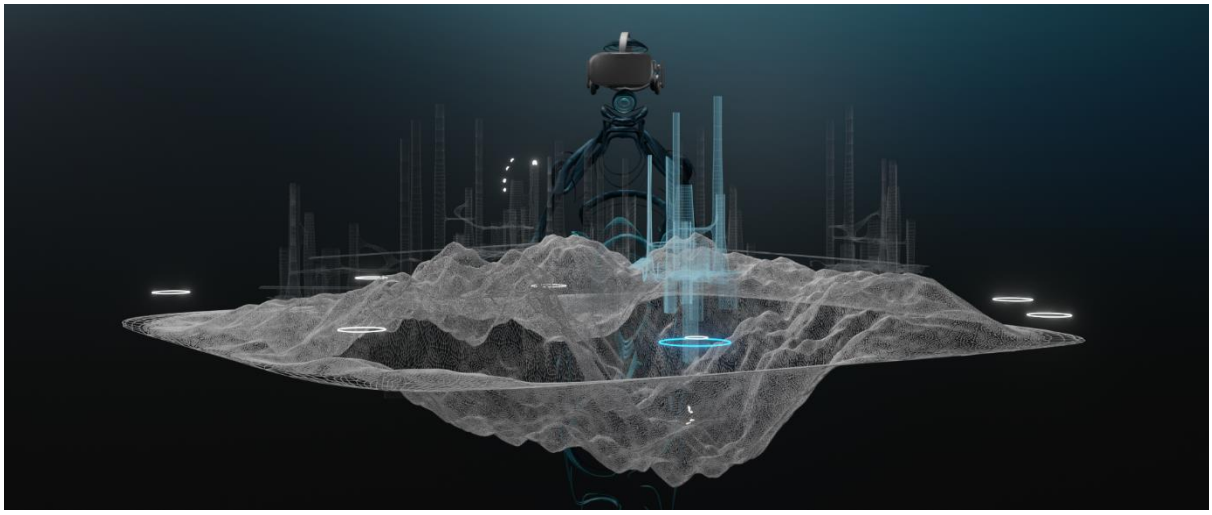
From VR to Metaverse

An Architectural Approach



ILLUSORR ©

“The telephone is virtual reality in that you can meet with someone as if you are together, at least for the auditory sense.” *Ray Kurzweil*

