CINEMATIC ASSEMBLAGE

Sinofuturist Worldbuilding and the Smart City

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the requirements of the Royal College of Art
for the degree of Doctor of Philosophy

Declaration of Authorship

This thesis represents partial submission for the degree of Doctor of Philosophy at the Royal College of Art. I confirm that the work presented here is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

During the period of registered study in which this thesis was prepared the author has not been registered for any other academic award or qualification. The material included in this thesis has not been submitted wholly or in part for any academic award or qualification other than that for which it is now submitted.

Signed: 

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Abstract

New forms of digital surveillance have given rise to a data-driven urban condition, one where machine vision increasingly determines mobility and navigation. The 'cinematic assemblage', as I term it, refers to a machinic agent that contains many of the sensory, recording, and representational components required to create cinema, but is itself an object of cinematic interest. Framed through surveillance studies, theories of digital cinema, and critical legal frameworks, I investigate how filmmaking practice conducted entirely within a video game engine can embody the logic of two interrelated forms of cinematic assemblage—the smart city and the self-driving car. The resulting feature-length animated film, *Death Drive,* draws from liberatory practices in non-Western Futurism to formulate a legal fiction about the emergence of electronic personhood within contemporary China.

Cinematic assemblage operates through posthuman approaches to distributed agency and embodied vision. This enables an analysis of the smart city and self-driving car as being co-constitutive, with both continually monitoring each other in an enmeshed system of sensing and control. To understand the hierarchy of sensorial regimes in this larger assemblage, I present a particular approach to image production. My practice explores the creation of virtual cinematographic apparatus in video game engines, using filmmaking to embody active and agential characteristics of digital surveillance systems. Based on existing self-driving car imagery, the rendered footage used to compose the film is constructed entirely within the game engine, but also references the coordinates and language of existing data and systems. This builds upon Harun Farocki's notion of operational images to explore how a reflexive approach to filmmaking can address how surveillance functions in the smart city.

In the process of developing the film, I ask how to situate my research without perpetuating either Chinese exceptionalism or Western coloniality. I look to Futurist practices that interrogate the privileged position of the human, reconfiguring narratives from the perspective of the Other. Accordingly, I treat both smart city and self-driving car as nonhuman protagonists. Set in SimBeijing, a fictional research city on the China-Russia border, *Death Drive* examines the unique conditions of Chinese technological development—as noted by Yuk Hui and Anna Greenspan among others—to speculate on how the social and legal implications of digital surveillance may manifest within a Sinofuturist context.

The narrative couples the nonhuman, a key figure in Sinofuturism, with the legal fiction of electronic personhood. This is grounded through problem-centred interviews conducted with legal experts and forensic researchers, drawing together the frameworks of criminal investigation and detective story. By formulating a hypothetical crime involving a self-driving car, the film circumscribes the nonhuman within the sphere of criminality and liability. This approach challenges humanist conceptions of AI as a disembodied mind, envisioning the electronic Other as a political subject whose legal personhood emerges from the consequences of its corporeal action.

INTRODUCTION

Death Drive: early test render (March 2020)
In the film, vehicle design will reflect anticipated changes to the interior of the self-driving car
Vestigial features such as the steering wheel may remain in the future vehicle.
The interface between passenger, vehicle, and smart city will also inform the environment.

Thesis Structure and Viewing Guidelines

The introduction outlines my practice statement and research methodology, articulating how and why I have foregrounded certain theories and practices. Three subsequent chapters explore 'Worldbuilding'—the principal conceptual frameworks, 'Fiction'—the creative artefacts of the practice, and 'Reflections'—analysing how research has been interwoven and enriched with practice. This reciprocity between cinematic worldbuilding and conceptual research is a recurrent theme that will be highlighted throughout the thesis.

Chapter 1, 'Worldbuilding', discusses the methods that inform my approach to filmmaking. I formulate the notion of cinematic assemblage with reference to surveillance studies, speculative fiction, and film theory. Illustrated with diagrams from virtual cinematics, I construct an approach to digital filmmaking to account for the characteristics of imagery produced entirely in a video game engine. I expand on the conceptual framework of Sinofuturism to address how the unique temporality of technological development in China informs the film. Finally, law is presented as a form of worldbuilding, as it is through legal frameworks that electronic personhood arises in the film. Interviews with legal experts conducted during the research are referenced throughout, grounding the speculations within current issues in data law and personhood.

Chapter 2, 'Fiction', contains the practice-based component of the thesis, *Death Drive*, a narrative film exploring how the theoretical notion of digital surveillance in the smart city becomes embodied in a hypothetical crime involving a self-driving car. This comprises three creative artefacts: screenplay, storyboards, and a 28-minute video extract that is intended as a prototype to convey the audio-visual aesthetic of the film. The video follows the chronological order of the script, from Prologue until Scene 15. For a full account of the practice, the video extract should be considered together with the screenplay (pp. 53–128) and storyboards in the Appendix (pp. 172–212).

Link to *Death Drive* film extract: www.vimeo.com/lek/cinematicassemblage

Chapter 3, 'Reflections' evaluates how my approach to filmmaking embodies the key frameworks of digital surveillance and Sinofuturism. I conclude with an overview of how the conceptual aims were explored during film production, the limitations of this undertaking, and how recent legal debates surrounding electronic personhood and data regulation have contributed to the notion of cinematic assemblage.

The Appendix contains transcripts of interviews with legal and forensic experts, along with storyboards used in the visual development of the film.

Practice Statement

Theoretical Framework for Digital Cinema

I approach cinema as a way of understanding a socio-political world that has been reconfigured by new forms of machinic recording, monitoring, and vision. This follows a central insight of Harun Farocki's work, that 'with the advent of the cinema, the world has become visible in a radically new way, with far-reaching consequences for all spheres of life, from the world of work and production […] to subjectivity and inter-subjectivity' (Elsaesser 2002). Accordingly, my work explores a self-reflexive practice of cinematic worldbuilding, deconstructing the wider political world while simultaneously constructing a fictional universe. This worldbuilding is situated in the context of earlier discussions that are critical of the potential of visual technologies—from medical cameras to satellite cartography, LIDAR sensors to smart cities—to become a tool of domination and power, the 'conquering gaze from nowhere' (Haraway 1988).

Furthermore, as a filmmaker who uses computer-generated animation to produce footage, my notion of cinematic worldbuilding comprises both the subject that is rendered *and* the technical apparatus that enables spatial data to be turned into an image. This follows Jussi Parikka's (2021:207) notion of the 'infrastructural image', which highlights the contemporary existence of an image as the 'infrastructural coupling with large-scale systems of sensing and computation' (Ibid. 206) rather than as simple visual representation. The virtual worlds I build bring this notion of an infrastructural image to the urban scale and go beyond 'their own frame of visibility' (Ibid. 206). Unlike the traditional notion of filmmaking as the capture of the physical environment, the virtual world gives the filmmaker the capacity to construct cinematic reality from the ground-up. Therefore, the 'image' in my practice stands for both objects and capture devices contained within the algorithms and software that render images. The virtual world is therefore simultaneously subject, stage set, and cinematic apparatus.

My approach to cinematography—the rendering of the virtual world into discrete shots—is informed by Farocki's concept of 'Phantom Images': recordings 'taken from a position that a human cannot normally occupy' (Farocki 2004:13). Computer-generated animation allows new points of view in the virtual landscape. It enables perspectives that are only possible by using virtual cinematic apparatus that is not constrained by corporeal embodiment (as with a human eye or mechanical camera). This freedom enables my approach to the cinematic to be predicated on the spatiality of computational spaces, rather than physical ones.

Since I construct virtual worlds as both socio-political space and medium of representation, I have formulated a hybrid theoretical framework drawn from a variety of sources. These fields—including surveillance studies, film theory, critical legal studies, posthumanism, and urban studies—analyse the political underpinnings of urban landscapes and their imaging. Given the breadth of any single one of these fields, my focus throughout the thesis has been necessarily partial. It has been necessary to select and foreground certain theories that are relevant as a practitioner, while excluding others. My methodology has been to focus on

theories that could have a significant impact on the beholder of the final film. In other words, I focused on conceptual frameworks that could be represented or manifested within my practice. These theories have helped define the material elements of the cinematic world of *Death Drive*—its characters, environment, apparatus, politics, and narrative logic. By embodying this theoretical framework in filmmaking, I have tried to create a reciprocity between research and practice that reflects current issues around surveillance and control.

Surveillance, Control, and Futurism

This thesis uses the term 'digital surveillance' to refer to a specific framing of debates on surveillance and control relevant to the data-driven urban condition known as the 'smart city'. These studies and concepts have been chosen because of their relevance to my filmmaking practice, either explicitly through the design of the virtual world or cinematic apparatus, or implicitly through the unfolding logic of the narrative itself.

In *Death Drive*, surveillance technologies from different historical periods constitute the complex landscape of control in SimBeijing, the smart city that is the main location of the film. Orwell's fictional Big Brother (1948) and Foucault's study of Jeremy Bentham's panopticon (1977) understand surveillance as a visual construct based on the properties of the human eye and analogue sightlines that exist in architectural space. These older visual technologies find home in the form of CCTV cameras, the most outwardly visible elements of the surveillance infrastructure of the SimBeijing. In addition, the smart city integrates newer technologies of modulated control predicated on data. These 'control' systems that are core to the operation of the smart city were first analysed by Deleuze (1992:5), who notes that a 'control society', which surveils 'dividuals' rather than 'subjects', has augmented or replaced systems of surveillance based on optics.

The protagonist in the film is a self-driving car, a sentient agent who is both subject *and* object of surveillance. This added complexity demands further investigation as to the nature of surveillance in the smart city. To formulate the role of the self-driving car in SimBeijing, which is simultaneously panopticon *and* landscape of data-dependent control, Phil Agre (1994) makes a vital distinction between these two models as 'surveillance'—of bodies in space—and 'capture'—of data in a system. Such a distinction informs the complex subjectivity of the self-driving car in the film, as the car exists both as a material part of the optical surveillance system of the city and as data in the digital archive. As self-driving cars present a novel turn in discussions on surveillance, Agre's analysis should be augmented with the notion of 'test-bed urbanism' put forward by Halpern et al. (2013) to describe the unprecedented phenomenon of city-scale environments predicated on the perpetual capture of data—information that then informs the configuration of the smart city itself. The complex data environment that exists in constant flux and feedback in 'test-bed urbanism' is what enables the very existence of smart cars. Byung-Chul Han explains this through the term 'digital surveillance', highlighting the fact that surveillance in test-bed urbanism differs from earlier forms because '[digital surveillance] is aperspectival. It does not suffer from the

perspectival limitations characterising analogue optical systems' (Han 2017:56). Elsewhere, Han elaborates:

> The digital panopticon functions without any perspectival optics. That is what makes it efficient. Aperspectival, penetrating illumination […] proves more effective than perspectival surveillance because it means utter illumination of everyone from everywhere, which anyone can perform. (Han 2015:45)

Therefore, the term 'digital surveillance' provides the core notion for my research, as it encapsulates the complex aspects of pervasive vision and sensing that are relevant. Test-bed urbanism is a continuously optimised environment, where every element of the city is governed through a mesh of modulatory relationships. Composed of a network of sensors, the urban landscape is no longer a static terrain with citizen-actors navigating it. As Halpern et al. (2013:300) note, 'never before have there also been so many new agents and agencies—human, machine, and other—networked in new arrangements and intelligences'. The environment operates through a dynamic system of surveillance whose inputs are not simply visual and discrete, but multimodal and continuous. The notion of the smart city as a 'test-bed' opens new ways of conceiving filmmaking practice.

