

DATASCAPE c/o Faisal U-K
The 21st Century Concept of Space

What is this 'datascape' you speak of? That's the question on every reader's mind, well to answer this I'd have to explain my journey through space (and time). It all started when I was 4 years old.. wait, am I losing you already? You don't care about my childhood? Okay, fine, let's get to the good stuff.

Why space? Of all the architectural principles I could be discussing in this great magazine, why is space so important? I'll take you through my thought process; I began by posing the simple question 'what is the goal of architecture?'. And after reading all the linguistic gymnastics practiced by us architects that try to answer this question, I came across Patrik Schumacher's, which was too well articulated to not mention, "The unique expertise or competency of architecture is therefore the establishment of order, of organizing, framing and priming of social communications and interactions" this basically means 'the core competency of architecture is organizing social functions'. This is a perfectly valid argument, but I would like to take this a step further and argue that architecture does not actually need to prioritize social functions to be considered architecture. There is an 'essence' deeper than 'social function' that connects all architecture, and that is space. With this outlook, I would like to humbly propose a new *modus operandi* for the discipline:

- **The core competency of architecture is organizing space**

Once you accept this new premise, the paradigm inevitably shifts. Doesn't it sort of remind you of the Renaissance and the Copernican Revolution? A profound and humbling experience! We are not the measure of all things. This realization then leads us to one question, what exactly is space?

The architectural space has been defined in many different ways since the first architect in recorded history - Imhotep - designed the Step Pyramid for Pharaoh Djoser in the 27th century BC. This word space has gone through extreme morphogenesis within the discipline as the heavy weights all took a crack at perfecting it; Vitruvius, Alberti, Le Corbusier, and the likes. It was first introduced explicitly to the discourse by August Schmarsow in 1893 during his inaugural lecture as professor of Art History at the University of Leipzig. Space in the discourse then, according to Patrik Schumacher, went through an 80-year period of hegemony but lost its progressive force during the 1970s and 1980s due to demand for added complexity that overburdened the *modernist space*.

What troubles me is that today there is a consensus of (a wrong) understanding of what space actually is. Even though as architects we might make use of our artistic licenses to add some pizzazz to the poetics of space, underneath it all there is an unspoken commonality of beliefs that holds the concept together. So where do these 'beliefs' (yes beliefs, because as we will discover, they are untrue) come from? Well I did an extensive perusal of architecture, science, and philosophy in search of where it all went wrong, and I found our main culprit; the great Sir Isaac Newton.

Sir Isaac Newton laid the foundations of classical mechanics, laws of motion, advanced the field of optics, and invented calculus, most of which he achieved by the age of 25! (I hope my parents don't read this!) But he happened to 'drop the apple' on gravity (and also space). In his magnum opus 'Principia', which was published in 1687, he postulated the concept of universal gravitation, which was widely accepted by scholars until over 200 years later, when Albert Einstein refuted him with the theory of General Relativity. Similarly, the modern conception of space could be traced back to Newton's Principia where he makes an interesting distinction between space and place. He states that, "Absolute space, in its own nature, without regard to anything external, remains always similar and immovable", and in the next paragraph he goes on to say, "Place is a part of space which a body takes up, and is according to the space, either absolute or relative". For the purpose of my space exploration, I have focused on the clear distinction he has consciously made between space and place, both being 'absolute' and 'relative'. This demarcation (generally speaking) does not exist today due to Einstein's Relativity, and for there to be a clear distinction, both would have to be (potentially) absolute.

Picture this for a moment; you are currently sitting down while reading this, in a particular 'place', or so you might think. Whether you are sitting still at your desk at home, or riding around with your

crazy friend who drives too fast, it doesn't make a difference. The whole Earth is spinning on its axis at around 1600km/h, if it was to suddenly stop we would all be flung like Carlton in *The Fresh Prince of Bel-Air*. But that's not all, the Earth's axis itself is also wobbling in a motion called the precession of the equinoxes, which does a full swing every 25,920 years (72 degrees every year). Then the Earth, the Moon, and all the debris we've launched out there since 1969, orbit the Sun at around 107,000 km/h. And then get this; the Sun, the Earth, the other 7 planets (sorry Pluto), and the 100s of billions of star systems in the Milky Way, all orbit the supermassive black hole in the center of our galaxy. Is your mind blown yet? Well that's not all, according to modern physicists, even the space in between galaxies is expanding, faster than the speed of light!

