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Noclip World: Drawing the disruptions of virtual videogame environments.

Abstract

Modern videogames give the player ever more realistic worlds to experience, yet they typically remain carefully cultivated virtual spaces. Cheaters and players who operate against the prevailing logic of the system often expose strange digital phenomena that come with attempts to replicate realistic spaces in game engine environments. Noclip World is an ongoing research project in which I seek to expose the underlying logics of videogame spaces using hand drawing as a critical tool. The project explores games based on Valve Corporation's *Source Engine* that has been used to make games from 2004-2016. Through a roving 'counterplay' (Dyer-Witherford & De Peuter 2009) using cheats to suspend in-game physics, I produce a taxonomy of behaviours which manifest in the virtual camera when navigated to the fringes of game worlds. The project references Flusser's notion of the camera as a 'black box' (Flusser 2006) and frames the inner coded workings virtual camera as equivocal in its opacity. I subsequently propose transcriptive drawing as a tool to unpick the logics of glitched virtual worlds. Protocols of architectural drawing are used to unpick and reassemble the fragmentary spaces detailed in-game through the use of screenshots as preliminary 'photographic' recordings. Noclip World questions whether the architect producing drawings of these virtual spaces can become surrogates for the opaque zone of Flusser's camera, becoming a 'black box' themselves. By using drawing to expose the disruption of virtual videogame environments, the project ultimately seeks to uncover the contingency of even the most realistic digital depictions of space.

Keywords

virtual environments

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drawing transcriptions

counterplay

cheat codes

drawing glitches

Article

Contemporary videogames offer us spatial experiences within increasingly realistic worlds. They simulate cities, planets and even galaxies. While these navigable virtual spaces become ever more realistic, they often remain akin to giant stage sets – encapsulated territories possessing defined edges one may not transgress. Anyone playing a modern *first person shooter* (FPS) game might marvel at the realistic depictions of a city, and despair at strategically placed barriers and *invisible walls*. But there is one group of players who regularly transgress the confines of these virtual architectures – cheaters and hackers. A widespread method of cheating is for the player to float through these edges of space, whether to gain an advantage, or simply explore beyond the fringes of the world.

Noclip is a cheat command that is ubiquitous to first person shooter games, and can be traced back to id Software's 1993 game *Doom*. The code is entered using an in-game console, a dialogue prompt typically used for development and testing. It suspends collision detection between the player's avatar and the world around them – effectively making one a ghost. Such commands are common across many different game titles, offering a consistent entry point for 'counterplay' (Dyer-Witherford and de Peuter 2009). Cheats represent 'an amplification of a disruptive force across an otherwise reiterative structure.' (Apperley and Dieter 2010) Daniel Reynolds further defines such cheat commands as *virtual world naturalism*, arguing they allow wandering exploration as 'a form of counterplay that remakes a game, in a more free-form, exploratory way, out of its own raw materials.'(Reynolds 2010)

Recording virtual spaces through a screenshot can also be a transgressive act. Screenshot artists such as *Dead End Thrill*'s Duncan Harris regularly compromise and break game worlds, overloading their computers and crashing software in the pursuit of the highest resolution imagery (Hamilton, 2011). Recording the pixel matrix of a screen can rupture a virtual world, as if Ansel Adam's shutter click caused the whole of Yosemite to evaporate. As each screenshot is captured the represented space is mediated through the computer screen which according to Alexander Galloway is a key example of Flusser's *significant surface*: a 'two dimensional plane with meaning embedded in it or delivered through it' (Galloway 2012: 30).

Noclip World is an ongoing research project that takes transgressive attitudes towards virtual space and uses it to generate architectural drawings from the significant surfaces of the screenshot. The project is a double-layered form of counterplay: first reframing the virtual world by cheating (and recording screenshots) and then by extracting and transcribing its logics into a series of hand drawn physical artefacts. All of these studies are based on games that utilise Valve Corporation's *Source* engine. This engine was launched in 2004 with *Half-Life* 2 and having been extensively iterated is still used in games released as recently as early 2016. As such there are common cheat commands and comparable logics within a great many games.

