'Smooth Space' for Avatars
A Proun in the Metaverse

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ABSTRACT

During the years of Suprematism, between 1919 and 1923 in Russia, one of the movement's most significant contributors, architect, artist and designer El Lissitzky developed a series of works which he entitled "Prouns," a name the exact meaning of which El Lissitzky never fully revealed, although he later described the purpose of his creations as interchange stations from painting to architecture, i.e., from two dimensional to three dimensional visuality. The author has re-created El Lissitzky's "Proun #5A" from 1919 in the metaverse, as an architecture for avatars. The process in which the translation from analogue drawing to three dimensional digital artifact was undertaken, the challenges encountered during its re-building; framed within a literature review that examines both El Lissitzky's influence on contemporary cyber-architecture, as well as the significance of his spatial investigations and his sources of inspiration during the early decades of the twentieth century will form the contents of this text.

Keywords – Architecture; Art; Avatar; El Lisstizky; Metaverse; Proun; Smooth Space; Suprematism; Virtual worlds;

INTRODUCTION: SUPREMATISM AND EL LISSITZKY

The project discussed in this text is based upon the concept of 'The Proun' which artist/designer/architect Lazar Markovich Lissitzky (widely known as El Lissitzky) developed during his association with the Suprematist art movement, instigated by Kazimir Malevich during and following the years of World War 1 in Russia. Although Suprematism was established as an art movement in as early as 1913, El Lissitzky's involvement with it did not come about until 1919 when he was brought into close contact with Kazimir Malevich at an art school founded and directed by Marc Chagall in Vitebsk, near Moscow. Prior to his involvement with the Suprematist movement El Lissitzky had whole-heartedly embraced the tenets of Constructivism, and would return to them after 1924 when the Suprematist movement came to an end under Stalin's new regime.

What is of note in his 5 year-long affiliation to Suprematism is that the movement is fundamentally opposed to the post-revolutionary positions of Constructivism with its cult of the object, and its strategies of adapting art to the principles of functional organization. Under Constructivism, the traditional artist is transformed into the artist-as-engineer in charge of organizing life in all of its aspects.

Suprematism, in sharp contrast to Constructivism, embodies a profoundly anti-materialist, anti-utilitarian philosophy. Malevich writes:

"Art no longer cares to serve the state and religion, it no longer wishes to illustrate the history of manners, it wants to have nothing further to do with the object, as such, and believes that it can exist, in and for itself, without "things," that is, the "time-tested well-spring of life;" further explicating that *"under Suprematism I understand the primacy of pure feeling in creative art. To the Suprematist, the visual*

phenomena of the objective world are, in themselves, meaningless; the significant thing is feeling, as such, quite apart from the environment in which it is called forth." (Malevich, 1927- reprint 2003, p. 67)

According to Lissitzky, the decisive transformations in art were analogous to the new concept of number – that is, art became totally divorced from material phenomena and free of the physical object. This change occurred, in Lissitzky's view, with Malevich's Suprematist Black Square of 1913. Prior to Suprematism, artists depicted objects from nature, and all new movements including avant-garde movements such as Cubism, Futurism and Expressionism were nothing more than attempts to endow the object with a new life. The Suprematist canvas, on the other hand, existed independently of anything outside it. In terms of the analogy with mathematics, *"Suprematism transposed painting from the condition of the ancient objective and concrete number to that of the modern number abstracted from the object. This number occupies its own, independent place in nature alongside all objects."* (El Lissitzky quoted in Levinger, 1989. p. 228)

Moreover, Lissitzky claimed that geometric forms were pure inventions of the mind that were comparable to the abstract terms of functional equations which imply a universally valid system of relationships. In the same way, the artist had to find a system of relationships that would be valid for all artists. This, Lissitzky argued, happened in Suprematism:

The moment the square and the circle are dissected and distributed over the flat surface a relationship is formed between the individual parts. The result is not a personal affair concerning one individual artist, but a system of universal validity. (Ibid)

Although El Lissitzky whole-heartedly embraced the creed of Suprematism, it cannot be said that the Constructivists, as a whole, shared his enthusiasm: The First Working Group of Constructivists devoted one of its early sessions to a discussion of two paintings by Malevich, one Cubist and the other Suprematist. Their consensus was that Malevich's Suprematist canvas followed the laws of composition. According to Rodchenko *"Malevich makes no color resolutions. His form is strong, but if you were to paint it a different color with the same intensity, nothing in the work would be changed"* (Rodchenko quoted in Levinger, 1989. p. 229) The Group's verdict against Malevich stood in blatant contradiction to Lissitzky, who argued that the term 'construction' applied as much to Suprematism as it did to Constructivism.