So we come back to Sir Isaac Newton, and we ask what can be absolute within this universe, and more so, how can 'absolute space' and 'absolute place' exist? But he wasn't alone in his thinking, this was the scientific paradigm of the time (Thomas Kuhn might be right!). Newton, Leibniz, Kant, and many other great thinkers of that period regarded space as something absolute, eternal, static, 3-dimensional (based on Cartesian planes and Euclidean geometry), flat, empty, and sometimes even a nonphysical, nonexistent entity based on innate knowledge.

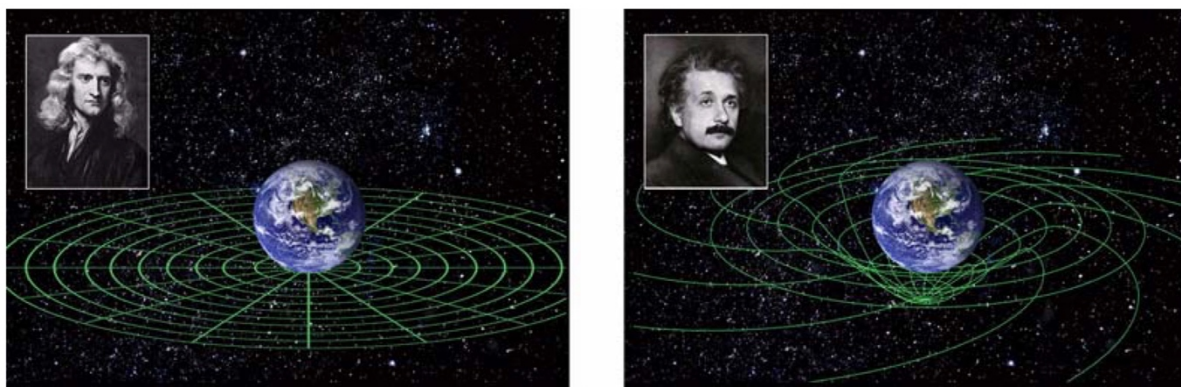


Figure 1 Newton's flat and fixed space and time (left) vs. Einstein's warped and twisted spacetime (right), from Francis Everitt & Bradford Parkinson, *The Gravity Probe B Experiment* (Executive Summary), October 2006

Now why is this little trip down 'natural philosophy' memory lane important for us architects? Because it gives an overview of the genesis of our conception of space. The scientific and philosophical community, however, have evolved from this understanding since 1905 when Albert Einstein published 'Special Relativity'. In this paper a completely new conception of space was postulated – for the first time it was no more 3-dimensional, it was now a 4-dimensional *spacetime* continuum. This meant that space could not be thought of independently of 'time', and vice-versa. Neil deGrasse Tyson is one of my favorite astrophysicists, he is also the director of the Hayden Planetarium (and the man who killed Pluto), he popularly said, "You have never met someone at a place, unless it was also at a time. And you have never met someone at a time, unless it was also at a place. That requires 4-dimensions of coordinates." Einstein also discovered that *spacetime* can curve – and therefore is not flat – meaning that when celestial bodies cause it to curve, that curvature creates the 'fabric of *spacetime*' (otherwise known as gravity; a pushing force, not a pulling force as Newton previously stated).

As the decades went by we went on to understand that in fact space is not empty, quite the opposite – on a quantum level even 'empty space' or 'outer space' is 'full'; it contains virtual particles, Hawking radiation, quantum fields, quantum particles, dark matter, dark energy, cosmic background radiation etc (don't worry you will not be quizzed on these). Physicists now refer to 'empty space' as a 'vacuum of quantum fluctuation', for example Professor Lawrence Krauss (an esteemed theoretical physicist and cosmologist) in his book 'A Universe From Nothing' stated that, "The results of the past century have taught us that empty space is in fact far from the inviolate nothingness that we presupposed before we learned more about how nature works".

There is no escaping these fundamental principles of space, even for a *species with amnesia*, it is inevitable that we conclude the fact that we are part and parcel of a cosmic soup that is evidently

much greater than us. And any in-depth study of the *sacred geometries* of ancient and antediluvian structures will show proof of a people who embodied this thought process. We see this over and over again throughout the world; Gobekli Tepe in Turkey, Stonehenge in the UK, and the Giza Pyramid Complex in Egypt. There is a recurring theme, an epochal style that has aimed to reconnect us with the cosmos since the catastrophes caused by the Younger Dryas impact. If we could bring back to life *Ötzi the Iceman*, even for a moment, to question him about this phenomenon, it is likely he would share the same sentiment. To understand *space* 'within', we must look outside the earth's limited atmosphere, especially if we want to understand it contextually.