My process begins by taking in-game screenshots as architectural photographs, navigating game levels in a 'ghostly' fashion to search the fringes of their encapsulated spaces for curious phenomena. When the camera leaves spaces designed to be navigable, strange conditions emerge and the level's proscenium is revealed – those fragments, effects and boundaries that constrain the player.
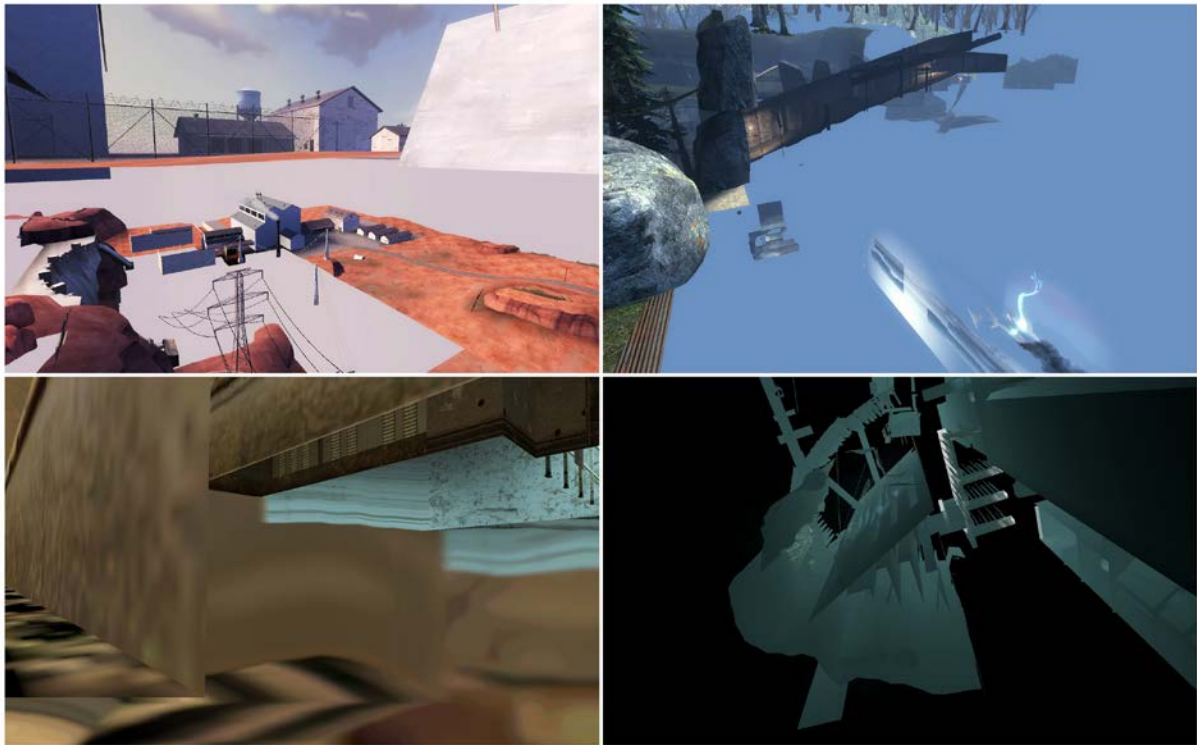
Figure 1: Author's work. (2013). *Source Engine Screenshots*. Screenshots taken by author from games by Valve Corporation.

Following my initial image capture procedure, I categorised screenshots and transcribe them into a series of inked architectural drawings that formalise these properties through delineation. By taking these screen-based images back into the 'pre-technical image form' of a hand drawing, I reflect on and reveal tropes, strategies and ways of viewing through the construction of the representation. The transcription of such videogame conditions into the form of the architectural drawing requires a procedure of translation on my part, where the utilising protocols such as 2-point perspective, elevation or section is in itself a critical re-encoding of the types of spatial conditions found within the game.

