1. What are the specific features of the aesthetic experience of artistic improvisations?
2. How does improvisation develop in relation to the specific media and procedures of each artistic practice?
3. What is the contribution of improvisation to the artistic sphere as a whole?

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