Okay, so is this a science lesson? No, my aim is to explore the reasons that we think the way we do, where they come from, and to try to update them. I refrained from using any architectural references so far consciously. As a student I realized very early on that all the rules, all the dos and don'ts, all the dogmas and taboos, all the axioms and maxims are based on paradigms that find their premise in philosophy or science, so here we are. The only relevant architectural scriptures I have come across, after years of perusal, are two worth mentioning; the first is 'The Autopoiesis of Architecture' by Patrik Schumacher. He is an architect, architectural theorist, and in the 2008 Venice Biennale he coined the term 'Parametricism'; he is also a partner of the late Dame Zaha Hadid, the current head of her firm, and the founder of the Design Research Lab (DRL) at the Architectural Association (AA) in London. Patrik has been involved in the propagation of the next epochal style of architecture – Parametricism – in academia, professional practice, and theoretical works, and he has been quietly curating the evolution of the discipline (alongside Zaha Hadid) for 30 years. His book put forth a cohesive definition of architecture (and all its components) in antiquity, and has proposals and agendas for the future to come; in the last chapter of volume 1, under the subheading 'From Space To Field' he quite comprehensively explains:

Space is conceived as empty and isotopic, like an unstructured vacuum. Fields are full, as if filled with a fluid medium. We might think of liquids in motion, structured by radiating waves, laminal flows and spiraling eddies. Swarms of birds and shoals of fish have also served as paradigmatic analogies for the field-concept that the contemporary avant-garde is trying to bring into architecture.

This clearly shows the movement – or at least the intention for a movement – towards a new and evolved understanding of *space*; an outlook that is unfortunately overlooked by many contemporary architects, teachers, and students alike.

The second book is 'Animate Form' by Greg Lynn; an architect, professor, founder of Greg Lynn FORM, and pioneer of proto-parametricism. Along with Kas Oosterhuis, Lars Spuybroek, and Jesse Reiser, he ushered in the new era of computational design and advanced fabrication methods that have influenced buildings all over the world; from the Heydar Aliyev Center in Baku, by Zaha Hadid (and Patrik Schumacher), to the Fondation Louis Vuitton in Paris, by Frank Gehry. In his book, he puts forward some new terms and principles for the conception of *space*, for example; *animation*, *motion* and *virtuality*:

Animation is a term that differs from, but is often confused with, motion. While motion implies movement and action, animation implies the evolution of a form and its shaping forces; it suggests animalism, animism, growth, actuation, vitality and virtuality. In its manifold implications, animation touches on many of the architecture's most deeply embedded assumptions about its structure. What makes animation so problematic for architects is that they have maintained an ethics of statics in their discipline. Because of its dedication to permanence, architecture is one of the last modes of thought based on the inert. More than even its traditional role of providing shelter, architects are expected to provide culture with stasis. This desire for timelessness is intimately linked with interests in formal purity and autonomy. Challenging these assumptions by introducing [sic] architecture to models of organization that are not inert will not threaten the essence of the discipline, but will advance it.

Greg Lynn sums up the 'state of the culture' in this opening statement very comprehensively, which he continues to expound on in his book. This simple element he is trying to introduce into architecture is incredibly important, but also just as alien to us architects; the element of movement.

The reason this is important when we discuss space is because the object and the place directly affect the way we view space. If we still view our object of interest and our place of interest as static entities, then it becomes almost impossible to regard the space they exist in as dynamic and free flowing. That is why this needs to be an area of focus that we rewire our brains to process naturally, and begin to conceive of our designed artifacts as *animate forms*. And this should not be all that foreign, because technically all buildings have some kinetic capacity; the doors, the windows, the curtains, the elevators etc we just have to understand our buildings as systems, with multiple subsystems that all participate in this *animation*.

Although I am a student of both Patrik and Greg (through their works), I would like to probe their ideas and explore the frontiers that these great architects have introduced into the discourse. In the words of Newton, "If I have seen further it is by standing on the shoulders [sic] of Giants".

The term '*datascape*' is a compound term I first coined in 2017; it combines the words 'data', which represents information to be absorbed, and '-scape' which represents a scenery (physical or virtual). This compounding of words results in one that innately defines an information-rich medium, an entity that is full, fluid, expansive, and 'timemore' (no, not timeless, timemore!). This new word is interchangeable with space but is unique to architecture and the design disciplines. I present to you, *datascape*.