Producing drawings in a portrait frame, rather than the near-ubiquitous landscape format of digital screens reforms the represented space under a set of equivocal, but divergent rules. The framing and defining of space through pen lines places the implications of architectural drawing protocols onto the spatiality of the screenshot. If the screen's pixel matrix ultimately reduces a virtual scene into a set of colour values then the use of a consistent pen weights and techniques explores how drawings may have similar equalising effects. What is in question here is the transferring – and transformation – of videogame procedures into an architectural context. This flexing and twisting of phenomena through an architectural translation might constitute a subversion of videogame experience and the media itself, a way of hacking the procedures of virtual architectural spaces. Exposing spatial tropes of videogames, the drawings instigate their own set of protocols. As a series of 26 drawings, they could be read as disparate moments from a temporal experience, or a frame-by-frame distortion of an architectural space around the machinic eye of the virtual camera. The format of the drawings is US Tabloid size – a stock commonly used in the comic book industry to create original

drawings for reduction to the modern standard comic book size. The use of this paper 'protocol' reinforces that the drawings could be disparate pieces or part of a wider organising narrative structure like a comic.

Conditions emerge such as edges of artificial skies, spaces dissolving into light, low-resolution phantoms and geometries lacking interiority suddenly obtaining it. These are transcribed into drawings that formalise these conditions as architectural outputs. I take the measure of these phenomena through drawing in order to divulge the architectural methods of transfer implicit in their spatial construction.

I will now introduce a series of works examining drawing as a tool of transcription and recording, ultimately acting as counterplay. These drawings represent *remediations* (Bolter and Grusin 1999) of videogame space – a refashioning of an interactive, digital media into the physical artefact of the paper based architectural representation. Like Flusser's notion of the 'black box' as the invisible workings of the camera-machine (Flusser 2006: 16), we can control the user inputs in the game and witness the phenomena the virtual camera outputs as a result – but the coded mechanisms behind such manoeuvres remain opaque. The drawings thus represent attempts to transcribe the inner processes of the virtual camera into a series of architectural situations. They become studies into how the virtual camera assembles space through swerving logics once it is used in a transgressive fashion.
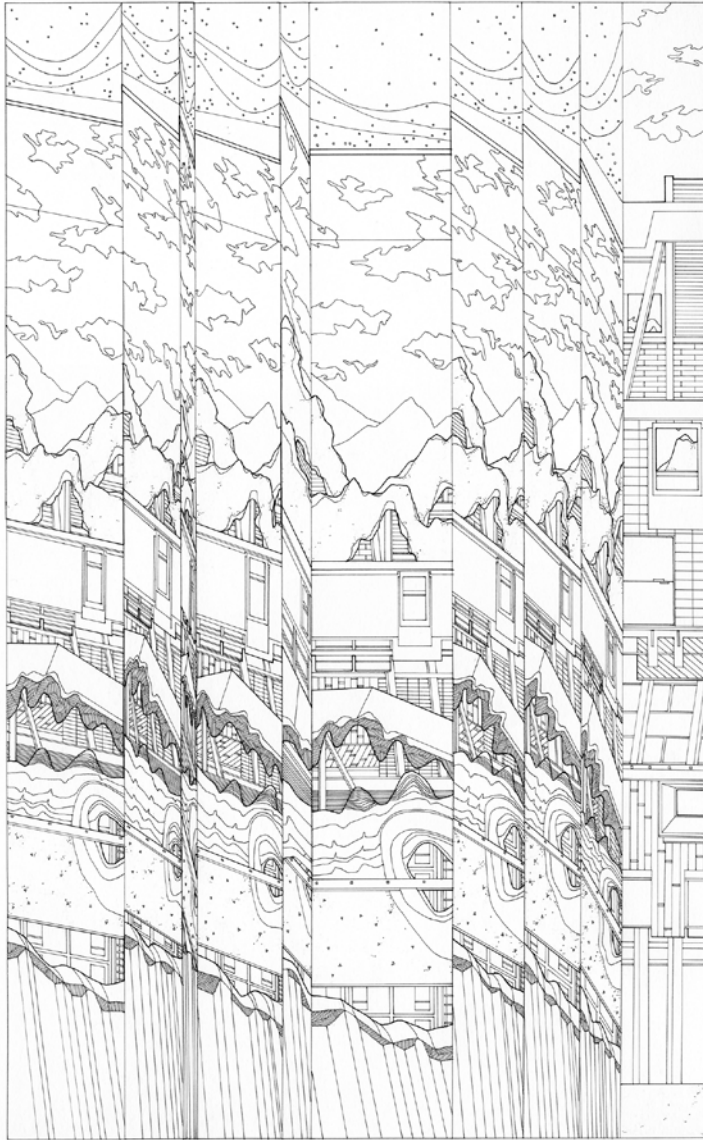
Hall of mirrors

Figure 2: Author's work. (2013). *Hall of Mirrors*. © Author.