The difference between El Lissitzky and the Constructivists was more than a disagreement over terminology. For Lissitzky, a Suprematist painting was, by definition, constructive art. Thus he repudiated the final decision taken by the First Working Group of Constructivists – namely, that a utilitarian element had to be immediately present in the idea of construction. El Lissitzky distinguished between the necessity to create new forms and the question of direct utility. For him, a new artistic form inevitably generated utilitarian forms, which, consequently, enriched and modified art and caused further developments in both art and production. (Levinger, 1989. p. 229)

Malevich's influence freed El Lissitzky up to work in a far more abstract/immaterial manner than he had previously done, allowing him to pursue investigations that questioned the relationships between space, shape and time. Although Malevich's artistic concerns were primarily based in two dimensionality, For El Lissitzky the architectural discipline presented itself as an obvious vehicle for the transference of basic suprematist schemes into life itself. In this respect, Lissitzky's Prouns (Acronym for 'proekty ustanovleniya novogo,' translated into English as 'projects for the establishment of the new'), which he designed between 1919 and 1924 were of vital significance since they served as intermediate points between two- and three-dimensional forms or, as Lissitzky himself said, *"as a station on the way to constructing a new form"* (Lissitzky, 1920 – reprinted 1988, p. 154)

El Lissitzky, with his training as an architect, soon translated the basic two dimensional Suprematist visual grammar that revolved around a very limited range of elements (the square and the circle as the two

primary visual components, and the colors red, black and white as the primary colors) into three dimensionality. A further distinction is that El Lissitzky, with his previous grounding in Constructivism, kept on focusing upon output that investigated design and architecture, to which he applied the principles of Malevich's Suprematist art philosophy.
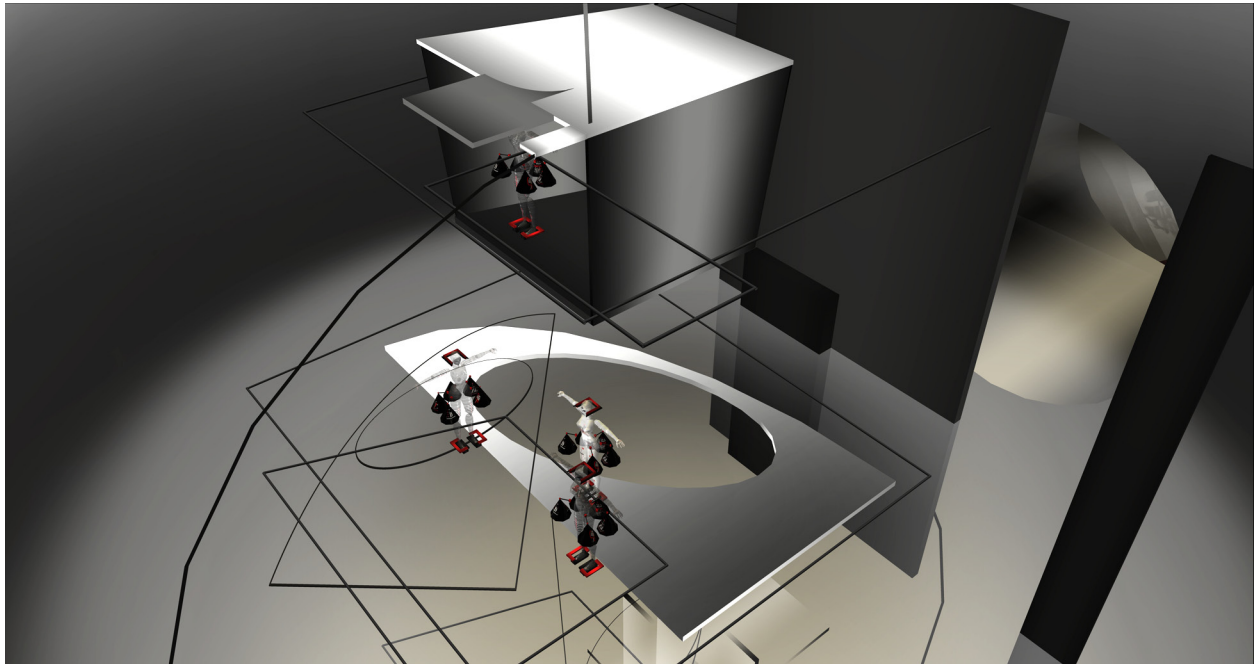
Figure 1. El Lissitzky's (re)constructed Proun 5A in the metaverse, shown with inhabitant avatars, placed for scaling purposes. Elif Ayiter, aka. Alpha Auer, Second Life, 2014. Photographs by Elif Ayiter.