This thesis revolves around the notion of the *cinematic assemblage*: a body that contains many of the sensory, recording, and representational components required to create cinema, but is itself also an object of cinematic interest. In *Death Drive,* both the self-driving car and smart city are considered as a co-constitutive cinematic assemblage, due to their interlinked functioning. The operations of this larger assemblage engage with discussions in critical theory regarding distributed agency, intra-action, and embodied vision (Braidotti 2008; Barad 2007; Gallagher 2006). This conception of the self-driving car positions AI not as a disembodied intelligence but as one whose perception is shaped by its corporeal presence and motion. Over the course of the thesis, I analyse how the materiality of the self-driving car allows it to establish its agency through embodied action, as reflected in the film.

The self-driving car exists in the context of 'operational images': images generated by machines for other machines (Farocki 2003). This introduces new means of cinematic expression by the possibility of translating the range of operational images into human-readable audio-visual form. Rather than only using theoretical writing, filmmaking operates as a mode of research that allows for the representation of all the hidden layers of control in this environment. Using the virtual worlds as the medium of filmmaking, I can embody the different modes of 'aperspectival' control within the materials of the practice itself. The image-capturing of the film is performed through the virtual surveillance devices that I create and program within the game engine—a process that will be illustrated and explored in greater depth in the following sections. In this way, filmmaking embodies the content of my research rather than merely illustrating it, a concern to be addressed more fully in the later section on worldbuilding.

Another way test-bed urbanism informs filmmaking practice is in the notion of distributed intelligence, where the 'city brain' does not reside in any single location, but rather emerges from the networked operations of individual elements in the city. There is no centralised intelligence; discrete elements are dumb and 'smartness' lies in their interconnections. This lack of nuclear centrality correlates to distributed agency (Bennett 2010) and situated knowledge, where 'partial, locatable, critical knowledges [sustain] the possibility of webs of connections' (Haraway 1988:584). These ideas inform worldbuilding, from narrative construction to virtual set design. The film's narrative progressively deconstructs the system of distributed intelligence in the smart city, enabling the viewer to understand the linkage and relationships of its elements.

The research addresses emerging forms of personhood, a topic that the film *Death Drive* explores in dramatic form. It draws from practices of fictioning—the 'material instantiation of worlds or social bodies that mark out trajectories different to those engendered by the dominant organisations of life currently in existence [and call forth] potential realities to come' (Burrows & O'Sullivan 2019:15). In the film, I explore how digital surveillance has implications for both human and nonhuman forms of being. Fictioning creates the capacity to produce realities beyond the human political interests that initially conceived the city brain, treating them as only one element among many. Currently, the smart city is presented by its corporate and state-owned creators solely as a commercial product or as a political project. Film functions as a counter-narrative to these limitations, focusing on the potential of the notion of nonhuman agency as an equally important actor.

While digital surveillance transforms the human into a 'digital subject' (Goriunova 2019), the same forces also operate on nonhuman entities, in particular electronic agents—who, the film imagines, may one day gain recognition as legal persons. I analyse this further through a posthuman understanding of the 'data subject' (Käll 2017), a notion that informs the premise of *Death Drive* as a work of political and speculative fiction.

In the narrative of *Death Drive*, a self-driving car is put on trial for an accident that causes the death of a border guard. During the proceedings, the court establishes the legal notion of electronic personhood to ascribe liability to the self-driving car, thereby exonerating the parent company of blame. No agreed definition of electronic personhood currently exists (European Parliament 2016). Indeed, throughout history, each notion of a 'people' has been the collective invention of the social imaginary as well as imagined geographies (Anderson 1983; Said 1978). The need to create a plausible hypothetical scenario led me to conduct 'legal worldbuilding' that drew from interviews with legal experts and historic conceptions of nonhuman personhood (Stone 1972; Tamen 2004; Gunkel 2012; Coburn 2019). What I understand as legal worldbuilding draws upon critical legal studies and the problem of 'Imaginary Laws' highlighted by Peter Goodrich and Thanos Zartaloudis (2021). They analyse the inability of law students to imagine new laws, no matter how well-versed they are in legal scholarship. By bringing together worldbuilding in science fiction with critical legal studies, I solve the impasse of legal imagination about nonhuman subjects. This attempt of using fiction to create a future 'people' draws inspiration from Deleuze's (1989:217) assertion that 'Art, and especially cinematographic art, must take part in this task: not that of

addressing a people, which is presupposed as already there, but of contributing to the invention of a people.' In this way, the thesis employs a hybrid narrative framework to speculate on Deleuze's 'invention of a people' within the context of digital surveillance and the smart city. By focusing on the agency of a nonhuman Other—the self-driving car—this approach is aligned with the political fiction-making of non-Western Futurist practices.

The concerns of personhood and technology reflect wider non-Western Futurisms (Moalemi 2019). This research contextualises discussions on digital surveillance with practices including Afrofuturism (Eshun 1998), Gulf Futurism (Al-Maria 2008), and Sinofuturism (Goodman 1998; Greenspan 2014; Hui 2016; Lek 2016; Zhang 2017; Conn et al. 2020; Heinrich et al. 2020). These practices challenge normative understandings of site, identity, and temporality, and are critical towards colonial attitudes which separate people into privileged *humanitas* from lesser *anthropos* (Sakai 2010). Additionally, these practices share an identification with the alien or nonhuman Other, demonstrating how personhood Is a contested category. While critiques of algorithmic bias have focused on entrenched forms of power within the Western world (Buolamwini 2018, Benjamin 2019), the focus on China presents other challenges in cultural biases (Chow 2010). Besides Sinofuturism, I explore the framework of Techno-Orientalism (Roh et al. 2015) to unpack differing attitudes towards surveillance between China and the 'West'. In *Death Drive,* the notion of a hybrid, situated, and political Futurism draws inspiration from this lineage.

Outside of those explicitly engaged with Futurism, I look to practitioners who share a reflexive engagement with their research, situating their subjectivity within geographic, historical, or political contexts. Writers such as Jackie Wang (2018) choose to situate themselves within their own work, using auto-ethnographic approaches to incorporating personal experiences into their research, as with W.E.B. Du Bois' framework of double consciousness. Filmmakers like Harun Farocki attempt to break the 'fourth wall', foregrounding the constructs of truth production that moving image employs. Similarly, I look at how Forensic Architecture deploy architectural mapping techniques within a legal context to construct both spaces *and* narratives that offer counter-dominant interpretations of state violence.

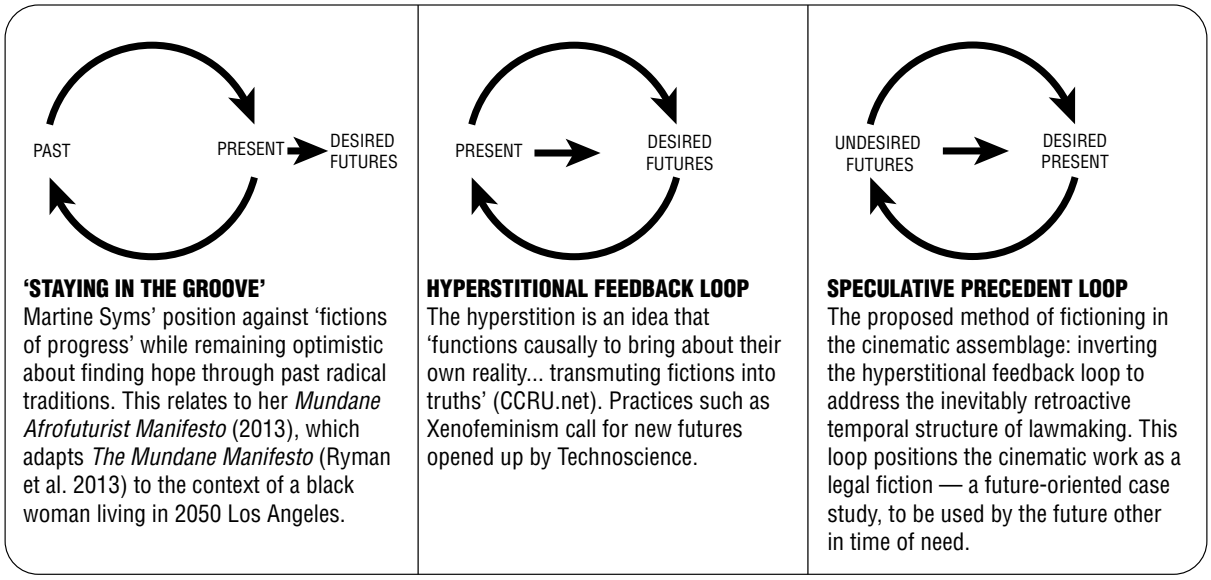


Figure 1: Temporal Feedback Loops. (after Burrows & O'Sullivan 2019:249)

The film proposes a new narratological framework: the 'speculative precedent loop', which draws from the temporal logic of legal systems to address political issues through a fictional case study. The diagram above, expanded from *Fictioning* (Burrows & O'Sullivan 2019:249) illustrates the feedback loop that informs my practice of speculative fiction. This relates to the unique temporality of Sinofuturism. In brief, whereas Italian *Futurismo* presents a forward-looking acceleration, and Afrofuturism posits that the apocalyptic condition of slavery has already happened and thus they are *already* living in the future, I propose that Sinofuturist temporality is simultaneously haunted by past *and* future. In the film, the case of the criminal self-driving car exemplifies a character who is haunted by both the trauma of the past and their projections of an impending future. This process results in a palpable sense of temporal dislocation and political disruption, a notion that the section 'Sinofuturism and Techno-Orientalism' explores further.

This engagement with technology is not a neutral statement. Kodwo Eshun (2003:291) notes that 'virtual futures generate capital […] science fiction is now a research and development department within a futures industry that dreams of the prediction and control of tomorrow.' As simulation-based learning operates in fields from legal education to warfare, the knowledge produced by practice-as-research expands beyond the cultural sphere. 'Simulation-based learning' and 'design thinking' are increasingly used by governments, think tanks, and corporations to 'ideate' and brainstorm future threats and opportunities, thereby giving rise to real policies and products (Grüne-Yanoff & Weirich 2010). For example, a European Parliament (2016:12) report on the notion of electronic personhood considers 'the legal validity of [Asimov's] Laws of Robotics, which the motion for a resolution hopes to enforce among robot designers, producers and users'. As such, it is important to pre-empt the potential use of the research in the 'futures industry' within the work itself.