One of the most visually evocative phenomena of this virtual world naturalism is an effect called *hall of mirrors*. This is an idiosyncrasy caused by repeatedly rendered game space. As procedures, games are driven frame-by-frame, both in their coded structure and in the visual rate of update for the virtual camera. In the Noclip World, we can find ourselves on the fringes of contained game space. Being able to ghost through walls means we can sit *within* them, straddling a cultivated interiority and exterior hinterlands. At this point the virtual camera becomes confused as to what it should be rendering. Space seems to strobe, stretch and reflect. Repeated visual artefacts build on one side of the threshold, as if the virtual camera was having its retina burned by flashing lights.

Digital artists such as Tom Betts have exploited this condition: in his *QQQ* series he hacks *Quake 3 Arena* and changes the draw rate of the world within (Betts). As invisible thresholds of the game world are not designed to be seen, they *layer* rather than *update*, producing spaces where an automated palimpsest runs at 30 frames per second.

Acting as Flusser's 'operator' (Flusser 2006: 91) I could manoeuvre my avatar into position halfway within a threshold and watch as the virtual camera automatically creates a perpetually shifting landscape of the seen and seen unseen. In this case, the architecture of the *hall of mirrors* is repetition with a progressive typological distortion. Captured through screenshots, we can see this emerging over time. From this, the drawing becomes a vehicle for reframing this condition. Just as the virtual camera distorts because it is continually defining pixel values within the field of the screen, so the production of the drawing becomes progressive distortion of delineated space. Starting from the right hand side of the camera's liminal position, I draw a sequence of progressive architectural distortions. The drawing contains nine stages of distorted architectures defined by my lateral sweep of the mouse, producing a horizontal movement in the virtual camera.

Given contemporary videogames are usually designed to run at 60 frames per second, this drawing can be read as a distorted architectural typology frozen in time, or as 0.15 seconds of a virtual camera rendering space. While the camera automatically creates technical images, working by hand I had to consider my own dexterity in being able to draw these progressive distortions. Without an underlying rough layer to the drawing, and working in pen from right to left across the page, each stage of drawn distortion becomes an unpicking of a frame as rendered by the virtual camera. It might be that *I* am at this point Flusser's 'black box' (Flusser 2006: 16) – an architect drawing by hand standing in for the algorithms of the game's camera.

In the Hall of Mirrors, drawing is able to articulate the invisible boundaries in virtual worlds between the ontological interior and exterior of a space. To draw frame-by-frame so to speak, is to mirror the irrepressible, consecutive rendering of frames of the virtual camera. The drawing exists both as a representation of this glitch phenomena as seen by the avatar, and an attempt to draw methodologically *as* the virtual camera itself.
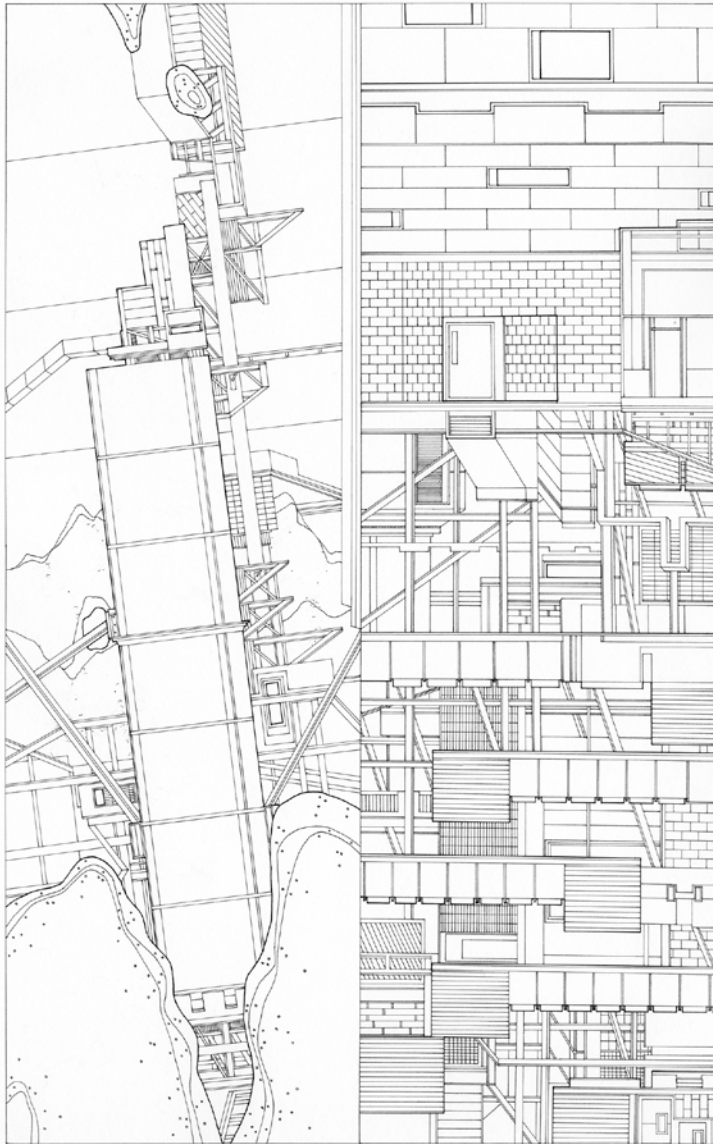
Dissolving space