His prolific output was driven by his belief that the modern era had abolished the barriers between different spheres of knowledge and activity such as between technology, art and physics. In support of this, El Lissitzky evoked Minkowski's space-time continuum, the theoretical interchangeability of the dimensions of space and time. (Levinger, 1989. p. 227) In using the Communist Revolution as a social example, El Lissitzky observed that it had discredited the old concepts that had set up barriers in society such as the notions of classes, nations, patriotism and imperialism. In this vein, he argued that towns would be rebuilt in such a way as to abolish the separation between their different elements since houses, streets, squares, bridges and the like were now linked by *"underground metro, underground monorail, electricity transmitted under the ground and above the ground."* (El Lissitzky quoted in Kavas, p. 107)

Similarly, El Lissitzky rejected a contradiction between spirit and matter – a stance which he also extended to an objection regarding the division between an artistic and a scientific understanding of space. *"The discoveries of new spatial perceptions,"* he held, *"went hand in hand in painting and in mechanics."* (El Lissitzky quoted in Levinger, 1989, p. 227)

Alongside the many architectural drawings which he made during this period, he also worked in theater design, creating a new set of architectonic costume proposals for the Russian Futurist opera 'Victory over the Sun' which had previously been performed in 1913; saying about these geometric costumes, which effectively translated Malevich's Suprematist credo into three dimensional wearables, that *"every form is the frozen instantaneous picture of a process. Thus a work is a stopping-place on the road of becoming and not the fixed goal."* (Prudence, 2013)

Further translations of abstract Suprematist concepts into utilitarian design artifacts, which bear testimony to his continued allegiance to the Constructivist ideal, can also be found in his collaboration with Vladimir

Mayakovski that resulted in a book of poetry entitled 'For the Voice' (1923) and his famed children's book of 1922, 'The story of the little red square.' In both of these books El Lissitzky used all visual elements strictly under Suprematist guidelines, both in terms of shape as well as of color; whilst still retaining his earlier ethics of considering the artist as an agent of change whose work should revolve around the task of transforming the society in which he/she operates through an active shaping of its industrial output. (Stallybrass and Bullock, 1988, p. 918)

THE PROUNS

By the end of 1919, Lissitzky was making series of drawings of architectonic constructions that held hybrid perspectives which had variable, oftentimes skewed, and contradictory vanishing points. He used construction materials that he mixed into paint to bring about a sense of energy generated by the encounter of these different surfaces, saying that *"the element of treatment which we have brought to the fore in our painting will be applied to the whole of this still-to-be-built world and will turn the roughness of concrete the smoothness of metal and the reflection of glass into the outer membrane of the new life."* (Bernhardt and Norman, 1998) Shortly afterwards he would call these compositions Prouns.

The creation of a Proun involved a process in which abstract geometric shapes defined spatial relationships that were developed as 3-dimensional constructs from which El Lissitzky rendered multiple paintings or drawings, often looking at the structure from varying perspectives out of which the series was then generated.

Although he was notoriously vague about an exact definition of the term as it relates to the drawings, he did give clues as to what their purpose was, why he was making them. A well known one of these is his proclamation that a *"Proun is the interchange station from painting to architecture,"* (Ibid) a statement which has been also been expanded on by Marcos Novak when he integrated it into his own conception of liquid architecture for cyberspace: *"Proun is a transfer station from material to the immaterial."* Born from light and the motion of objects, this notion has elements in common with the space of electronic media. *"The liquid architecture of cyber space is clearly immaterial architecture. It is architecture that is no longer satisfied with form, light and the other aspects of the real world. It is an architecture composed of changing relationships between a variety of abstract elements"* (Novak, 2002, p. 262)

While the earlier Prouns were all drawings, El Lissitzky later also created three dimensional 'Proun Rooms.' The first of these was put together for the Grosse Berliner Kunstausstellung in 1923; where he decided to transform a small cubic space into an exploded Proun, an environment which was designed to impress specific visual dynamics on the entrant. (Bernhardt and Norman, 1998) However, dynamic, exploratory behaviour on behalf of the spectator was crucial to all of the Prouns – be they two dimensional drawings or actual physical rooms. Thus, he writes on a Proun room that he was commissioned to do for an art show in Dresden in 1926:

"I have placed thin laths perpendicular to the wall at regular intervals, and I have painted them white on the left side, black on the right side and the wall itself grey. So you see the wall grey from the front, white from the left, black from the right. According to the standpoint of the viewer, the pictures appear on white, black, or grey – they acquire a threefold life. (...)With every movement of the spectator in the room the impression of the walls changes – what was white becomes black and vice versa. Thus an optical dynamic is generated as a consequence of the human stride. This makes the spectator active." (Ibid)

Amongst El Lissitzky's experiments on space creation one of the most significant subjects was his research on a method to make the observer move, as is explicated in his writing above. In his Proun rooms, the visitor was expected to move along a path provided or guided by the artist. This insistence upon keeping the visitor in perpetual motion can also be seen to be a means of denying the past, given that one of El Lissitzky's primary concerns was the usage of art, design and architecture as the tools for

moving towards a new future that held the promise of a socialist utopia in which social hierarchies were no longer of consequence.