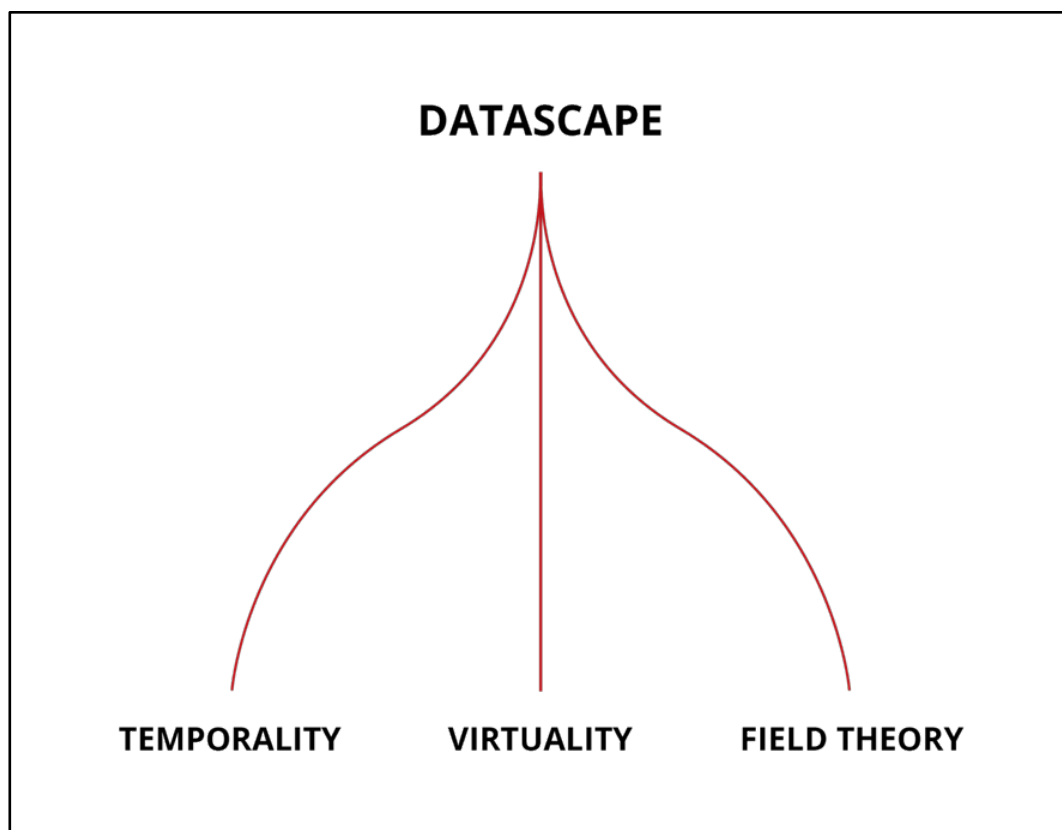


Figure 2 Datascape: The 21st Century Concept of Space, Faisal U-K, Dubai, 2018

1. **TEMPORALITY**
Spacetime concept, which combines the 4th dimension (time) with space according to Einstein's theory, this could also be adapted to the 11 dimensions of string theory (M-theory)
2. **VIRTUALITY**
Virtual/augmented reality and other simulation technologies which bend/hack spacetime
3. **FIELD THEORY**
Emergence of systems and subsystems from fields in a recursive manner

I am proposing, that we consider *space* as an ontological entity outside of our first-person subjective experience. This is in line with the most contemporary theoretical physics, as well as contemporary philosophies such as *speculative realism* and *object-oriented ontology* (OOO) which call for the acknowledgement of the morphogenetic capacities of extrinsic matter, including *space*. Since the ancient Egyptians, and through the ancient Greeks, the understanding has remained that man is the measure of all things; and even though other disciplines (especially science and philosophy) have evolved from this perspective, architects remain anthropocentric. My hope is that my peers take this information and develop it further so that it becomes a part of the discourse.

Now what does all this pontification amount to? How can it help us design better homes for our families, better schools for our kids, and better offices for our clients? When we get back to our desks to sketch concepts and model forms, how can we use this information? Well we can start by looking at a building like the RV (Room Vehicle) House Prototype by Greg Lynn; a brilliant experimental project that explores many of the different principles I've spoken about. If that isn't enough to satiate you, then you can read my detailed paper on this topic on my website - faisaluk.com - and you can check out my new podcast - faisaltalks.com - where I discuss a multitude of contemporary architecture-related topics, starting with this one, in longform conversations and debates.

Till then, Godspeed.