Figure 3: Author's work. (2013). *Dissolving Surface*. © Author.

As we reach the edge of game spaces, we not only face the rupture of geometry and represented architectures but also deviations in the behavior of virtual lighting systems – as if our eye were a physical camera trapped between two different aperture settings. When we place ourselves halfway within the edge of a virtual architecture we place the camera into a crisis. As the game cycles through its frames, one part of our view becomes increasingly overexposed and unintelligible. The other side of the liminal edge remains resolute, continuing to uphold the carefully cultivated architectural facsimile. Once more, it becomes Flusser's black box – automatically generating visual phenomena as its carefully maintained limits are transgressed.

Exploring the fringes of a Source engine level these lighting effects begin to cause situations

where space dissolves in front of the camera. Situating the avatar on the line between the contained and uncontained space causes the envelope of a virtual building to become an invisible buffer from the dissolving landscape on its 'exterior'. The avatar's camera becomes unable to discern the constructed scene and the environment breaks down into pure illuminated brilliance. Effects such as 'bloom' – a technique within the game engine to mimic the way real-world lenses capture intense light – spiral out of control. A graphical effect for visual verisimilitude betrays the camera's virtuality once removed from the cultivated limits of game space.

By drawing this boundary in elevation, the edge effectively disappears as it does in the virtual camera. The equalizing quality of the line also allows for the definition of virtual geometry and camera-borne phenomena on an equivocal level. After all, in the end they are both constituted by colour values defined by the game engine. As part of a 'significant surface' of the screen they are as spatial as one another. What this produces is an architecture that behaves in two different manners either side of this invisible border. Although the drawing in this case is a snapshot, rather than a temporal reading, the protocols of architectural drawing can once more be used to elucidate spatial conditions that emerge from the black box of the virtual camera.