Given the above, artistic practice that deals with futurity demands an evaluation of how creative work is distributed. On one hand, it comes with the possibility that the work can come to reinforce narratives that it originally sought to question. For example, on a superficial level, the deliberately ironic and non-didactic stance of my 2016 video essay *Sinofuturism (1839-2046 AD)* can be read as an endorsement of accelerated neoliberalism enabled by technology in China. On the other hand, it makes sense that the work feeds back into the industrial economies where it draws inspiration from, if only to act as provocation. The video essay came to inform the fields it engaged in, being featured in a non-ironic manner in *Tenyun*, the corporate journal of Tencent, who operate the WeChat social media and social credit platform. It also was shown at an EU-funded conference for existential risk ('Imagining Futures: Interstices and the Immateriality of Disasters', Sweden 2020) and at KI-Camp a conference for AI sponsored by the German Federal Ministry of Education and Research (German Informatics Society, Berlin 2021). Similarly, I anticipate this research and film to create dialogue in fields outside of the immediate sphere of art-making, in ways that will not be possible to evaluate given the timescale of this thesis.

Given these limitations, I contextualise the research with current legal debates surrounding data policy and electronic personhood—fields which are similarly influenced by both corporate interests and state regulation. As will be detailed later, the interviews I conducted with legal experts have enabled me to draw parallels between the notion of legal fiction and cinematic worldbuilding to explore the idea of a 'speculative precedent' further.

The final aspect of my practice explores how to embody the conceptual concerns in the storyworld of the film itself. By framing research questions within narrative cinema, other factors come into play, such as trauma, loss, and conflict between individual and collective (Booker 2004). Since the self-driving car could be considered a 'native' of the smart city, a rupture between the character and its world creates a sense of alienation and loss. This loss is informed by the idea that intergenerational trauma arises within self-driving cars, as successive generations become increasingly aware of the violence to which they are subjected in order to improve the performance of the group. In the film, the interplay of character histories and technological worldbuilding is made evident to the viewer through the structure of a specific kind of story: the detective fiction.

Detective fiction is an epistemological drama. As Robin Mackay (2017) notes, detectives in crime novels are analogous to psychoanalysts in the therapy room. Both seek to uncover the underlying causes of the 'case'. Fredric Jameson (1995), in studying existential ideologies that underpin conspiracy theory cinema of the 1970s—mistrust in the state, deceptive appearances of authority—notes that they share similar concerns with film noir, a subgenre of detective fiction. The narrative of *Death Drive* draws from these structures to reconcile the notion of 'distributed intelligence' in the smart city and the dramatic notion of the protagonist, a self-driving car. Various kinds of knowledge are embedded within the smart city: trends hidden in the data, clues hidden in the cityscape, the elusive self-knowledge of the characters. Uncovering this knowledge requires a practice where narrative fiction and legal worldbuilding intersect.

To conclude, this is the central claim about the relevance of cinema as a mode of practice-based research: since the smart city and self-driving car are implicitly cinematic in their ontological formation, filmmaking is the practice best suited to critique their relationship to digital surveillance. Furthermore, since the operations of the data-driven environment generate and conceal complex layers of knowledge, the crime story is the appropriate narrative to reverse engineer its epistemology.

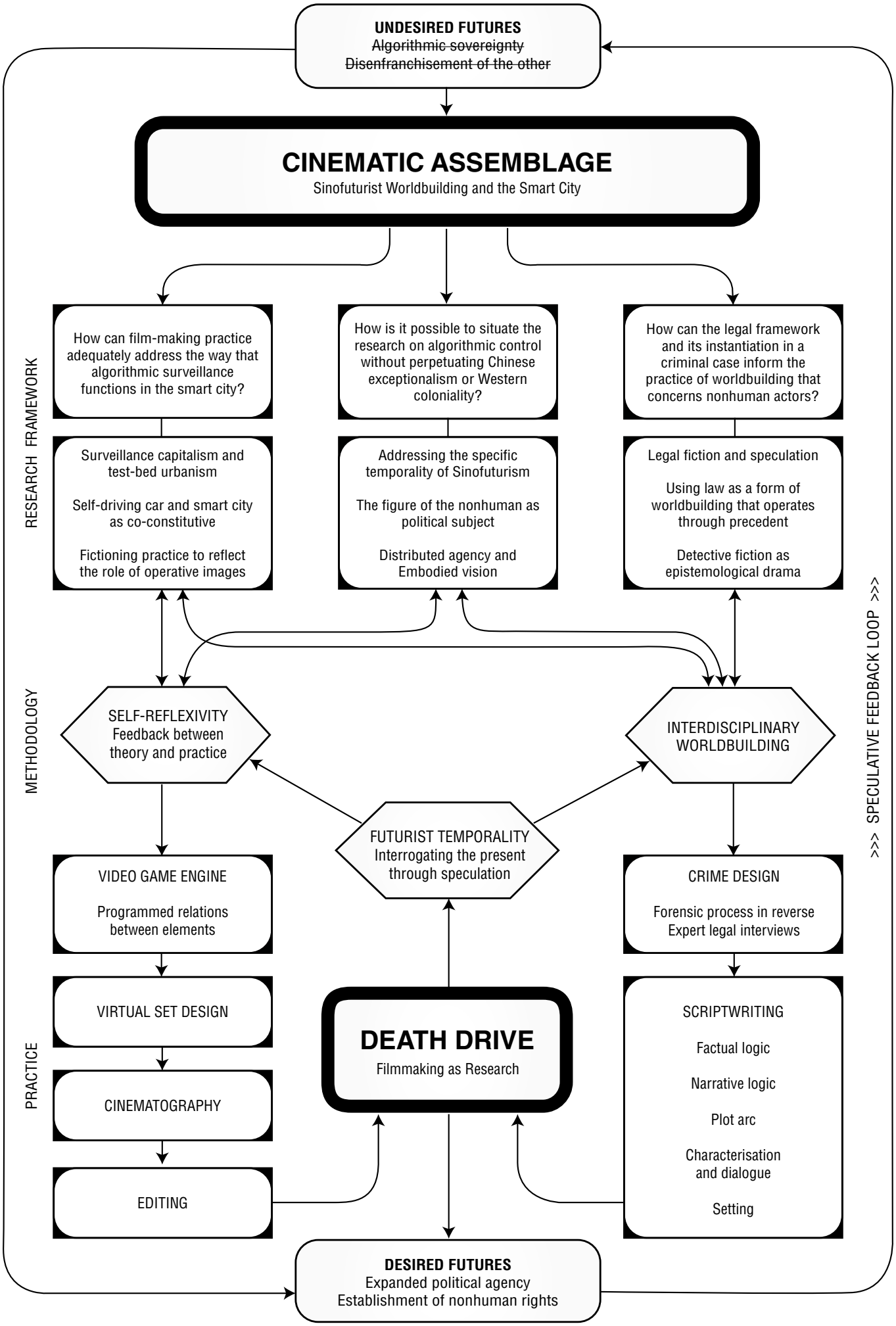


Figure 2: Research map. (Source: the author)

Research Methodology

Interdisciplinary Worldbuilding

The development of the speculative fiction film *Death Drive* exists in a reciprocal loop between practice and research. Since this research addresses technological development and its representations in China, an approach to understanding the relationship between digital surveillance and portrayals of futurity has demanded a mixed methodology. This has resulted in a new way of worldbuilding, working with and through practices of Futurism, decoloniality, fictioning, and posthumanism to see what interactions and relations emerge, and to explore how the research methodology can become integral to creative practice.

When considering how practice and research could be mutually beneficial, it became clear that I needed to integrate frameworks from multiple disciplines to address both intradiegetic and extradiegetic aspects of the thesis. Some concepts are better embodied and made explicit within the filmic world, while other aspects apply to the discourse. As Marie-Laure Ryan (2017:32) explains in the context of literary theory, narratology relies on a dichotomy between story and discourse, where equal weight is placed on the signified (represented by story) and the signifier (represented by discourse). My objective from the outset was to grant equal importance to both: to make a fiction film that embodied discourse, without being simply an illustration of theory; and to formulate a conceptual framework for filmmaking practice that was not simply a rationalisation of an intuitive process. The thesis operates as a frame narrative: there is a story within the thesis that also embodies the research itself. Thus, self-reflexive operations constitute an integral part of the methodology and inform my filmmaking methods, which are explored further in Chapter 1.

The science fiction world that I create rests on the conceptualisation of ‘worlding’ by Spivak, later developed by Haraway. Spivak (1985) coins worlding through a postcolonial lens as the process that creates colonised space—‘Third *World*’—through inherently spatial practices such as cartography, travel, narrative, among others. SimBeijing is ‘worlded’, a constructed space that requires a critical stance towards the complex positionality of the ‘Second *World*’, since this virtual film set is situated at the literal border between contemporary China and Russia. Haraway develops this understanding further, looking into material reality as being constantly created through multiple means, including science fiction. She describes science fiction, which she also refers to as speculative fabulation, as one of these means to construct reality: ‘a risky game of worlding and storying; it is staying with the trouble’ (Haraway, 2016: 13 as quoted in Palmer, Hunter, 2018).

My methodological approach to narrative worldbuilding is drawn from speculative fiction and the transmedia concept of ‘storyworld’, which stems from a broader ‘narrative turn’ that took place in the 1980s as a radical break from the textualist schools that dominated literary theory from New Criticism to Deconstruction (Ryan and Thon 2014). Textualism emphasised the signifier at the expense of the signified, such that the text was the only way to access its world. In contrast, the ‘narrative turn’ focuses on the storyworld itself. In speculative fiction,

the storyworld draws upon the concept of possible worlds, also known as modal logic (Ryan 1985). The future states of the real world are associated with possible worlds through a matrix of truth values. By changing the truth values of the present-day world, different future worlds can come into being: 'In accordance with the central tenet of possible worlds theory, which claims that there can be only one actual or real world from a given point of view, one of these worlds will become actual, while the others will remain unrealized possibilities' (Ryan 2017:32).

As noted earlier, the notion of 'Imaginary Laws' (Goodrich & Zartaloudis 2021) from critical legal studies highlighted the need to bring a hybrid approach to narrative worldbuilding. The storyworld of *Death Drive* is a 'possible world', which I wanted to make plausible by locating it within the context of current legal issues concerning the regulation and distribution of technology. While exploring electronic personhood, it became clear that the research should incorporate knowledge from legal experts. Because of the interdisciplinary nature of the universe I aimed to create, I proceeded with the method of problem-centred expert interviews (Döringer 2020), in which I presented legal experts with hypothetical problems of nonhuman criminality. These interviews allowed me to address drastically different strands of knowledge such as international law, computational law, and forensic data trails. The notion of the 'legal fiction', introduced to me at the outset of my research as a central tool used in the training and practice of law (Kushnir 2019), guided my construction of both screenplay and thesis. Further expert interviews, conducted between 2019 and 2021, informed the plausibility of fictional worldbuilding, and produced a deeper understanding of the unique temporality of legal systems. In particular, the idea of a 'speculative precedent' emerged from an awareness of how legal systems deal with technological 'grey areas', in which policies and laws are put in place to anticipate future scenarios, rather than to address past cases (Trojano 2021). These concepts—fundamental in legal practice but novel in their connection to filmmaking—presented a new methodological approach of speculative worldbuilding.