Lissitzky's attempt to destroy a fixed position for the observer that does not move physically or emotionally in front of artworks relates to this vision of an overall non-hierarchical state since motion allowed for multiple projections that were all deemed to be of equal significance to the observation of the space: *"Moving around Proun, we pressure ourselves to space. We made Proun move. So we have obtained several projections."* (El Lissitzky quoted in Lee at al, 2003, p. 218)
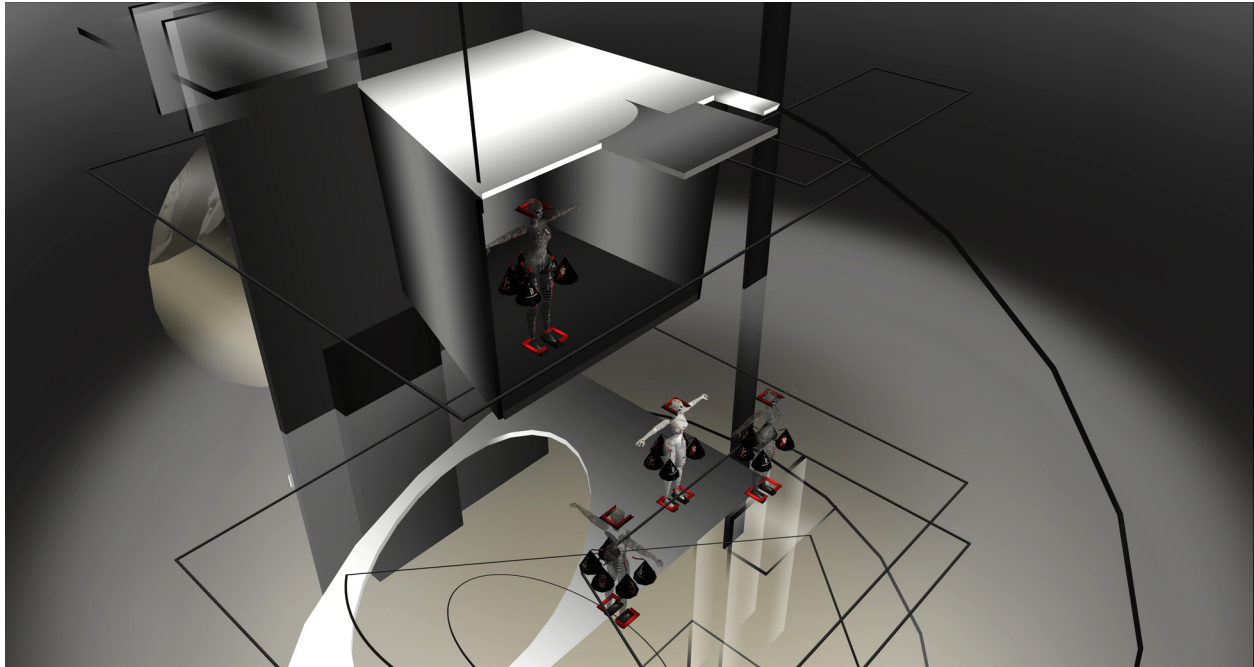
Figure 2. El Lissitzky's (re)constructed Proun 5A in the metaverse, shown with inhabitant avatars, placed for scaling purposes. Elif Ayiter, aka. Alpha Auer, Second Life, 2014. Photographs by Elif Ayiter.

In his Proun-Rooms, El Lissitzky constructed a space with the aim of moving vistiors around them. Through such motion he aimed to construct a perpetually new space determined by the objects' topological relationship to that space. Thus, according to El Lissitzky the observer must be allowed to walk through the exhibition space 'by themselves', which brings forth a productive aspect where the relationship between target and subject is endlessly adjusted and changed in accordance with the subject's movements. Here, the observer is not a observer anymore, but functions as an active participant in the artwork/architecture. Not only do the objects control a subject's movements, but also the topology of the objects change based on the subject's movements, resulting in a reciprocal state that goes considerably beyond a one-way relationship whereby a subject linearly moves due to the objects' unilateral inducement. Instead what occurs is an interaction/communication between the subject and the space, a spatial form newly obtained through the subject's participation. *"The space at this point is a fast-moving space continuously created by the relationship between the subject and objects, not a fixed or a still space. This visual space provides impression of a new space similar to 'writing a hypertext'."* (Lee at al, 2003, p. 219)

Thus, the observer who entered a Proun-Room, turned from an observer into a participant from that very moment due to the eye path provided by El Lissitzky. *"The itinerary of dynamic space movement from multiple viewpoints is individually linear, but has subtle non-linear properties when it is identified as overall connection and paths between objects, and between objects and the subject."* (Ibid)

A further interesting connection provided by Lee and his colleagues concerns a relationship between El Lissitzky's Proun architecture and the notion of 'smooth space,' which is part of Deleuze and Guattari's definition of an inherent distinction between 'the Nomad' and 'the State.' This dichotomy is a part of their political anthropology, which is intended to replace Karl Marx' political economy and historical dialectics as an analysis and guide in today's political struggle. In his account of the historical process, Deleuze introduces an agent called 'the Nomad,' unknown to Marxism, who runs counter to 'the State' in the sense that the nomad is aggressively creative, while the State plays the more passive role of consolidator: The State thrives by capturing nomadic innovations and transforming them to fit its own needs, in order to consolidate its own power. When the nomad/State opposition is applied to space, the basic principle is that nomad space is 'smooth' and heterogeneous, while State space is 'striated' and homogeneous. (Marcussen, 2014)

