Machines Hallucinations. Architecture and Artificial Intelligence

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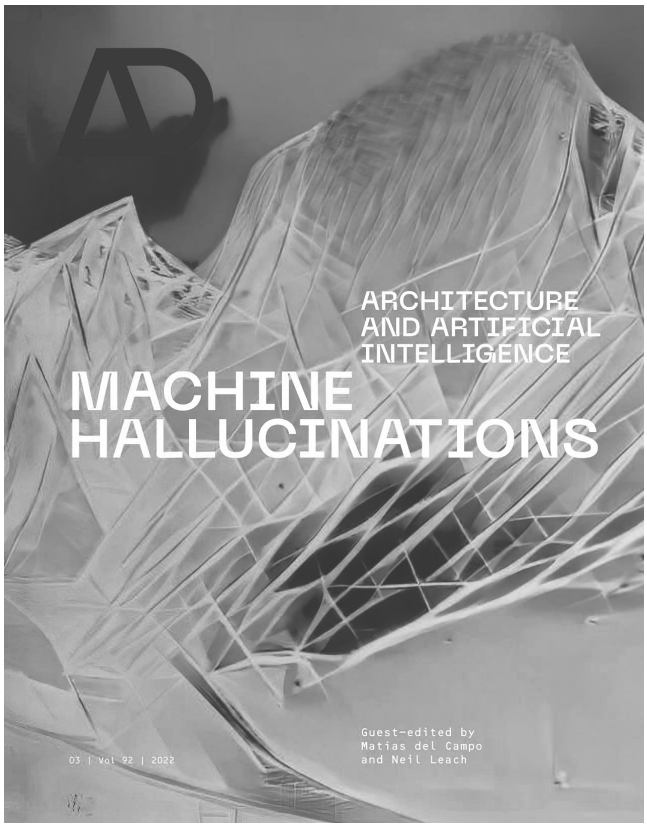

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Matias Del Campo and Neil Leach are two of the most avant-garde researchers and academics in a multidisciplinary field exploring the implications of the use and spread of Artificial Intelligence in current architectural practice. What they have been advocating is that we are submerged into a paradigmatic shift in the way we conceive and produce architecture and that, presently, a substantial portion of our architectural intellect collaborates with machines or non-human entities. This collaboration differs from the architectural assistant specialization in space representations prevalent in the eighties and nineties.

Then, if the architectural design was documented as an homage to human intellectual prowess and, within this realm, human ingenuity found expression in the creation of either sublime aesthetics, appreciated by the discerning observer, or optimal spatial arrangements, indicative of the achievements of the rational scientist, what should happen now that 'different' intelligences have joined the discussions? What will happen if do not use technology just as a tool to represent and visualize the space we think of but we start communicating with them as active players in a sort of co-shared design process?

If we think about it, Artificial Intelligence (AI) has seamlessly integrated into our daily lives, often without explicit awareness. It permeates our smartphones, discernibly filtering spam, recognizing acquaintances on Facebook, and categorizing images on Instagram. Additionally, AI assumes residence within our households through virtual assistants such as Siri and Alexa. Its presence extends to our vehicles, including cars and planes. What we just haven't imagined is the possibility for it to play an active role and be more than a decision-making tool but a yet-to-be-discovered potential for architects and design.

The book Machine Hallucinations: Architecture and Artificial Intelligence, tries to set the bar for a discussion in this direction, engaging some of the most well-known researchers in this cross-polluted field of research for a total of 21 contributions. Not just academics, but also architects currently implementing it in their daily workflow as active users really training them-