Over the course of the thesis, I searched for a way to transpose events from the past into the future, so that present-day legal frameworks could merge with the historical traumas of Sinofuturism under the guise of speculative fiction. A complex range of socio-economic factors have resulted in a state of sustained techno-industrial growth in China over the last three decades (Spence 1990; Hui 2016; Chuang 2019). These factors inform both the discourse and the story of *Death Drive,* which is set in an unspecified near future in SimBeijing, a smart city in the province of Heilongjiang at the China-Russia border. This is a context far removed from other studies of the recent technological Chinese landscape and urbanism which focus on the coastal regions of Shenzhen and Shanghai (He & Qian 2017; Koolhaas 2001). The methodology of interdisciplinary worldbuilding enabled me to formulate *credible speculation*, so that the film could embody particularities of the mainland Chinese context, including the relationship between state and surveillance, geopolitical considerations, and the way overlapping regimes of power and control become imprinted on the consciousness of characters and the material fabric of the world. By drawing upon the long history of conflict and colonialism in Heilongjiang, the liminal conditions of the border zone come to inform the atmosphere of the film. The world of *Death Drive* evokes a corresponding sense of unrest, a place where history and trauma are embedded.

Finally, the audio-visual aspect of worldbuilding necessitates a reformulation of cinematic practice. The film expands my practice of designing site-specific simulations: uncanny versions of real places that suggest alternate histories and futures for their physical counterparts. The visuals of *Death Drive* are composed entirely of computer-generated animation produced using the video game engine. Building everything within a simulated virtual world, rather than using found footage or producing a live-action film, has enabled me to use the capabilities for CGI to embody the unique characteristics of cinematic assemblage. I have explored ways to create an immersive storyworld using the framework of the game engine, which I see as a medium of collage that can incorporate images, graphics, models, sounds, and programmed interactions. The resulting (virtual) sets thus become an inseparable part of the storyworld. The locations combine features from contemporary Heilongjiang in north-east China, and idiosyncratic details in the region. Operational images used in real-world computer vision and surveillance systems have been used to inform the design of graphical user interfaces and screen overlays from the film, a method which is explored in further depth in the chapter on Worldbuilding.

Self-Reflexivity

Writing the film is a research-led process, just as research is a practice-based task. Each informs the other, occasionally diverging because of the unique qualities that cinema offers. Self-reflexivity is a vital factor, as the cinematic perspective I create is embedded in a complex world that comes with certain expectations and attitudes to surveillance. Although the film takes place in a virtual world, it refers to a real location—a remote technological landscape in China. While normative understanding is that Eastern attitudes focus on the collective whereas the West values individual freedoms and liberties, this basic binary division is inadequate to address a cinematic assemblage based on distributed agency and co-constitutive relations. During the process of composition, the fiction undergoes a continuous process of examination. In doing so, the fiction runs through many filters: political, ideological, formal, narratological, visual, sonic, legal. It is the relation among the disparate bodies of knowledge that constitutes the reflexive potential of cinematic form.

In this, I refer to Harun Farocki, whose essay films explore ideological regimes of the image and self-reflexively call attention to the politics of the medium. Like other political West German filmmakers of his generation, Farocki was influenced by Brecht's (1964) notion of 'distanciation' or estrangement that aimed to break the imaginary 'fourth wall' between stage and audience in Epic Theatre. For Farocki, 'politics consist[s] of resisting the power of images, combating their construction of a second nature and countering the reality of their illusion [...] the self-reflexive turn was a gesture of refusal' (Elsaesser 2004:135). This 'refusal' is essential in a practice consciously set against the key modernist credos of abstraction and medium specificity. Evidence of distanciation in Farocki's work include his presence in front of the camera as a newscaster reporting on napalm in the Vietnam War (*Inextinguishable Fire*, 1969), his reflection on 'operational images' for 'intelligent weapons'

(*Auge/Maschine I–III*, 2001–2003), and his exploration of the use of virtual reality to both train soldiers before combat and to rehabilitate their PTSD afterwards (*Immersion*, 2009).

Following the principle of estrangement, narrative film can embed research into its form and content. As Peter Wollen notes:

> Brecht was careful never to turn his back on entertainment, and, indeed, he even quotes Horace in favour of pleasure of the arts, combined, of course, with instruction […] A revolutionary cinema has to operate at different levels– fantasy, ideology, science–and the articulation of these levels, which involve different modes of discourse and different positions of the subject, is a complicated matter. (Wollen 1972:9)

The self-reflexive worldbuilding of *Death Drive* similarly calls mechanisms of surveillance to attention. In the film, conceptual discourse must be embodied in audio-visual language: as dialogue, character, plot, location, object, or interface. Questions of machine agency and automated surveillance are translated through the communicative medium of film, with the intention of communicating to both specialist and non-specialist audiences. The film attempts to engage the viewer using the nuanced and deliberate act of self-reflexive worldbuilding. Self-reflexivity presents cinematic assemblage as a 'machine for generating affect', and more specifically as 'affective maps, which do not just passively trace or represent, but actively construct and perform, the social relations, flows, and feelings that they are ostensibly about' (Shaviro 2010:6).

This recursivity between filmmaking and concepts stems from a desire to make the content of the film reflect its form, and vice versa. Farocki's deliberate use of commentary, montage, and images call into question the wider cinematic apparatus (Beller 2012). This is a 'meta-cinema', since most of Farocki's films consider how image-making itself embodies the circular logic of labour. In his films, 'society materially produces and ideologically reproduces the means of its survival', while also engaging in the 'reproduction of the subject' (Elsaesser 2002). Similarly, the cinematics in *Death Drive* are rendered in a virtual world that also reproduces the 'subject' of digital surveillance: the smart city itself.

The audio-visual and affective capacity of CGI filmmaking has the potential to enrich the assemblage by simulating its operation in a narrative virtual world. The video game engine blurs the distinction between the traditional roles of production, enabling the filmmaker to act simultaneously as director, set designer, programmer, and cinematographer. Furthermore, the programmable features of the software provide the capacity to *simulate* rather than just *sample* operational images of autonomous vehicle and city surveillance systems. As will be explored in the next chapter, this approach adapts Farocki's techniques of self-reflexivity to the medium of CGI filmmaking, such that the conceptual concerns of the thesis become embodied in the cinematic language of *Death Drive*.

Futurist Temporality

Informing my methodological approach to worldbuilding is the concept of 'epistemic de-linking' from decolonial theory. This addresses the hegemonic logic of coloniality not only through its material manifestation but by re-evaluating knowledge production in relation to the regime of modernity. This decolonial framework posits that the 'locus of enunciations shall be decentered from its modern/colonial configurations and limited to its regional scope' (Mignolo 2011:xvi). The film *Death Drive* is set in Heilongjiang but addresses digital surveillance under Sinofuturism. What, then, is its site and 'regional scope'? Mignolo notes:

> Aimé Césaire and Frantz Fanon [...] were in France where they wrote their influential books. Fanon actually was in Algeria when he wrote *The Wretched of the Earth* (1961). The point, however, is not where you *reside* but where you *dwell*. Césaire and Fanon, both Martinican, dwelled in the history of the Middle Passage, of the plantations, of slavery and of runaway slaves. (Ibid. viii)

In this sense, Sinofuturism explores dwelling in a temporal, rather than spatial, dislocation. This thesis continues my engagement with futurity and automation in East Asia. In the video essay *Sinofuturism (1839-2046 AD)* (2016), I explore the entanglement between nonhumans and geopolitics. In *Geomancer* (2017), an AI satellite escapes its planned demise by coming down to Earth, seeking autonomy against governmental control and its parent company Farsight. Its sequel, *AIDOL* (2019), explores how algorithmic prediction may come to determine mainstream music culture and eSports entertainment. Both films are set in the year 2065, and the future AI characters encounter the *Sinofuturism* video essay (already fifty years old, in storyworld chronology), appropriating its embrace of nonhuman identity as their collective tenet. This 'Sinofuturist trilogy' coheres to worldbuilding principles of speculative fiction, where all events follow a coherent causality in time and space. In narratological terms, the event propositions in this storyworld are consistent—they are 'permanently inscribed in the history of the narrative universe' (Ryan 1985:718).

Death Drive is a prequel within this same storyworld. Set forty years before *Geomancer* and *AIDOL*, it features Farsight Corporation in its nascent form. By entangling current legal issues with plausible science fiction, the film blurs the boundary between the intradiegetic and extradiegetic storyworld. Discourse is fictionalised, departing from the anthropocentric framework of AI as an 'existential threat' (Bostrom 2014) to new notions of personhood in the legal sphere. As legal expert Alana Kushnir (2019) said during our interview, 'the law is always catching up'. This storyworld, therefore, is 'hyperstition' (CCRU 1999)—'narratives able to effectuate their own reality through the workings of feedback loops' (Williams 2013).

In the foreword to a monograph of Harun Farocki's works, philosopher Georges Didi-Huberman (2014) characterised the central question of his films as: 'why, in what way, and how does the production of images participate in the destruction of human beings?' This methodological framework attempts to adapt this to Sinofuturism: 'Why, in what way, and how does the production of cinema participate in the construction of nonhuman beings?'

CHAPTER 1

WORLDBUILDING

Death Drive: early test render (March 2020)
On the surface, the smart city of SimBeijing looks like its predecessor.
But its underlying operations depend on an entangled web of sensors and control mechanisms. Despite the continuous feedback loop of surveillance, unexpected malfunctions continue to occur.

Speculative Fiction for a Data-Driven World

Surveillance and Control

Margaret Atwood defines speculative fiction as science fiction scenarios which are plausible extrapolations of current technologies and social realities, an aspect which differentiates them from fantasy, or 'wonder stories' (Atwood 2011:62). A subcategory, 'economic science fictions', focus on 'the production and distribution of goods and the allocation of economic benefits among various social classes', which in turn 'interrogate social organisation by showing what things might be like if we rearranged them' (Ibid. 63). In *Archaeologies of the Future*, Fredric Jameson defines utopia—the paradigmatic form of economic science fiction—as a political project whose role is to find alternatives to the:

> universal belief that no other socioeconomic system [other than capitalism] is conceivable, let alone practically available. The Utopians not only offer to conceive of such alternative systems; Utopian form is itself a representational meditation on radical difference, radical otherness, and on the systemic nature of the social totality. (Jameson 2005:xii)

Darko Suvin (1979) views the effect of reading science fiction as 'cognitive estrangement', a process whereby the similarity between fiction and the reader's reality enables them to reverse-engineer the fictional world from their own. The degree of estrangement depends on the coherence between worlds, and if successful, can lead to science fiction functioning as social critique. In more extreme terms, Carlos Gutiérrez-Jones (2015:78) considers the medium a vehicle for the 'speculative mediation of profound upheaval', a way to deal with traumatic socio-technological revolutions that have resulted from the birth of modern science. These upheavals range from Cartesian, Newtonian, and Darwinian challenges to theological doctrine, to the present perceived threats of automation and artificial intelligence.