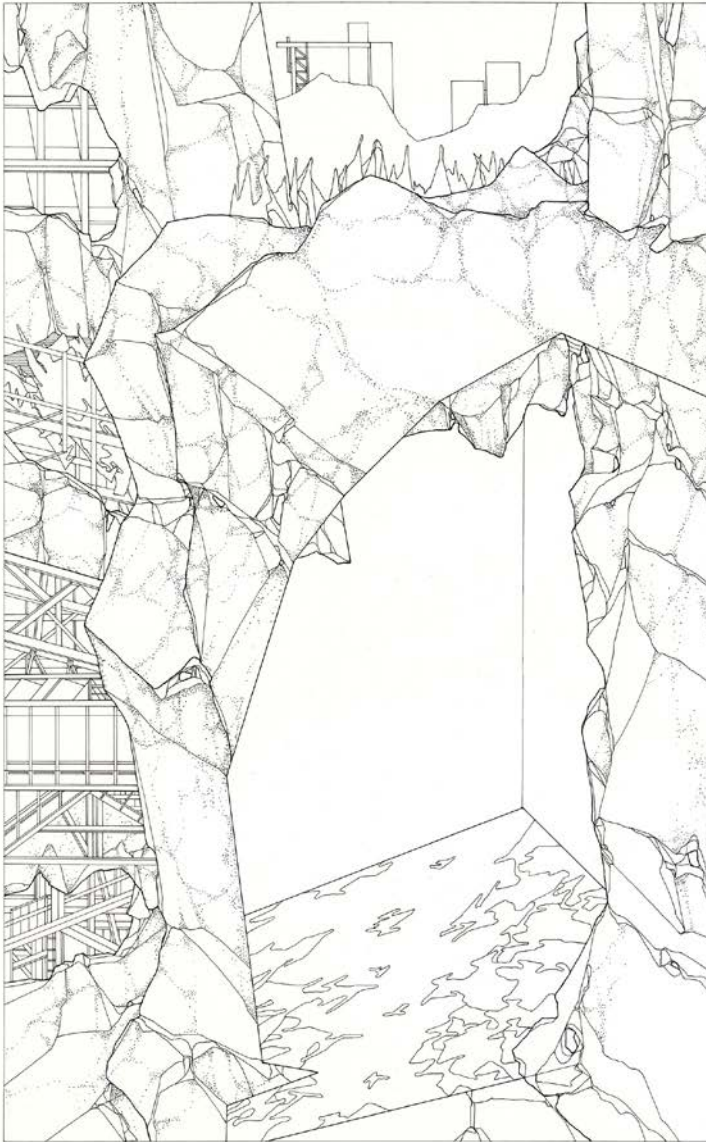
Skybox

Figure 4: Author's work. (2014). *Clipped Rock Skybox*. © Author.

The Skybox is typically an open box that hangs above the level that is inaccessible and in engines such as Source or Unity3D utilises a 'cube mapped' six-sided texture to produce a constant, seamless, sky across the contained space of the game level. This allows for the suggestion of expansive spaces in the background of a scene without the need to model large amounts of backdrop geometry – which would make the game space highly memory intensive.

As the skybox is predicated on a normative relationship to the virtual camera, disrupting this link produces a series of effects that allow us to understand the way in which these landscapes work. Drawing is used to expose the skybox as a conditional context. In *The Architectural Parallax*, Slavosj Zizek argues for contingent spaces that emerge as

possibilities through the transition between viewpoints - architectures manifest through the linkage between two subjective perspectives. He inquires: *'does the gap between the two perspectives now open up the place for a third virtual building'*. (Zizek 2011: 245)

Even within an older game such as *Half-Life 2*, the skybox is often matched to modelled geometry. Large structures are created as part navigable geometric space and part background mapped images. The screen as a matrix of pixels once again becomes the unifying surface – this time between a mapped texture of a building, and a three dimensional representation. The skybox works much like a dynamic movie matte painting, a splicing of the painterly and constructed, exposed together onto the virtual camera. If the composition of geometry and mapped image might recall Pozzo's facsimile dome at Sant'Ignazio, then the perspectival virtual camera collapses distinctions much as a photograph might enmesh the visual tricks of the faux-ceiling into the building itself. The drawing similarly enmeshes these two perspectives.