It is no accident, Deleuze comments, that the very spaces inhabited by nomads – steppes and deserts – are smooth, and the same is true of the ice desert inhabited by Eskimos, and of the sea roamed by seafaring peoples. In these spaces orientations, landmarks and linkages are in continuous variation, Deleuze observes, and goes on:

"there is no line separating earth and sky; there is no intermediate distance, no perspective or contour; visibility is limited; and yet there is an extraordinarily fine topology that relies not on points or objects, but rather on haecceities, on sets of relations (winds, undulations of snow or sand, the song of the sand, the creaking of the ice, the tactile qualities of both)." (Deleuze quoted in Marcussen, 2014)

In contrast to this fluid state, the spaces inhabited by sedentary peoples – which are State spaces – are striated with walls, enclosures and roads that exhibit constancy of orientation and metric regularity.

The correlation between Deleuze and Guattari's definition of 'smooth space' and El Lissitzky's Proun spaces, according to Lee and his colleagues, resides in the itinerary of dynamic space movement from multiple viewpoints that may be precieved to be individually linear, but nevertheless have subtle non-linear properties when they are identified as an overall connective path between objects, and between these objects and the subject. The space elements hyper-linked through such non-linear paths are then 'smooth space' and various other concepts responding to this, such as nomadism, fleeing lines, and rhizome can also refer to a space defined by such active traversions or collisions. (Lee at al, 2003, p. 219)

(Re)building a Proun in the metaverse, i.e., as virtually embodied three dimensional architecture, therefore appears to be a question/challenge of creating what Novak calls the materially immaterial, coming about as a build of shifting, contradictory perspectives and components in which the inhabitant avatar's motion determines the experience. Such a task may best be accomplished by putting into prominence the above described non-linear attributes that yield to a notion of a 'smooth space,' in which walls, enclores and identifiable paths give way to to a fluid space of no fixed boundaries. Such a space will ineviably redefine the relationship between space and object, as well as the relationship between the object/space and the visitor – who in this case is a metaverse avatar.

A PROUN FOR AVATARS

The (re)building of Proun 5A as a virtual construct was one of the components of a collaborative Second Life® venture which was part of a large exhibition that was held in the Spring of 2014 in the Manege Museum in Moscow. The conceptualizers/artistic directors of the project, filmmaker Peter Greenaway and artist Saskia Boddeke, were supported by the British Council to create a unique viewing experience by fusing together a variety of visual forms. More than 1,000 artworks, borrowed from galleries and private collections around the world were displayed as a gigantic exhibit that spread across 5000 square metres, accompanied by a film that was shown as a polyscreen installation. The exhibit aimed to bring about a viewing of historic of artifacts by combining film, animation and 3D virtual world technology which were

brought together to create a unified atmospheric work, drawing the viewer into the space of the Russian avant-garde.

I have long been a great admirer of El Lissitzky's oevre, and when I was invited by Saskia Boddecke to contribute to the project, I immediately asked her whether it would be possible for me to concentrate exclusively on his output – a proposal to which she had no objection to. The result were three different projects that in two cases were almost exact replicas of El Lissitzky's work (for which the needed permissions were obtained by the exhibition's organizers in Russia), and one of which was more of an interpretation based upon his original output. The Proun 5A build falls into the first category – I tried to replicate and/or virtually three dimensionalize El Lissitzky's vision of the construct as closely as I could. [i]

El Lissitzky rendered the construct that he worked from from many different viewpoints, in a detailed and crisp technique – very much like a technical drawing. However, it soon became evident that some further work was needed to get a grasp on the plan of the structure since all the drawings were persepctive drawings, and what was needed was a bird's eye view that would enable me to see the actual shapes of the components without the perspective distortion with which El Lissitzky had drawn them. I tried to approximate such a bird's eye view by opening the drawing that showed the structure from an angle that was closest to a top view in an image editing software, and then used the 'persepctive,' 'skew' and 'distort' transformation tools to reverse its persective. From this distorted image I then traced the outlines of the components and created vector shapes out of them. These vector shapes were imported into a 3D modeling software, where they were extruded and then taken into Second Life as mesh objects. At a later date I also came across the work of Rob Robbers [ii], an architect who had modelled some of the Prouns, including 5A, with 3D software and had made his output available online in various 3D formats. I was pleased to see that my reverse perspective strategy came very close to his findings.

Examining El Lissitzky's architectural concepts through a process of (re)building from his three dimensional drawings is not new. Amongst many others, such work has previously been undertaken by John Millner from the Courtauld Institute in London, in 2010. Milner says that it occurred to him, while reading one of El Lissitzky's essays, to ask what El Lissitzky was actually suggesting through his architectural drawings, whether there might not be an implicit architectural challenge in them; what the potential of these drawings might be if they were to be realized as actual models:

"When you look at a lithograph like The Town you begin to see that this is essentially city planning, so we have made some of the models. But we were not making 'fake Lissitzky'; we were trying to convey the idea that there is a proposition here, that you can change the world and this is how you can do it, so we're just taking it forward a step." (Milner, 2010)

Although conceived of well before the advent of the digital medium, and through entirely analogue procedures, the significance of the Proun drawings has been noted upon by cyber-architects, since they allow for a visual method of re-interpretation/re-definition of virtual time and space, particularly when placed in relation to El Lissitzky's preoccupation with immateriality as a spatial norm, a notion which he drew from Einstein's theory of relativity and the manner in which architectural forms might be perceived at the speed of light.