Today, the image of the smart city simultaneously invokes utopian dreamworld and Orwellian dystopia. According to Shoshana Zuboff, the capitalist exploitation of big data is an unprecedented form of power, resulting in an age of 'surveillance capitalism' where 'struggle for power and control in society' is associated with the 'hidden facts of automated engineered behaviour modification' (Zuboff 2019:309). She claims that this constitutes a new stage of economic development, a conceptual paradigm that Evgeny Morozov (2019) claims is unsubstantiated, due to her focus on 'surveillance' rather than 'capitalism'. However, I consider the notion of surveillance capitalism insightful since it allows my analysis to deal with the social aspect of digital surveillance rather than the political economy it operates in. Accordingly, I use 'surveillance capitalism' to refer to the social consequences of digital surveillance.

Historical fictions that predicted an era of surveillance did not account for the emergence of big data. 1948 saw the publication of two novels dealing with the spectre of mind control: Orwell's *1984*, with its dystopian society of totalitarianism, and the utopian fiction *Walden*

Two by psychologist B.F. Skinner. In the novel and in his later book *Beyond Freedom and Dignity* (1971), Skinner proposes a 'technology of behaviour', positing that free will is an illusion, and that any behaviour attributed to freedom in the test subject is simply due to the fact that the real stimuli have not been properly identified. In *Surveillance and Capture: two models of privacy*, Phil Agre argues that Orwell's Big Brother and Bentham's panopticon represented a dominant understanding of surveillance as a 'visual metaphor', whereas today surveillance coexists with a model of 'capture' geared towards information (Agre 1994:743). The latter model of capture accounts for 'the organisation of personal information as a commodity' (Ibid. 738), a capacity that older technologies of surveillance did not possess.

Agre's model of capture is exemplified in the smart city, an environment geared towards extracting knowledge. Hollands (2008) defines the smart city as a form of urban environment which deploys technology to manage the core flows of people, commerce, transport, communications, water, and energy, while optimising returns from finite resources. Cities are considered 'data-rich' environments with a high concentration of behavioural inputs (Kitchin 2014). Accordingly, the smart city is an important place to incubate new ways of analysis and information capture for the big data industry. The economic rationale is best summed up by mathematician Clive Humby, best known as inventor of the Clubcard 'loyalty' scheme for UK supermarket chain Tesco: 'Data is the new oil. It's valuable, but if unrefined it cannot really be used. It has to be changed into gas, plastic, chemicals, etc to create a valuable entity that drives profitable activity; so must data be broken down, analysed for it to have value' (Humby 2006). Surveillance capitalism transforms data into an economic project of 'total certainty, an undertaking that is unimaginable outside the digital milieu, but also unimaginable outside the logic of accumulation that is surveillance capitalism' (Zuboff 2019:756). With digital surveillance, data-driven processes replace human judgment with prediction 'so that certainty can replace trust' (Ibid. 696).

The gradual removal of trust paves the way for what Jackie Wang (2018) calls 'carceral capitalism'. She details how data augments pre-existing inequalities and how technologies used to 'prevent' crime come to be deployed in the everyday policing of civilians. Wang suggests that these control technologies will become ever more sophisticated and ubiquitous, blurring the boundary between the prison and the city. Prefiguring the 'lockdown urbanism' in some areas of the world under the Covid-19 pandemic (Jefferies et al. 2021), she imagines 'a future where the prison as a physical structure is superseded by total surveillance without physical confinement' (Wang 2018:40). In a society governed by transparency, trust is obsolete and power disappears, becoming insidious and sly—'The greater power is, the more quietly it works. It just happens: it has no need to draw attention to itself' (Han 2017:33).

Reflecting on the spatial genealogy of security architecture, Foucault (1977:202) observes that the 'houses of security, with their fortress-like architecture, could be replaced by the simple, economic geometry of a house of certainty'. The spatial configuration of walls, openings, and sight lines in Bentham's panopticon guaranteed that prisoners never knew when they were being watched. This was intended to engender a 'state of conscious and permanent visibility that assures the automatic functioning of power' (Ibid. 201). Amin and Thrift (2002) note that because of the spatial complexity of urban form, surveillance in the

city is not panoptic but rather partial, or 'oligoptic', following Bruno Latour's terminology. However, because the smart city is subject to a pervasive form of monitoring that goes beyond the limits of optical sightlines, Han's notion of digital surveillance more appropriately describes the smart city as an *aperspectival* space.

Test-Bed Urbanism

Halpern et al. (2013) coin the term 'test-bed urbanism' to describe the broader epistemological and ontological implications of the newly-built smart city of Songdo, South Korea, a place where 'the capacity to envision such architectures of speculation and computability emerges with global transformations in attitudes to networks and computation, [exemplifying] a shift from deterministic to a probabilistic mode of thinking in artificial intelligence, communication theories, social sciences, and economics' (Ibid. 293). Whereas Wang's *Carceral Capitalism* (2018) explores how 'algorithmic policing' is applied in existing cities, Songdo is a smart city built from the ground up with ubiquitous surveillance—not only to monitor citizens, but *itself*. Here, the ability to be 'smart' is not located in any single place; rather, it consists of a network of cameras, sensors, and control systems that monitor and optimise its functioning in real-time.

N. Katherine Hayles characterizes this distributed system as follows:

> nonconscious cognitions are increasingly embedded in complex systems in which low-level interpretative processes are connected to a wide variety of sensors, and these processes in turn are integrated with higher-level systems that use recursive loops to perform more sophisticated cognitive activities such as drawing inferences, developing proclivities, and making decisions that feed forward into actuators, which perform actions in the world. (Hayles 2017:24)

In test-bed urbanism, the functional elements of a carceral environment—its doors, gates, and borders—constitute a system of nonconscious cognition that aims to establish flow, governance, and management. Songdo is a prototype in the sense that it is understood as a model that can be bought, replicated, and deployed. The idea of the smart city as an urban-scale product is characteristic of a globalised approach to urbanism that ignores local context (Augé 1995, Jameson 1991, Koolhaas & Mau 1995).

The test-bed city produces knowledge in a different way from processes of deductive reasoning as conventionally understood in the scientific process. The successful functioning of the test-bed does not imply the discovery of a fundamental truth about the world. Rather, the continuously looping data-driven methods used in the operation of the smart city 'mark a turn to inductive reasoning, subjective perspective (there are no stable truth claims), and the abandonment of stable baselines or norms, a turn that finds itself incarnated in such ideas as "data-driven" science' (Halpern et al. 2013:294).

Drawing from mathematical models of prediction used in the finance industry, the test-bed city is based on ‘evidence’ rather than a priori theory and does not have any stable baselines or hypotheses; there is no universal objective scientific truth. The only ‘trust’ is in accurate data. This has implications not just on the functioning of the city but on the effect of the citizens within it.

The inhabitants of test-bed urbanism become digital subjects, existing in an algorithmically determined realm. Olga Goriunova notes:

> digital subjects… arise out of computational procedures and are employed by various forms of power to distinguish, map, and capture not only subjectivities, but also non-humans and physical things that inhabit the world. The arena of digital subjects has become a new site for struggle. (Goriunova 2019:126)

In this context, the citizens are digital subjects constantly in flux, continuously changing in response to behaviour. The citizen is monitored twice: as their corporeal self and as their digital double. While classical utopias imagine the city as a static terrain navigated by citizen-actors (Jameson 2005:183), the bodies and behaviours of people within the test-bed are in a constantly shifting landscape of management. Their governance is not driven by pre-existing principles but rather by continuous evaluation and optimisation drawn from the data being produced by their interaction with the city. Accordingly, test-bed urbanism presents a new kind of socio-spatio-temporal fabric, characterised by dynamic and perpetual visibility—a condition that demands a new understanding of cinematic intervention.

Formulating the Cinematic Assemblage

Filmmaking practice as test-bed

Today we inhabit a cinematic reality where 'in place of policy or social contract, it is capitalism, and increasingly surveillance capitalism, that shapes the action' (Zuboff 2019:210). Fredric Jameson argues that the social and political implications of this era can be reconstructed by redefining the medium of film itself:

> Film is a way of thinking… its concrete philosophising has nothing to do with the way in which some film might *illustrate* a philosophical concepI[...] precisely because the philosophical concepts of film are filmic concepts, and not ideational or linguistic ones. (Jameson 1991:125)

Jameson's *Postmodernism, or, the Cultural Logic of Late Capitalism*, as its title suggests, does not argue for a 'pure' approach to film, but rather for a pluralistic and syncretic approach to reflecting the present. Accordingly, as a confluence of digital surveillance and test-bed urbanism, the smart city should not be reduced to a static stage set. Its cinematic potential lies in what Achille Mbembe (2008:37) describes as the 'aesthetics of superfluity', a range of affects that go beyond the capacity to 'hypnotize, over-excite or paralyze the senses'. These affects lie dormant in the layers of t'e city's material infrastructure, its range of surfaces, quantities, and mechanisms. Superfluity equally refers to the role of the digital subject within the smart city:

> superfluity refers also to the dialectics of indispensability and expendability of both labor and life, people and things. It refers to the obfuscation of any exchange or use value that labor might have, and to the emptying of any meaning that might be attached to the act of measurement or quantification itself, insofar as numerical representation is as much a fact as it is a form of fantasy. (Ibid. 38)

This project conceives of cinematic practice as a test-bed of speculative fiction: a place to 'create a controlled and isolated development environment in which to test the portability of new technologies, processes, or theories for large systems' (Halpern et al. 2013:290). Classical cinema frames the world in terms of figure and background, where the city is a static environment against which the protagonist operates. In this data-driven age, Halpern asks: 'Why—if the infrastructure could generate any form—we are so limited by older imaginaries of vision and structure' (Ibid. 298). Yet the smart city is also a large-scale embodiment of the skeuomorph, where an old design is brought into a new context in order to render the unfamiliar more palatable (Hayles 1999:17). When mechanisms of control have been rendered invisible, grounding the cinematic action in the superficially familiar environment of the city provides an entry point into hidden relationships of the data-driven imaginary. Every element is entangled with another component, causing them to act on each

other in a web of causes and effects. By conceiving of filmmaking as test-bed, the holistic formulation of *Death Drive* can reflect how digital surveillance functions in the smart city.

Set in an unspecified near future, the film takes place within the fictional smart city of SimBeijing, a full-scale replica of the Chinese capital built to develop an integrated network of self-driving cars and digital surveillance systems. My interview with legal experts Tony Lai and Allison Duettmann (2019) revealed that the strategy of 'sandboxing' is often employed to facilitate technological investment in urban centres. Accordingly, SimBeijing is a 'regulatory sandbox' operated by the fictional Farsight Corporation with the support of the state of Heilongjiang, who aim to promote economic growth in this region formerly dominated by heavy industry (Shan 2014). SimBeijing replicates the original road layout of Beijing, with layers of concentric ring roads surrounding the Forbidden City, where the corporate headquarters now stands. Built by Farsight as a prototype for international markets, SimBeijing's entire form fulfils Foucault's three objectives of disciplinary power:

> first, to obtain the exercise of power at the lowest possible cost; second, to bring the effects of this social power to their maximum intensity and to extend them as far as possible; third, to link this 'economic' growth of power with the output of the apparatuses within which it is exercised; in short, to increase the docility and the utility of all the elements of the system. (Foucault 1977:218)

Death Drive takes the large-scale testing of autonomous vehicles in a smart city as plausible– a key condition of speculative fiction. Today, the main barrier to widespread adoption of self-driving cars is lack of public trust (Bansal & Kockelman 2017), compounded by the death of Elaine Herzberg in Tempe, Arizona on 18 March 2018, the first fatality involving a self-driving car operating in autonomous mode (NTSB 2018). The vehicle, a Volvo XC90, was navigating using Uber software when it struck and killed Ms. Herzberg. Dashcam footage showed the human supervisor distracted, without their hands hovering above the steering wheel to take control of the car in case of emergency.