Moving through the edge of a rock face exposes the skybox mapped onto a plane out of the camera's normal view. The texture appears out of context and sky becomes floor. Transcribing these layered landscapes through drawing also has the effect of collapsing space into a unifying language. By utlising combinations of perspective and elevation I expose architectural spaces within the drawing that emerge in the parallax gap that Zizek proposes, a continuous fringing between geometry and pure image - where the lines between the two are fluid and ever changing.
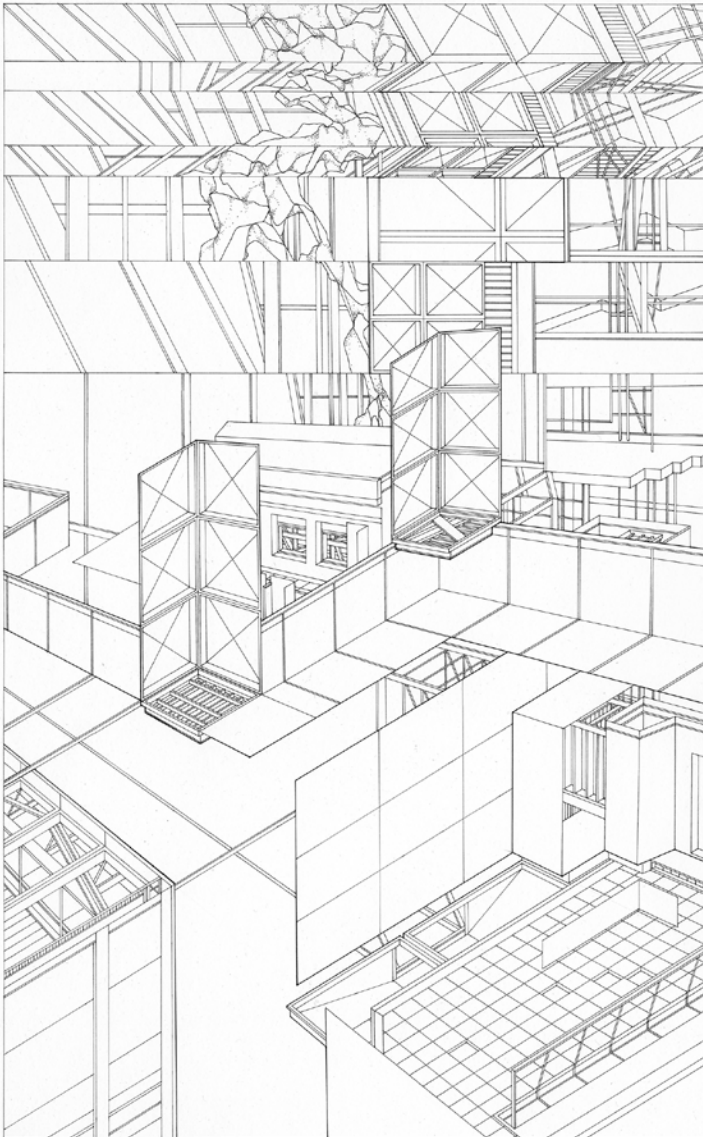
Lightboxes and (in)direction

Figure 5: Author's work. (2014). *Air Vent Landscape*. © Author.

Distant light sources and atmosphere are implied in a comparable way to the skybox. Often such light sources are presented to the player as the end of a tunnel, or an inaccessible space or opening. A geometry mapped with a light emitting shader on a geometry encasing the opening is often exploited to suggest a further set of spaces beyond the confines of the contained level.

Seen through noclip transgressions, these constructed environmental conditions represent a system that appears almost equivocal to the directed lights and reflectors of a photography studio shoot – the light emitting surfaces are directed to filter down through space and create an architecture of suggestion through light and shadow, rather than overtly indicating scale or context through trompe l'oeil or similar effects. Exposed through the drawing, we see these inaccessible spaces as part of a wider network of elements, an equivalent to architectural