selves neural networks to imprint into them their thoughts and, to some extent, personality traits. The editorial for the editor's duo takes a strong position affirming that "it is the right moment for a discussion about the impact of AI on the world of Architecture". Such a statement is motivated by the consciousness that we are facing a so-called 'huge explosion' of creativity in architecture. Even though this could be caused by different and heterogeneous reasons: commercial, productive, curiosity-driven ones, it is undeniable that the way machines 'hallucinate' (or do not) is food for thought for architects all over the world, facing the need to extrapolate proper methodologies from the use/abuse of neural networks and GANs and to learn to organize, comprehend and – why not – create their own datasets from which move their researches on. Writing a review for such a wide-ranging book would be challenging for every author. Each one of the essays contained in the publication is worthy of a dedicated comment that could unveil and deepen the importance of the concepts and the findings contained in it. Readers can identify various threads within the book that offer avenues for elevating their professional endeavours or embarking on individual research initiatives. These threads serve as pathways to experiment with, analyze, and engage in discussions surrounding the keywords encapsulated in the text. For this reason, the strategy followed was to identify some macro-areas where these contributions focus and then to choose one of them as the exemplary work to discuss and analyze more in-depth. Some of the fields we can identify starting from the index could be something like creativity, intelligence, synthesis, space, and hallucinations. Of course, not one excludes the others but these could be considered some of the main ingredients where the authors decided to focus and to express their position in such disruptive field of research.

In his Creative AI. Augmenting Design Potency, Daniel Bolojan - Assistant Professor at Florida Atlantic University School of Architecture, founder of Nonstandardstudio and a PhD student in Vienna – explores the idea that AI and intelligent tools could have the power to free architects and designers during their creative process. Nevertheless, he affirms at the same time that human and non-human intelligence could not be equated or even compared but they could properly pair to offer new direction and creative opportunities. The article marks an important distinction between expert systems and learning systems, considering them as the two main approaches when it comes to developing intelligent entities. The first ones were popular during the '80s and are classified as knowledge systems that are typically composed of two interrelated subsystems: a knowledge base and an inference engine. The knowledge base is responsible for specifying rules, while the inference engine utilizes these rules to process known facts, thereby deriving new facts through logical reasoning. Most importantly, they need a human expert to insert information in the knowledge system to let them be 'intelligent'. Differently, learning systems – such as neural networks - do not rely on the presence of a human factor, and they do not learn from hardcore solutions but rather through experience and examples. Indeed, they do not have a set of a priori conditions to stick to but they semantically learn generating their own condition to operate. At the end of his disquisition – and to sustain his thesis – Bolojan presents a work of his studio titled Machine Perceptions: Gaudi + Neural Networks (2021). The main objective of this research is not to preserve or duplicate the Sagrada Família, nor is it focused on generating mere interpolations of the acquired representation. Instead, the aim is to garner insights and formulate geometrical strategies that facilitate the liberation of the composition while preserving the fundamental tectonic details, ultimately yielding innovative and novel compositions. The result is a series of generations that could be enlisted with the Sagrada Familia domains of form, semantics, and aesthetics but completely generated through the constant communication between two intellects and – most importantly – the shared agency that can be achieved through their relationship.

The ideas expressed by Bolojan are part of a longer and more articulated discussion contained in the book. Whether we refer to creativity/style/synthesis the main thread is always the idea that architects are starting to implement and to 'playfully' interact with some other intelligencies that can learn outside a series of pre-coded situations to which extract from. Each of the essays could be of interest because it is linked to the other from the idea that each of the people involved is showing the way they are learning to communicate with such intelligencies and the way their work is reshaping itself thanks to this new interaction. One of the authors, Matias Del Campo is a friend. We met during the pandemic and we started working together on a project that, despite the difficulties of the last years, will soon be ready. He is the one who explained to me for the first time the implications of these new tools in the architectural practice and, somehow, I feel like one of the people he initiated to this field of research. If it is true that intelligent machines can 'hallucinate', meaning that they can create outputs that are nonsensical or altogether inaccurate to the human viewer due to some glitches in the interpolated dataset they have, I like to think that also in our conversations Matias and I hallucinated a little bit discussing on what we are currently living and where this road could take us and, at the same time, this book is the results of a series of 'collective hallucinations' from the researchers trying to open up new perspectives for the readers.