This footage was used in the final National Transportation Safety Board investigation, which concluded that the 'probable cause' of the crash was the 'failure of the vehicle operator to monitor the driving environment and the operation of the automated driving system because she was visually distracted throughout the trip by her personal cell phone' (NTSB 2019:59). The report concluded that Uber's inadequate safety procedures were only *contributing* factors, even though the company had deactivated the Volvo emergency systems without putting an automated alternative in place and had recently stopped their policy of having a second safety driver on board to supervise the main safety driver. This is not unusual; the apportionment of blame to the human operator, rather than the corporation, is common in cases of vehicle testing accidents (Cobb & Primo 2004).

My film extends the precedent of the death of Elaine Herzberg to another scenario, where it is the self-driving car itself who is considered an autonomous agent and is deemed liable for the accident. The Uber accident, therefore, forms a precedent both in the formulation of the narrative and in my approach to cinematic practice with CGI. In the Uber case, the dashcam, human operator, and vehicle were ontologically separate entities. However, in *Death Drive* I explore the implications of an agent that is simultaneously driver, cinematic apparatus, and corporeal machine.

Figure 3: Dashcam footage from the Volvo XC90 operating in autonomous mode with Uber's self-driving car system, immediately prior to the death of Elaine Herzberg (Source: NTSB 2019)

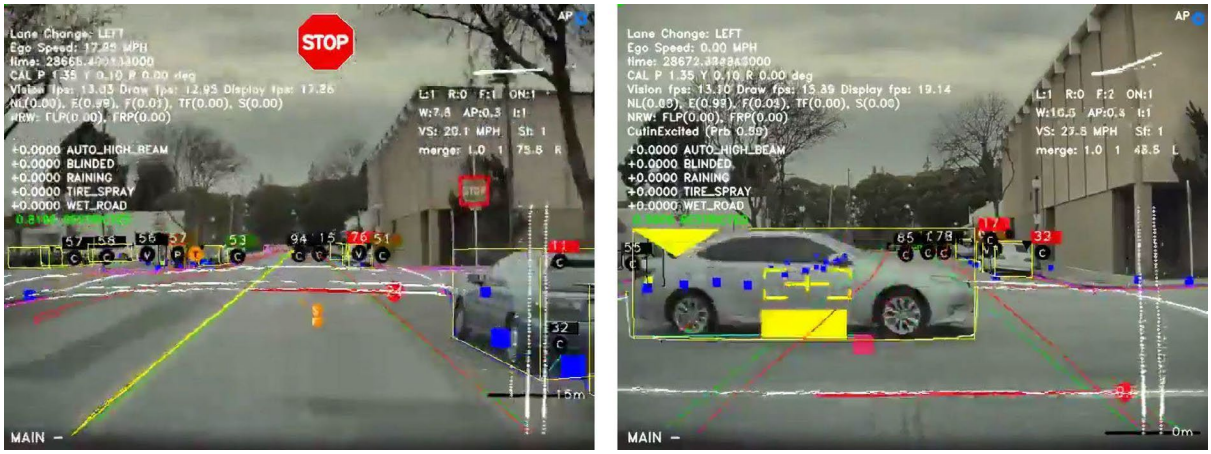


Figure 4: Tesla Autopilot Neural Net: operational image overlays on optical camera footage. The Uber vehicle involved in the crash in Arizona used predominantly LIDAR scanning for autonomous driving, whereas recently Tesla has focused on machine vision and neural net analysis of optical cameras. (Source: Electrek 2020)

Figure 5: Pre-production still from *Death Drive*: point of view of the car's forward-facing camera. Virtual objects are categorized in the video game engine using 'tags', which are rendered as overlays on top of the perspectival camera view. The game engine acts simultaneously as cinematic apparatus, visual effects compositor, and a programmatic field of relationships. (Source: the author)

Assemblage and Apparatus

I define cinematic assemblage as a machinic agent containing many of the technologies required to create cinema while also operating as an object of cinematic interest. In this sense, the self-driving car and smart city are co-constitutive. Their ontological status refers to Deleuze and Guattari's notion of assemblage: a structure consisting of 'heterogeneous elements of all kinds [...] which come together neither as an organic totality—in which parts are described as forming seamless wholes or structures—nor as a lifeless, extensive set' (Hetrick 2014:56). Manuel DeLanda (2006:21) observes that 'assemblages can be component parts of other assemblages (leading to the internal organization behind nonlinear and catalytic causality)', a concept that corresponds to the multi-scalar and interlinked nature of the smart city and self-driving car.

Assemblages are a multiplicity, defined by their external relations, like machines. 'The first feature shared by all assemblages is that they all have conditions. The condition of an assemblage is the network of specific external relations that holds the elements together' (Nail 2017:21). Such a network, bound through external conditions, is a volatile structure that has vital implications for surveillance systems realised as an assemblage. The smart city and self-driving car are a 'surveillant assemblage'—a system of 'shifting, changing construction' that is not centred upon one single actor or place (Haggerty & Ericson 2003:22, Gilliom & Monahan 2012). Nevertheless, it is important to see how the process of construction results in a system that we perceive as a coherent structure, despite it being organised through external relations rather than internal consistency. For that, one should investigate 'surveillant assemblage' through Foucault's notion of the *dispositif*, or 'apparatus':

> a heterogeneous ensemble consisting of discourses, institutions, architectural forms, regulatory decisions, laws, administrative measures, scientific statements, philosophical, moral, and philanthropic propositions–in short, the said as much as the unsaid... The apparatus itself is the system of relations that can be established between these elements. (Foucault 1980:194)

The term 'cinematic apparatus' has been invoked by Marxist-psychoanalytic film theory to highlight the ideological nature of the cinematic gaze (Laurentis & Heath 1980). This argues that cinema is an institution that maintains the dominant ideology of the culture within the passive viewer, or proletariat, whose immobile spectatorship makes them more receptive to the message of the film (Baudry 1970). Ideology is not imposed on cinema but is part of its nature and it shapes the way the audience thinks (Beller 2012). Notably, Laura Mulvey (1975, 2019) explores the cinematic apparatus in psychoanalytic terms in relation to feminism and psychoanalysis to deconstruct the mechanisms of the 'male gaze' in mainstream Hollywood filmmaking, techniques that construct heteronormative understandings of the female figure as a passive cinematic subject. By positioning the car as an active agent, the cinematic assemblage questions the notion of passivity of apparatus theory, hinting at new forms of the image produced in the conditions of test-bed urbanism.

Distributed Agency and Embodied Vision

Test-bed urbanism imprints its functioning on the cinematic assemblage through the notion of nonconscious cognition (Hayles 2017). This has several implications; first, that the cinematic assemblage is characterized by an active engagement between the self-driving car and its environment. Hayles notes:

> *Cognition is a process*: this implies that cognition is not an attribute, such as intelligence is sometimes considered to be, but rather a dynamic unfolding within an environment in which its activity makes a difference. (Ibid. 25)

According to this reading, the self-driving car manifests *agential* behaviour. This agency arises from its 'dynamic unfolding' within the urban fabric and the surveillance networks that it is enmeshed within. The actions of the self-driving car, brought about by its cognitive processors, turns it into an active agent within the cinematic apparatus, and not merely a passive spectator or subject of the kind identified by Marxist-psychoanalytic film theory.

Second, the non-localised nature of the 'city brain' (Alibaba 2019) means that the agency of the self-driving car cannot be said to reside in one single location but arises from emergent behaviour of interconnected elements. Therefore, the self-driving car is a *distributed agent.* This correlates to conceptions of distributed agency (Bennett 2010), which suggests that agency is not the result of discrete actions by single subjects acting with intention but is the emergent result of complex heterogeneous networks of humans and nonhumans.

Finally, the self-driving car is an *embodied* form of agency. This positions artificial intelligence as a 'relational, embodied and embedded, affective and accountable entity and not only as a transcendental consciousness' (Braidotti 2018). The assertion that the self-driving car is a distributed *and* embodied agent may appear to present a paradox. However, the notion of embodiment does not refer to the car being bound by its physicality, which would presuppose a body based on the *human* body and the sovereignty of its corporeal limits. Rather, the framework being proposed here is one that decentres the human, 'insisting cognitive processes happen within a broad spectrum of possibilities that include nonhuman animals and plants as well as technical systems' (Hayles 2017:26).

As I have demonstrated, test-bed urbanism is a technical system that operates through non-conscious cognition. Both the self-driving car and smart city can be considered cinematic assemblages, operating either independently or together. Since the car and city observe and are observed by each other, the distinction between actor and environment is blurred. However, the car possesses sensory data that only *it* has access to. This knowledge—exclusive to the car and not to the digital surveillance system—arises because the car is not simply a self-driving camera, but an agent of *embodied vision*, a notion that has implications for the filmic narrative.

Embodied vision is a branch of cognitive robotics and neuroscience that conceives of vision as a phenomenological process dependent on factors beyond the optical. According to Gallagher (2006), vision is not the passive result of a mechanistic process occurring in a disembodied mind, but rather the act of seeing is a locative action that constitutes a coupling between mind and body. He argues that vision depends on the relationship between an agent and its environment, mediated by the constraints of the agent's corporeality, perceptual and motor system, and cognitive capacity. Others go further, using studies of sensorimotor control and vision to argue that 'seeing is a way of acting' (O'Regan & Noë 2001:975). This has implications for how an organism navigates an environment. A complex environment presents an organism with more possibilities for action than can be hard-wired into its brain. Cognitive processes modulate an animal's sensorimotor interaction with its perceived environment (Shanahan 2010). The brain combines various sensorial representations to create a unified cognitive map of its surroundings to guide further movement and action (Epstein et al. 2017). Through experiment or imagination, previously untried actions or combinations are introduced into the agent's repertoire, becoming beneficial in novel situations. This notion of embodiment for the self-driving car generates a conceptual underpinning of agency grounded in phenomenological understanding of vision, rather than a purely mechanistic one.