Research on the relevance of the Proun drawings to cyber-architecture has been conducted by Sang-Ho Lee and his team, who have re-modelled Proun 2 as a virtual artifact. Their study is based upon questions that are related to the Proun series' common attributes and what the specific logic that seems to have been applied to all of them may have been. Their findings show that the *"image of space presented in the Proun discloses differences with methods of space organization in pre-existent analogue media to the point of showing a procedure of computation algorithm in their logic."* (Lee at al, 2003, p. 216) In a virtual world, Lee says, space and time are deconstructed, as a result of which experiences become impromptu, momentary and repeatable, simultaneous and even identical. Similarly, El Lissitzky's Prouns express space without actual directions.

We can find a considerable amount of work where a space is rotated or flipped over in 2D, and a space is expressed from a different viewpoint in line with viewpoint movements of a spectator inside Proun. These modified viewpoints of spatial elements are images that cannot be constituted without the visual recognition ability guaranteeing the modification, re-deployment and rotation of elements occupying a space. They must undergo the process of recognizing the image is modified in a virtual space, and protecting the image visually. Thus, this series of Prouns are modified in an actually identical 'virtual space'. Lissitzky worked within the new 'virtual meta space' rather than 2D graphic space. (Ibid, p. 217)

What is also important ot note is that ccording to Lee, El Lissitzky worked from the premise that non-Euclidian geometric space was the real space of the universe.

Accordingly, he tried to represent space as curvacious since his denial of Euclidian space made him believe that curves and spheres formed the substance of the universe,... [] ...showing a new space image, (which is more than) *just unlimited non-Euclidian space that has no ending point. That is, it creates a space image analogous to the panoramic view... [] ...*(in that the drawings do) *not provide a simple axonometric space, but a viewpoint that seems to show a picture by 360 degrees. "* (Ibid, p. 217)

Building a Virtual Proun

As has been previously discussed, the efficacy of a Proun-Room as a space in which relationships are defined primarily by a perpetually shifting viewpoint that goes beyond a hierarchically based single vantage point depends very much upon the motion of the visitor within the space. While accomplishing such a perpetually shifting viewpoint in a physical space has its own rules, considerably different strategies have to be implemented in a virtual space so that even basic viewing can occur at a satisfactory level.

A virtual viewer in the metaverse has the ability to look at things from two viewpoints. One of these, and the one most commonly used, is the 'over the shoulder' viewpoint whereby the human behind the keyboard sees not only the space that they are in but also sees his/her avatar within that space from a vantage point that is slightly above the left shoulder and that allows for a slightly top down view into the space in which a considerably expanse of the ground/floor can also be seen. The second viewing procedure is the so-called 'mouselook view' whereby the observer is allowed to view a space directly from the eyes of his/her avatar, allowing for a straight ahead gaze in which the ground/floor of the space is no longer as prominnet as it is in the 'over the shoulder' view. While the 'over the shoulder' view carries the distinct disadvantage of not allowing observers to gaze up, the mouselook view has its own frustrations since it does not allow observers to turn their heads/gaze, unless a 3D mouse is utilized. Since there is no way to second-guess which means of viewing the visitor will employ, virtual architects need to utilize building strategies that will allow for good viewing with two viewing preferences, both of which are instrinsically flawed and hold rather unfortunate limitations that are system defined. [iii]

When I started to (re)build Proun 5A it very quickly became evident to me that in order for visitors to the space to see the construct in its entirety the platform upon which they were to initially stand had to be at a high enough level to allow the 'over the shoulder' visitors to see the structure from their system defined downward gazing view angle. This small platform also had to be invisible so that the default downward gaze could take in the construct from above without the obstacle of a solid floor in order to generate a wish to plunger right in and wander around in it. However, this transparent platform also had to be placed low enough for 'mouselook' viewers to see a sufficient amount to generate an interest in motion and exploration.