INTRODUCTION

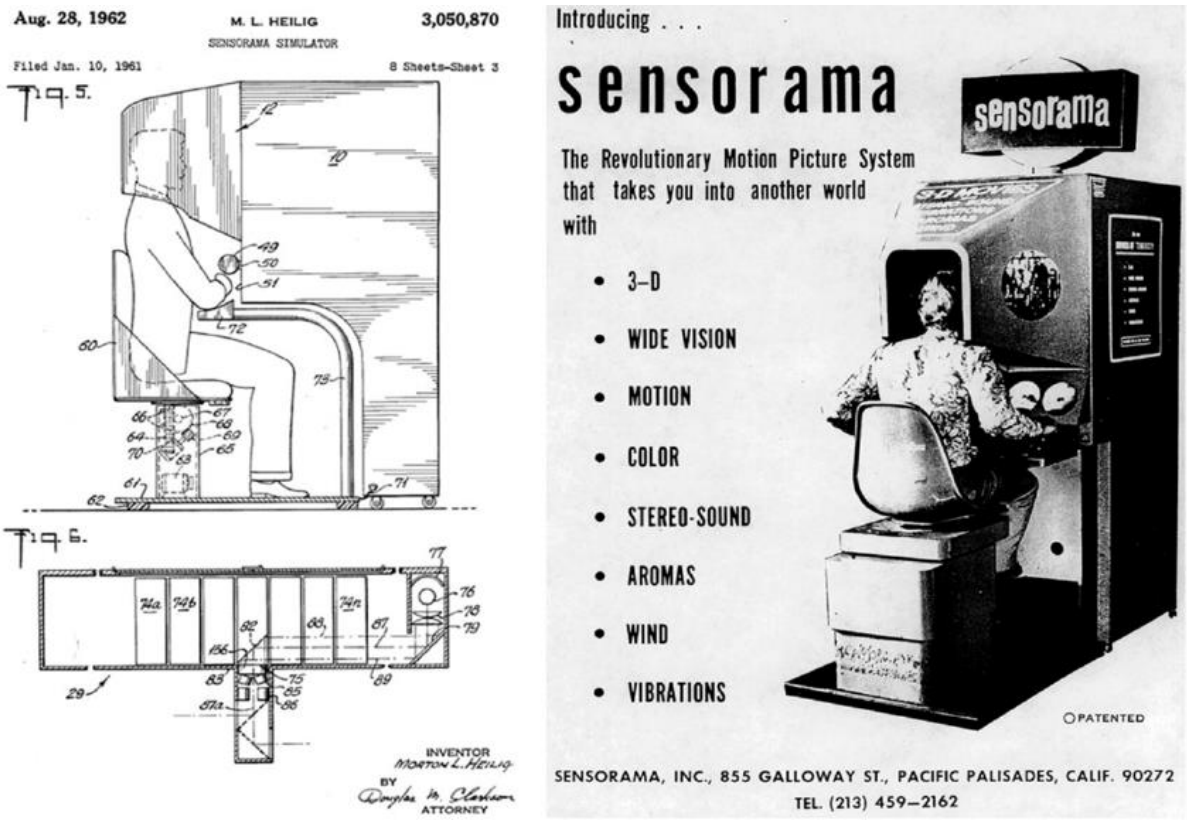
“Virtual reality” has been defined in many ways by different people and disciplines. For example, the definitions found in English dictionaries are different from the ones used by programmers in computing, which are also different from ones used by scholars in philosophy. For the purpose of this project ILLUSORR developed a comprehensive understanding based on all the relevant fields – that is specific enough for clarity, but also general enough to invite exploration and evolution/adaptations that may not have been considered by the pioneers of VR. This is the definition that ILLUSORR will be using:

Virtual reality - *all simulated arenas and immersive experiences recursively affecting the perceptual senses*

There are multiple reasons for having this specific wording and understanding; for example, Elon Musk’s Neuralink is within a couple of years of being realized and this implanted chip, called a brain machine interface (BMI), is completely capable of creating simulated experiences that will make VR goggles redundant. This is also why the dictionary definition which “consists of images and sounds created by a computer” is inadequate and will soon become obsolete. The ‘virtual’ we speak of is that of perception - not juxtaposing ‘reality’, but rather ‘physicality’ - like the usage of the term ‘virtuality’ by philosophers such as Gilles Deleuze and Henri Bergson. This is a very important distinction because as we continue to study and understand the brain, consciousness and quantum physics better, we learn that perception and reality might be further apart than ever previously conceived. Therefore, VR should be defined generally as an experience that recursively stimulates the senses in a way that hacks the restrictions of physical space.

The invention of VR can be hard to trace and might sometimes seem even arbitrary. The standard history credits 'Sensorama' by Morton Hellig as the earliest VR system introduced in 1962, a 3D stereoscopic display that engaged multiple senses including sight, sound, smell, and touch. But a deeper dive might land you at the possible inspiration depicted in the 1935 novel by Stanley G. Weinbaum called 'Pygmallon's Spectacles', which speaks about the special goggles that play interactive movies. But what makes these different to say an early photograph in the 19th century? Because Steven Pinker, one of the world's leading cognitive scientists at Harvard, said "Photography is a kind of virtual reality, and it helps if you can create the illusion of being in an interesting world." And if this is true, we can extrapolate a little further - what makes this different to the 35,000-year-old paintings in Chauvet cave in France? The answer to this question takes us back to ILLUSORR's definition of VR, and specifically the phrase "recursively affecting the perceptual senses". Because VR isn't just about motion picture – that would make every movie, tv show, and video ever recorded also VR – it's more than that! It's about interactivity. The agent must be able to recursively interact with the arena (or objects within the arena), just as one does in the physical world. As the senses are being stimulated, they can also affect the medium in which they are immersed in. So, with this framing in mind, the timeline and progression of VR over the past century is contextualized and begins to make more sense.