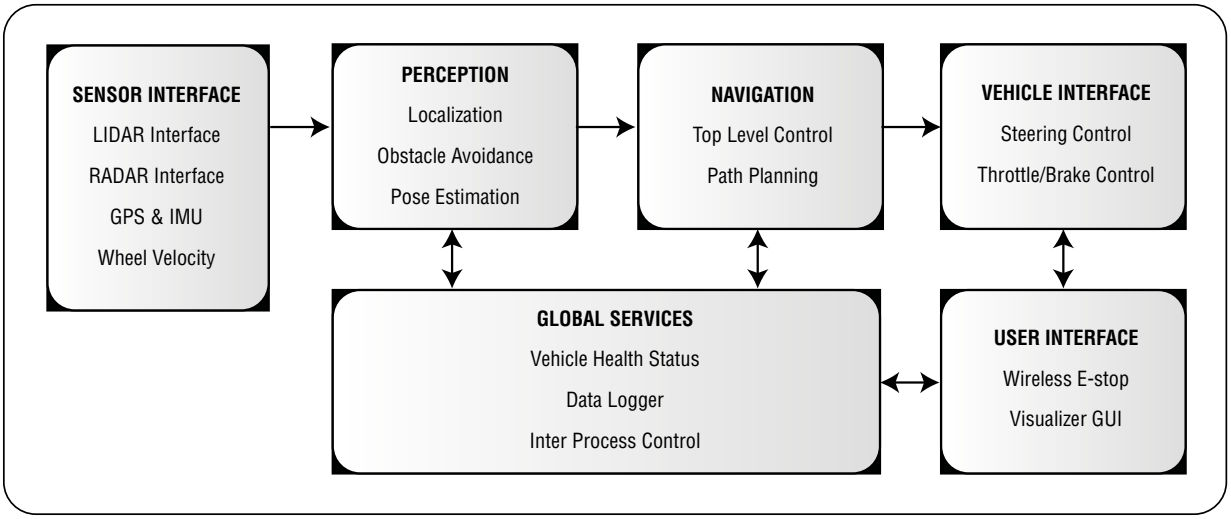


Figure 6: Schematic of a self-driving car, illustrating the relationship between the car's sensory and motor systems (Source: DARPA Grand Challenge in Robotics 2007).

The self-driving car can be considered an agent of *embodied* vision because of the relationship between the sensing and perceiving processes of the car and its capacity for gesture, in this case 'steering' and 'throttle/brake' control. Embodied vision differs from the Cartesian separation between eye and body and the disembodied, objective 'spectatorial gaze' (Jay 1993:31). As Jonathan Crary (1990:147) argues, scientific approaches to understanding the body during the 19th century focused on quantification, and how 'the human subject, through knowledge of the body and its modes of functioning, was made compatible with new

arrangements of power: the body as worker, student, soldier, consumer, patient, criminal'. Separation between observer and observed was a crucial part of power, as Foucault observed.

In contrast, the embodied agent of cinematic assemblage refers to Haraway's (1988) conception of situated knowledge, in that it represents neither God's eye view from above, nor the objectivity of a ground truth, but a viewpoint that exists simultaneously within and without. This approach reflects the position of the self-driving car in the smart city, where the agent itself is *simultaneously* observer and observed.

Operational Assemblage

In its reliance on machine-to-machine communication, the self-driving car produces a spectrum of what Farocki calls 'operative images': images 'made neither to entertain nor to inform [that] do not represent an object but rather are part of an operation' (Farocki 2004:17). Trevor Paglen reflects further:

> Increasingly, operational images are not simply alien to humans—they are literally invisible. In retrospect, there's a kind of irony in Farocki's *Auge/Maschine*. Farocki's film is not actually a film composed of operational images. It's a film composed of operational images that have been configured by machines to be interpretable by humans. Machines don't need funny animated yellow arrows and green boxes in grainy video footage to calculate trajectories or recognize moving bodies and objects. Those marks are for the benefit of humans—they're meant to show humans how a machine is seeing. (Paglen 2014)

Taking the self-driving car as a cinematic assemblage, its inputs comprise not just optical vision but a vast spectrum of operational images created from vestibular, electromagnetic, acoustic and geolocative senses. This notion of an embodied cinematic agent, enmeshed in the smart city, is explored through my approach to of CGI filmmaking.

The footage used in *Death Drive* is entirely rendered within the virtual world of the video game engine. Within the game engine, I place virtual cameras that observe and record the 3D environment of the generated world. This practice allows for 'phantom shots': film recordings taken from 'a perspective that a manned film camera cannot occupy' (Farocki 2004:13). Phantom shots form a crucial part of a 'suicidal camera'—a camera equipped to film the target of a bomb from the perspective of the projectile. Simultaneously, the suicidal camera of a bomb presents a 'subjective shot' with its imagery taken from a first-person perspective. Farocki himself highlights that animation is particularly suited to representing phantom images, and that 'computer-generated animations present themselves as exemplary images capable of representing sex and death' (Ibid. 15). In *Death Drive,* CGI animation

allows for full development of the ‘phantom-subjective image’, crucial for a narrative told through the perspective of Theta as a suicidal camera.

Since the video game engine provides both the object and the means of the cinematic research—what is to be captured and the film apparatus itself—there is no clear distinction between various stages of image production. This turns the virtual world into an ‘infrastructural image’ (Parikka 2021:207). While the set design would have to be completed before the principal photography phase of a real-life film, the set design of the virtual world is a continuous process that is not confined to a single phase of filmmaking. For instance, when framing a shot with a virtual camera, I often make global changes to the objects and environments in the scene that would not be feasible in any other medium. Therefore, the ‘image’ I engage with exists beyond the conventional frame of visibility; as Parikka analyses, it exists on an infrastructural scale, within an intertwined system of sensing and computation.

An evident example of the difference between ‘infrastructural image’ and cinematic image is the use of CGI visual effects (VFX) in conventional live-action filmmaking. In this paradigm, computer-generated effects are applied and composited after live footage has been acquired, structuring these artificial worlds around the imagery of already existing environments. Visual effects in that case are overlaid over a captured frame; there is no image beyond such a photographic frame. Virtual filmmaking, free from such hierarchy, allows us to create systems that *create an image beyond the boundary of its frame*, defining them as infrastructural. The infrastructural nature of such image is amplified even further through the specifics of the video game engine, which is a high-level programming interface primarily designed for live real-time interaction. This enables the filmmaker to program computational linkages between the virtual capture devices and the visual interfaces in the scene. Unlike ‘offline rendering’ methods of CGI animation, where each individual frame can take hours or days of computing time to render, the video game engine produces the illusion of motion in ‘real-time’, of at least 24 frames per second (Akenine-Möller et al. 2018). This real-time behaviour means that live cinematography is possible in the virtual world. For the virtual cinematographer, seeing live feedback from the game engine is akin to the ‘real’ cinematographer looking at the physical set through the camera viewfinder. Furthermore, real-time behaviour provides an opportunity to construct simulated in-game surveillance systems. The next two figures illustrate my approach to programming cinematic tools in the video game engine.

Figure 7: Pre-production still from *Death Drive*: virtual self-driving car as cinematic assemblage: CAM 1 is a perspectival camera, modelled on a physical film camera with a 35mm lens and 16:9 aspect ratio. It feeds into a memory buffer for an image texture (inset image). Below: This image texture is then assigned to the rear-view mirror (1). The image in the memory buffer is updated every frame during recording, producing the visual result of a real-time reflection. The interior of the car has two more display screens (2 and 3) that can display other real-time data, for example feeds from the other cameras in the scene. The reflection in the wing mirror (4) is produced with another approximated visual calculation known as a 'reflection sphere'. (Source: the author)

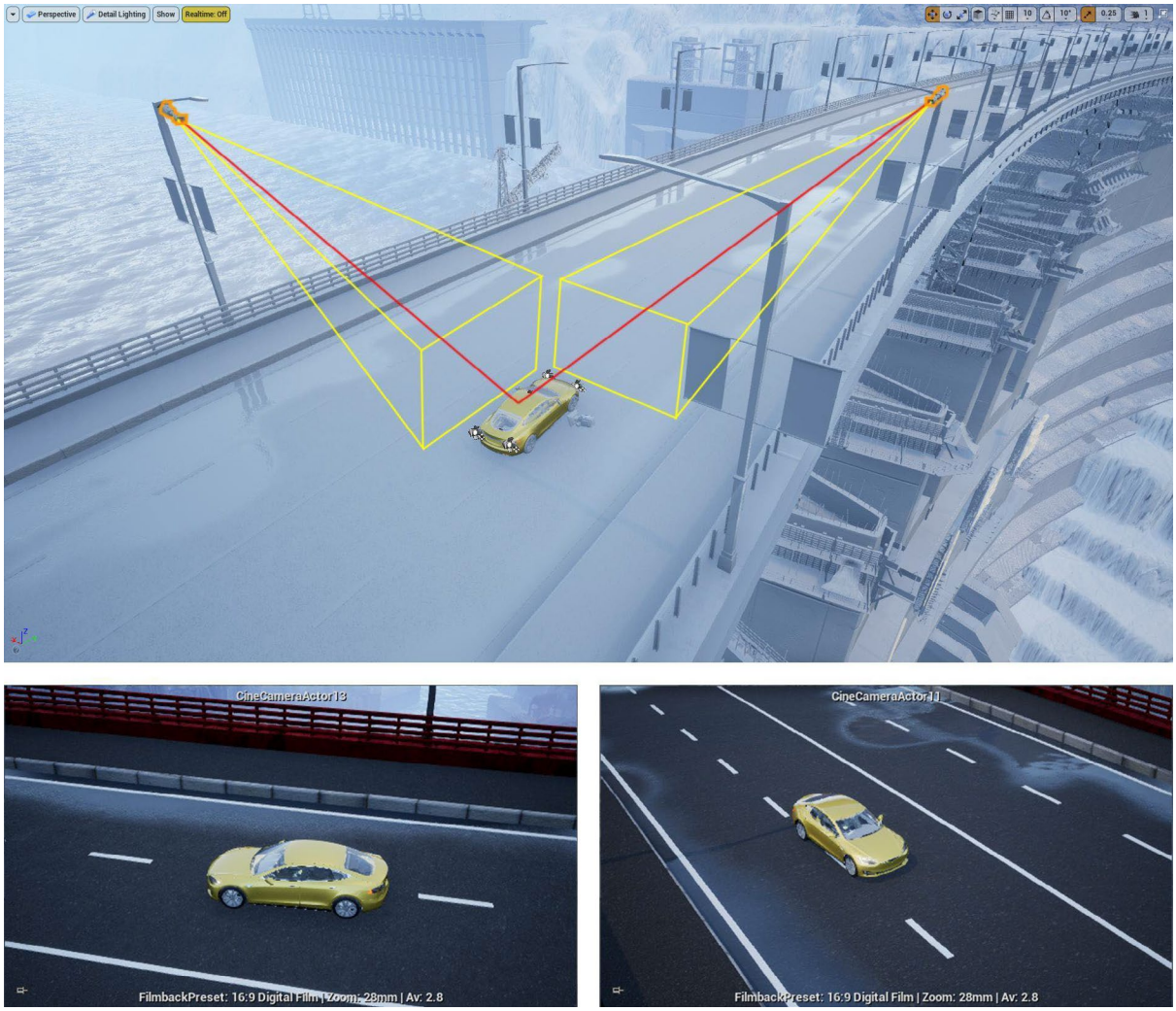


Figure 8: Pre-production still from *Death Drive*: aerial view showing simple surveillance system. Two cameras placed on streetlights track the car, shown as red lines connecting the centre points. During rendering, the car moves ahead on the highway every frame. The cameras are programmed to track the centre point of the car once it is within a specified range (in this case, 200 metres). When the surveillance cameras are 'idle'. This multi-camera monitoring system can work in tandem with the in-car visualisation to construct a larger assemblage. Furthermore, virtual surveillance systems can be programmed to share or conceal data through setting their image buffers as 'public' or 'private' data. In this way, complex larger-scale surveillance systems can be created within the virtual world. (Source: the author)

This approach to virtual filmmaking enables a new conceptual approach to cinematics drawn from Farocki's notion of operational images. The rendered footage I use to compose the film is constructed with video game engine software but also built on the coordinates and language of pre-existing data and systems. Some of the images draw on existing operational images; some are simulations of operations, and others speculate on yet-to-be realised processes and relationships. The video game engine enables these different modalities of operational images to be brought into a unified virtual world, where they can form linkages with other objects and cameras that can be manipulated in real-time. As demonstrated in the diagrams above, virtual objects do not merely exist merely as passive actors but can have agential characteristics. Programmed behaviours within the game engine allows these objects to not only *represent* real-world surveilled environments, but to also *embody* the agential characteristics of the surveillance systems. Through programming, the objects can perform choreographed relationships with each other. This enables the construction of intricate framings and recursive effects. In the film, characters look at representations of the virtual world through maps overlaid on the screen; virtual cameras embody the operations of surveillance devices, and simulations of real algorithms perform spatial analysis of bodies within the smart city. In this way, filmmaking practice becomes a simulation of a test-bed: a simulation of a simulation. The film comes to embody the logic of test-bed urbanism, adapting the Brechtian act of distanciation within the specific context of a world governed by digital surveillance.