The good news however is that avatars can fly, of course! Thus, after an intial survey of the overall space from the viewing platform at the entrance of the installation what was expected from the experienced avatar visitor was that they would lift themselves up into the air and peruse the space in all directions, upwards, downwards, inside and out – which most of them were quite eager to do.
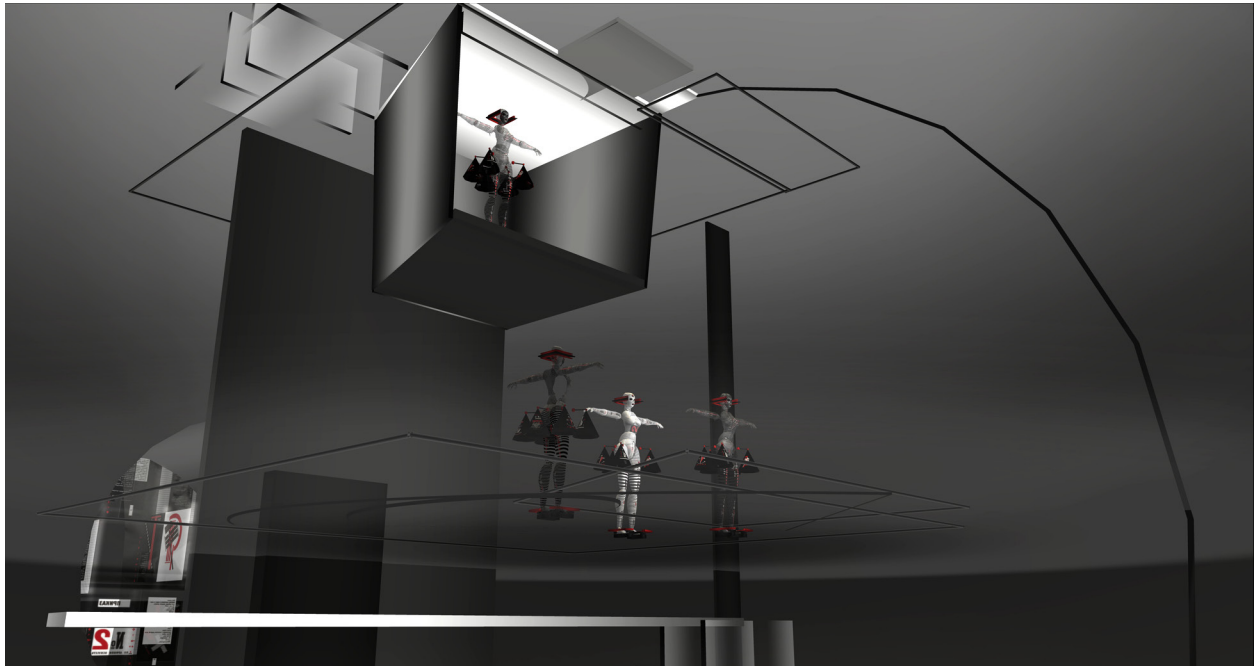
Figure 1. El Lissitzky's (re)constructed Proun 5A in the metaverse, shown with inhabitant avatars, placed for scaling purposes. Elif Ayiter, aka. Alpha Auer, Second Life, 2014. Photographs by Elif Ayiter.

Many of Lee's observations regarding disorientation, open-endedness – of a state in which space and time are deconstructed, expressing space without actual directions proved to be more than apt when I started translating El Lissitzky's Proun 5A drawings into virtual architecture. El Lissitzky had created a number of drawings of the construct from multiple viewpoints and it soon became evident that neither the placement of the components or indeed their actual presence in the drawings corresponded to one another: What was there in one drawing was missing in another, and even more intriguing was that oftentimes what appeared to be a straight line from one aspect became a curve in another. The central, enclosed cuboid room, which was present in all of them, turned out to be a huge challenge in and of itself since although it looked like a 90 degree angled cube in the drawings, when I tried to re-build what I saw I soon found out that the only way in which I could fit this central element into what surrounded it was to turn it into an irregular trapezoid prism. The more I looked at the drawings and the more I brought together their components in the metaverse the more I realized that what Lee considers El Lissitzky to have intended was what I was in fact experiencing – a loss of direction, a sense of duality, of being not only one, but instead multiple observers in perpetual motion. Or as El Lissitzky himself wrote: *"...the Proun ceases to exist as such and becomes a building surveyed from every direction. The result of this turns out to be the destruction of the single axis that leads to the horizon. Revolving, we are screwed into space. We imparted motion to the Proun, deriving a host of projective axes thereby — we stand between them and displace them."* (Wolfe, 2013)

And finally the biggest building challenge lay in creating an architecture which would resound with the Deleuzian notion of 'smooth space,' that Lee has also noted upon in relation to El Lissitzky's Proun work. 'Smooth space' is occupied by intensities and events. It is haptic rather than optic, a vectorial space rather than a metrical one. The characteristic experience of 'smooth space' is short term, up close, with no visual points of reference or invariant distances. Instead of the metrical forms of striated space, smooth space is made up of a constantly changing orientation provided by a population of nomads who are actively entertaining tactile relations among themselves.

'Smooth space' finds its countepoint in 'striated space' which is defined by boundaries, walls, hierarchies, and easily identifiable entry/exit points. According to Deleuze and Guattari striation is negatively

motivated by anxiety in the face of all that passes, flows, or varies and through this anxiety ends up erecting a constancy and an eternity of a state of being 'in-itself.' Thus their seminal work 'A Thousand Plateaus' is actually a recount of an extended confrontation between the smooth and the striated in which the striated progressively takes hold over the smooth. (Hubert, 2007)

What is of great interest however is that while Deleuze and Guattari note upon the fundamental oppositions of these two types of spaces, they acknowledge their distinctly separate existence only in nature, claiming that when it comes to man-made spaces these two spaces can exist only in mixture. This state of in-betweenness also seems to hold true for El Lissitzky's Proun drawings, and particularly for Proun 5A which is the one that was replicated in this project: While the objects placed inside the drawing have striated attributes (indeed Proun 5A has a dark cuboid room and concrete outer walls that are arranged around this enclousure), there is an absence of outer walls and a floor that would define the boundaries of the space as a whole.