services that work to uphold a suggestion of spatial scale. Transcribed into drawn lines and missing their luminous light sources, we see the convoluted landscape of tunnels and air ducts working in service of architectural atmosphere as a fragmentary virtual infrastructure.
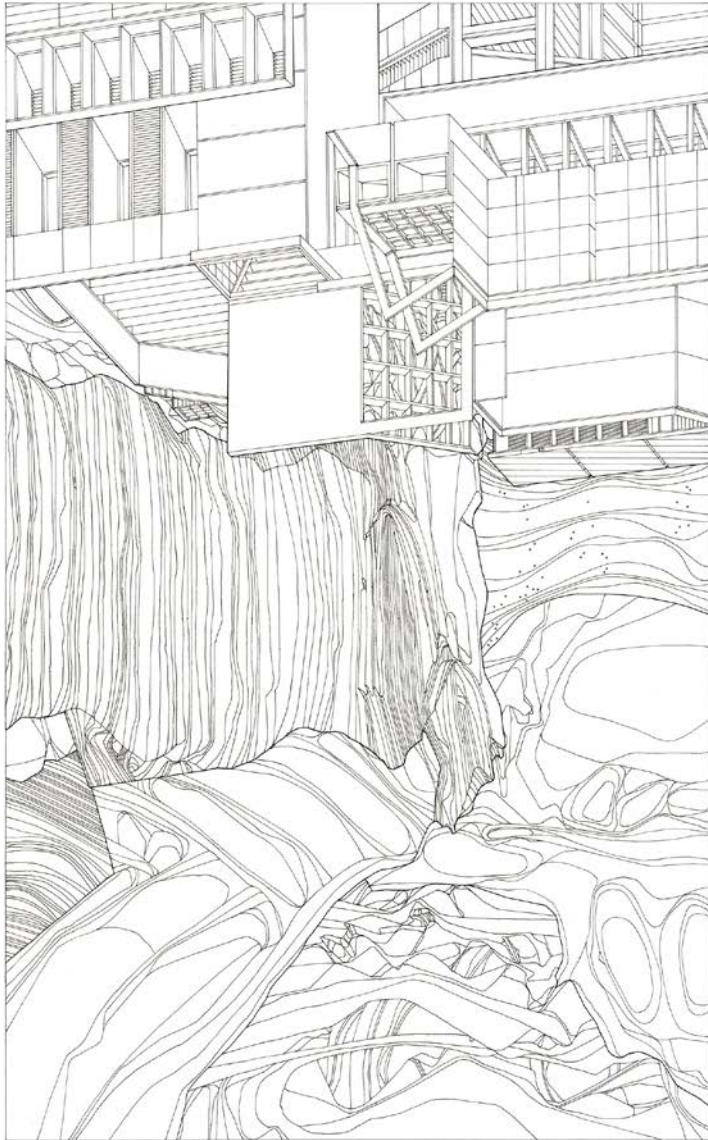
Thick atmospheres and oscillating edges

Figure 6: Author's work. (2013). *Thick Atmospheres*. © Author.

Another phenomena that manifests in Source Engine games is what we might call a *thick atmosphere*, where an encroaching fog starts to desaturate and fade the scene at a certain distance from the virtual camera. This fog primarily masks the *draw distance* of the virtual camera – the point at which it will no longer render a scene. But in this obfuscation it also becomes an atmospheric catalyst, subsuming geometries into a murky gloom. These thick atmospheres become a meteorological manifestation of the tightrope between memory

intensity and experiential quality of the game space.

These type of effects contextualise memory efficiency within the realms of the atmospheric, and as such they start to constitute a new form of typological space, additive rather than reductive in their effect. Smoke and mirrors is not only a device for shrouding or obverting a viewpoint, but also a unique aesthetic property of many videogame environments that comes to resemble London's *Great Smog* or contemporary Beijing through the balancing of fidelity and playability. As we reach the edge of the fog, a new phenomena occurs where the thick atmosphere exchanges places with that outside of the container. All that is solid in the game world becomes void, and all that is void becomes solid. As we move back towards the edges of the level, things reverse back to normality. The definition between positive and negative space can change in a moment in the game space, reflected across shifting edges where fog becomes solid and solid becomes fog. Once more the screen, and subsequently the drawing, encodes both the 'physical' and the 'atmospheric' together into one architectural language. To draw this exchange as a pen drawing is to encode this spatial swap into a permanent condition, where both the thick atmosphere of fog, and the modeled geometry of the game world are both read as architectures together.

Noclip World

Ultimately as one transgresses borders in a videogame world by utilizing cheat codes, we come to understand how to affect certain behaviours in the camera. We learn that through this machinic eye that at a certain position within a game built on a certain game engine, produces certain spatial phenomena. This wandering counterplay frames the player as an explorer, Reynolds 'naturalist' who can rebuild the protocols of virtual space through its composite parts. The act of drawing then allows me to transcribe and record these conditions, framing them through the protocol of the architectural drawing. The representations become snapshots of a moment in time that suggests a temporal event, taking place either side of the static image. Drawing becomes the tool to expose glitches in virtual videogame environments, and reveal the contingency that underpins even the most realistic digital depictions of space.

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List of Illustrations