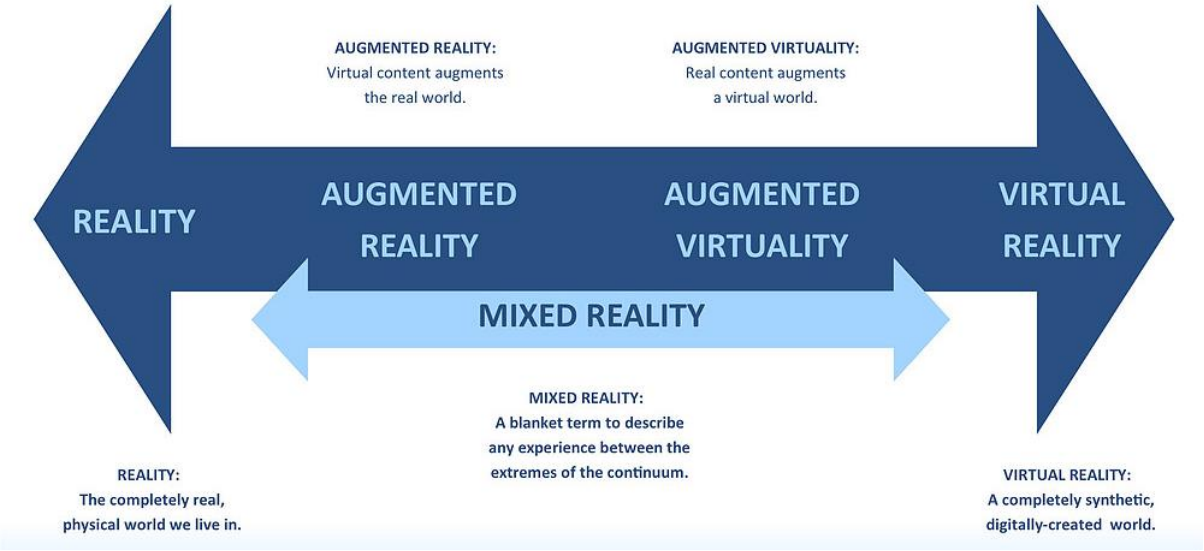
"In the past, before phones and the Internet, all communication was face-to-face. Now, most of it is digital, via emails and messaging services. If people were to start using virtual reality, it would almost come full circle." *Palmer Luckey*



Sensorama Simulator
(https://www.researchgate.net/figure/Sensorama-the-first-virtual-immersion-system-the-technical-table-and-the-pictures-shown_fig1_321142137)

MEANING

Things begin to get sticky when other terms such as 'augmented reality' (AR) and 'mixed reality' (MR) are introduced. But a great way to frame this is to imagine it as a spectrum with physical reality on one end and virtual reality on the other. So, we can think of AR as virtual content that augment the physical world, or physical content that augment the virtual world; and MR as different variations and intensities of AR. Extended reality (XR) is also another popular term which blankets all the above - VR, AR, and MR. The current general understanding is usually contingent on the interface/device being used; goggles that block out the external world are usually associated with VR, while device screens that allow you to augment the physical world through the camera (or projected hologram) are associated with AR.