As I have emphasized from the onset my (re)building of Proun 5A was just that – an as close as possible replication of what I thought El Lissitzky had envisioned in his series of drawings. It was therefore a foregone conclusion that I placed the construct inside a pure, unbroken white sphere with no entry or exit points, as was also the case in his drawings. This provided a borderless, unbounded perimeter which was also augmented by the fact that (outside of the small transparent platform at the entry point) the build also did not have a floor, that the only way you could traverse it was by flying in it. This not only provided the mixture between smooth and striated space that the drawings seemed to call for but such a means of locomotion also provided the countless viewpoints that El Lissitzky seems to have envisioned for his Proun-Rooms.

In terms of the Deleuzian notion of 'smooth space' what can also be added is that their definition of 'smooth space' as being short-term, up-close, with no visual model for points of reference or invariant distances seems to resound extraordinarily well with metaverse spaces: Metaverse architecture is highly transitory in its very nature. The concept of distance fades away in the face of the ability to fly and that of teleportation – these being the default means through which avatars move around the grid. But beyond such details, can the metaverse itself – as an open-ended world that finds its being through code – not be considered to be a 'smooth space' in its very foundations? And following from this, can avatars themselves be said to be essentially nomadic creatures of constantly changing orientations whose *"primary determination is to occupy and hold a smooth space."* (Deleuze and Guattari, 1980, p.410)

CONCLUSION/FUTURE WORK

The work on (re)building El Lissitzky's Proun 5A in the metaverse was completed in January 2014, after which the build was filmed by Saskia Boddeke, to be projected onto large screens during the exhibit in Moscow in the Spring of 2014. A further means of seeing the construct was provided to the visitors of the exhibit by placing computers (that were hooked up to the installation in Second Life, complete with 'tour guide' avatars) in the exhibiton space.

Although the original brief that I was given by Greenaway and Boddeke is now completed, I nevertheless intend to continue working on the project in the future: A logical next step, which also seems to me to resound with El Lissitzky's intentions of creating a changeable, fluid architecture that would re-invent itself based upon the entrant's position within it, would be to put the entire construct in motion, to animate it – both as a whole, by rotating it along one or more of its axes, but also by fragmenting it into various standlaone parts that may move/rotate along individual axes, converge, join and/or come apart. Yet another step that can be contemplated is making the architecture respond to its inhabitants – to sense the presence of the avatars that enter it and to make it respond to them either through motion patterns as are described above, or through other means such as shrinking/expanding, or indeed by proceduarally disclosing its components in such ways that they may fulfill specific habitant avatar's needs as they come into being.

What would form a good basis for such further work is that what was also at the heart of El Lissitzky's work was a theory of systems in which the notion of change, the idea of *"becoming' rather than the idea of 'being"* (Cassirer quoted in Levinger, 1989. p. 229) held great significance. And not only was El Lissitzky preoccupied with 'change' as a constituent element of the new art, a preference to becoming rather than to being was a recurring theme in many Russian Constructivist discussions. Thus, for Tarabukin, rhythm in art was an element of `life' – it was that which *"Bergson, Rikkert and Spengler name 'becoming' in opposition to the frozen. . . . Rhythm is always movement, élan, surge"* (Ibid) This significance of becoming is also present in Lissitzky's writing although, in adherence to Suprematist tenets, he placed mathematics at the core of his ruminations rather than the more romanticised notion of 'life' which seemed to fascinate the Constructivists. Thus, according to El Lissitzky, the work of art was analogous to mathematical systems, and like them, it evolved during its execution.

In conclusion, we come yet again to the notion of 'Immaterial Materialities' – a term coined by El Lissitzky to describe a dynamics of space that could be explored through the design of imaginary/immaterial habitats. (Löschke, 2013) It is therefore my aim to continue working on Proun 5A in the metaverse under his concept of immaterial materiality, in the hopes of bringing about a responsive architecture in the way that he too may have envisioned.

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[i] Due to copyright reasons the original drawings of Proun #5A by El Lissitzky are not shown in this paper, however an internet search will lead to many results, showing drawings from many viewpoints, one of which can also be accessed from here: http://tinyurl.com/mgyxps6

[ii] http://lava.ds.arch.tue.nl/modelshop/lissitzk/prouns_r/

[iii] It should be noted that in Second Life third party developers have created supplementary softwares in the shape of HUDs, that go quite some distance in aleviating such viewing restirctions. However, users of such additional plugins are few and far between and therefore a Second Life cannot count on these whilst building.