Paul Milgram's Reality-Virtuality Continuum
(https://www.virtualiteach.com/post/2017/08/04/exploring-the-virtuality-continuum-and-its-terminology)

"VR is going to be defined by the content that is designed explicitly for virtual reality." *Palmer Luckey*

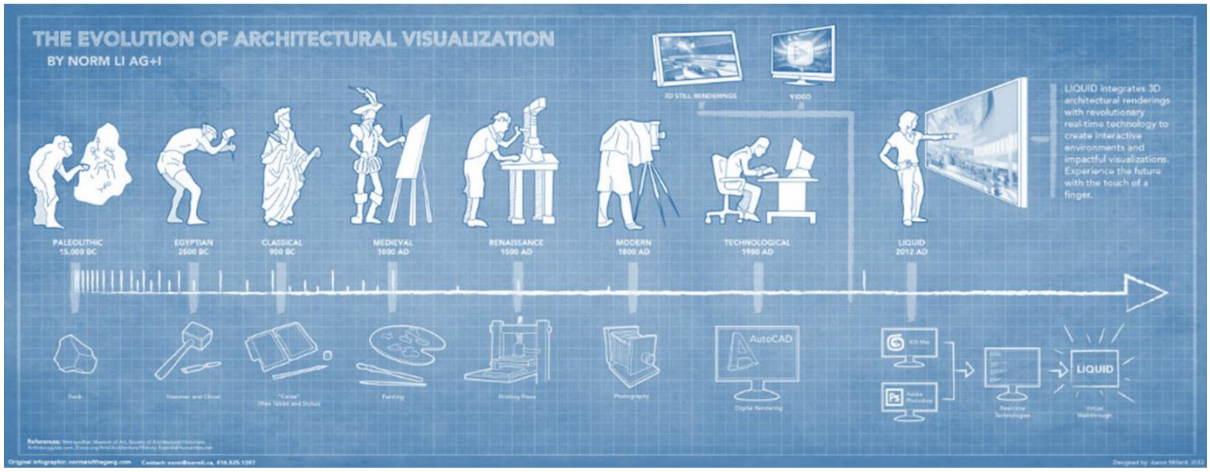
REPRESENTATION

The genesis of architectural representation is quite an interesting one, especially if you take the Mario Carpo and Patrik Schumacher framings (two of the leading contemporary architectural theorists). They both assert that architecture as a self-referential discourse began with the renaissance, around the 15th century. Prior to this what existed with (and before) the Medieval and Gothic era was the 'arkitekton', the master builder or chief builder. It wasn't until renaissance figures like Leon Battista Alberti and (a century later) Andrea Palladio, through their theoretical works, began to influence the discourse leading to a distinction between the architect (ie designer) and the builder (ie engineer). This amalgamation would emerge again in different forms, once manifesting as a lone genius in Spain who tried to reinvent the medieval process of building through catenary models; he goes by the name Antoni Gaudi. Another is the German architect/engineer who tried to partner with materials through form finding experiments; none other than Frei Otto. And yet again in the early 90s when the idiosyncratic American architect decided to use complex computation for the first time in architecture

(with the software CATIA) to design and build a fish monument (El Peix) in Barcelona, Spain; that architect was Frank Gehry.

With the current state of avant-garde architecture, and the exponentially increasing complexity, the most appropriate future is VR representation and communication. The 3 pivotal moments in architectural representation according to our framing (Gaudi, Otto, Gehry), form a trajectory that inevitably leads to virtuality. As the cinematographer Norm Li said, “the technological reality emulation definition of Virtual Reality, is the natural evolution of the visualization realm field from tools we’ve used in the past”. From stone, to paper, to computer, and now to perceptive experiences. This is a paradigm shift that’ll eclipse all others due to both the endless possibilities, and the sheer scale of this globalized society.

The ILLUSORR project aims to be a leader within this epochal shift by providing a virtual platform in which design can be expressed.



The Evolution of Architectural Visualization

Norm Li.“The Evolution of Architectural Visualization.” Visual.ly, 2017. https://www.visual.ly/community/infographic/ other/evolution-architectural-visualization.