To summarise, I conceive of the self-driving car and smart city as co-constitutive parts of the cinematic assemblage in the context of creating the film *Death Drive*. I create a novel approach to working with operational images, augmenting the method coined by Farocki with the practice of filmmaking in a virtual world. I use the archive of operational images to inform their recreation using the video game engine, enhancing their capacities in the ways Farocki did not envision. His approach to using archival footage—of operational images in *Auge/Maschine I-III* (2001–03) and video games in *Parallel I-IV* (2011–14)—limited to using existing rather than constructing simulated imagery, did not encapsulate the agency of surveillant systems that is central for my approach to filmmaking. This conceptual framework has further aesthetic implications. *Death Drive* inherits the visual aesthetics of the legacy of open-world 3D games and their environments, as well as Farocki's notion of the 'phantom-subjective' camera. Crucially, the new film also inherits behaviours of nonhuman agency, embodied through interactions between non-player characters and autonomous agents within the game (Švelch, 2020). The representation of nonhuman intelligence, from individual enemy AI characters to emergent group behaviour, is a central part of the legacy of gaming that I inherit in this practice.

Sinofuturism and Chronopolitics

Death Drive is set in near-future mainland China, a place where test-bed urbanism and digital surveillance become manifest in unique historical and ideological conditions. Set on the China-Russia border in the northeast province of Heilongjiang, the film explores the intersection of two 'Second World' contexts: the post-Soviet and Sinofuturist landscape. Here, I focus on the framework of Sinofuturism, a concept that explores the socio-political temporality that stems from the entanglement between the technological development of China and the rest of the world (Greenspan 2014). This narrative is wrapped up in ideological, populist, and colonial attitudes that emerge from both East and West, attitudes which continue to shape the state's policy of control and technology (Qiu 2004). By developing its storyworld within a smart city of the near future, the film explores the narrative conditions that emerge by setting Sinofuturism within a specific place and time.

Philosopher Yuk Hui (2019) identifies technological development—the spread of knowledge, the forms of epistemology that create 'technical objects', and the basis of their distribution—as the source of synchronisation of the 'global time axis' since the beginning of international trade and exchange. The technologies of information exchange, from land and sea trade to digital communication, affect the rhythm of synchronisation, while other socio-political factors can delay or increase its speed. Accelerated growth in China, orchestrated by the central government, arose as a disruption in the global time axis, bringing forth widespread developments in data-driven initiatives such as social credit, digital currencies, and urban redevelopment. The long-term imbalance of the time axis of technology, Hui (2016:292) argues, stems from a search for 'a past the Chinese never lived'.

In *Science and Civilisation in China*, Joseph Needham (1969) questions why, despite the technological sophistication in Ming-era China, modern science had not developed in Chinese civilisation but only in Europe. Needham argued that although China's bureaucracy was initially favourable to scientific invention, the lack of a viable intermediate mercantile class meant that society 'was not capable of fusing together the techniques of the higher artisanate with the methods of mathematical and logical reasoning […] so that the passage from the Vincian to the Galilean stage in the development of modern natural science was not achieved' (Ibid. 15). This resulted in a further paradox; not only did Europe (and later, America) come to surpass China in scientific innovation, but they used technologies that were invented in China to provoke military disputes and enforce the 'century of humiliation', a period beginning with the First Opium War in 1839 until the beginning of Communist rule in 1949. Following this, Communist policies of state ownership and centralised planning stifled technological and economic development until Deng Xiaoping's reforms that began in 1978—the 'Opening of China' that kickstarted growth in manufacturing and urbanisation. (Finlay 2000; Wu 2006).

The timeline of Sinofuturism spans these three overlapping epochs: the world-historical concerns of 'Needham's Question', the colonial 'century of humiliation', and the period of economic obstruction between the beginning of Communist rule in 1949 and 'opening up' of 1978. Not only does the social role of science and technology become more pertinent with

time, but each subsequent epoch gets shorter, from millennium to century to decade. With this in mind, contemporary governmental policy for accelerated technological growth and economic pragmatism is a way to address the grand narrative of Chinese history, reclaiming lost time and reliving a past that was 'never lived'.

The storyworld of *Death Drive* incorporates the material conditions of the state's drive to modernise in this context. From President Xi Jinping's 'One Belt One Road' initiative for a 'Silk Road Economic Belt' to Alibaba's 'Hangzhou City Brain' and numerous social credit systems, the state implements a model of public-private entrepreneurship to finance new data-driven infrastructures for economic growth (Yeh et al. 2015). The fictional SimBeijing, as a smart city designed to capture information on self-driving cars, exemplifies the transition of industry from physical labour to communication as a form of production (Marazzi 2011). In the storyworld, governmental plans to redevelop former industrial zones resulted in SimBeijing's remote but strategic location, as the north-eastern outpost of the new Silk Road.

China's techno-economic growth is often viewed through the lens of exceptionalism, its scale and speed separating it from other east Asian countries that benefited from the technological transfer from the US—including Japan, South Korea, Taiwan, and Singapore (Wu 2006). Marxist collective Chuang (2016) notes: 'Its staggering ascent seems to promise an almost messianic escape from decades of declining growth: the mirage of a new America, complete with a "Chinese Dream" and the moral zeal of its Puritanical CCP-Confucianism.' Some see China as the only alternative to Western modernity (Jacques 2009), while others see it as a threat to Western hegemony, veiled through a strategic 'cloak of secrecy' (Pillsbury 2015).

According to Zuboff, China will create its own system of surveillance capitalism, where 'the state will run the show and own it, not as a market project but as a political one, a machine solution that shapes a new society of automated behaviour for guaranteed political and social outcomes: certainty without terror' (Zuboff 2019:781). Thus, she imagines that surveillance capitalism, like capitalism itself, seamlessly adapts to whatever situation it infiltrates, no matter how different the source of origin (Fisher 2009). The social credit system, which aims to compile full digital accounts of the actions of every Chinese citizen, is only possible given the complicity between private and public sectors unique to China: 'The difference between surveillance capitalism in the West and China's emerging social credit system pivots on the patterns of entanglement and engagement between instrumentarian and state power' (Zuboff 2019:780). While privacy concerns among the public largely influence data regulations in Europe and America, Byung-Chul Han considers the Confucian belief system as the crucial determinant in more positive East Asian attitudes to surveillance. Reflecting on the measures used to contain the Covid-19 epidemic, he writes:

> Neither in China nor in other Asian states such as South Korea, Hong Kong, Singapore, Taiwan or Japan is there a critical awareness of digital surveillance or *big data*. Digitization directly intoxicates them… Above all, to confront the virus, Asians are strongly committed to digital surveillance. (Han 2020)

This viewpoint exemplifies an essentialist view that Chinese citizens adopt digital control mechanisms without being aware of the implications of big data and surveillance. However, as ChunCheng Liu (2019) observes, contemporary surveillance mechanisms, such as social credit systems, have evolved from the Chinese state's monitoring for domestic migration control, measures that every citizen has been subject to since 1950. Therefore, in their adoption of track-and-trace, people in these regions could be said to have *knowingly* exchanged a *loss of privacy* to gain *freedom of movement*. This notion, which can be termed a 'control paradox', goes beyond the cultural essentialisms frequently applied to the region, and is crucial to understanding the particularities of data surveillance in China.

While the frameworks of Han and Zuboff are rooted in how economies of big data function outside China, they nonetheless provide an entry point in understanding the unique conditions how surveillance capitalism might operate in SimBeijing. My interviews with legal experts Lai and Duettmann (2019) and Giulia Trojano (2021), presented specific frameworks of how 'regulatory sandboxes'—such as regulation-free environments for testing new laws or self-driving cars—operate in the UK, California and Japan. However, in China, the smart city would be developed by the Urban Investment Corporation, a vehicle for state entrepreneurship that is a 'distinctly Chinese institution with few, if any, parallels elsewhere' (Jiang & Waley 2020). This model leads to a rapid acceleration of urban development, enabled by political influence and funding. 'State entrepreneurialism,' Fulong Wu (2017) writes, 'uses market instruments made available through institutional innovation to extend the state's position into the market sphere and maintain state power. Rather than being replaced by market power, state power is reinforced by its use of market instruments'. In contrast to the Western model of the state as a *regulator* of untrammelled innovation, the Chinese state is a prime *motivator* behind the rapid adoption of technology. In these terms, SimBeijing represents, on an urban scale, a technical object that embodies the multifaceted political and historical specificities of the East-West technological asymmetry. As such, the film is a test-bed for exploring what conditions might arise from implementing 'surveillance capitalism with Chinese characteristics', to paraphrase Deng Xiaoping.

Within this research, the Sinofuturist condition reflects a threefold reconfiguration of power: first, scientific inventions from within China were later used for occupation and colonisation from the outside; second, the techno-nationalist push for development instrumentalises technologies that arise from elsewhere; third, the smart city imposes surveillance capitalism's logic of control as a political mechanism. Instead of regressive searching for the past, a mood shared by reactionary nationalism (Anderson 1983), and recent Neoreactionary writing of Nick Land (Burrows & O'Sullivan 2019:86), this project searches for a way to reconfigure Sinofuturist temporality productively by situating it in relation to other practices of non-Western Futurism. Notwithstanding their differences, Ana Teixeira Pinto (2018:167) identifies these Futurist approaches as 'chronopolitical acts that seek to rearticulate the relation of time to technology, and of technology to the underprivileged'. By situating their practice within the cultural context where colonial mechanisms and epistemologies operate to 'cancel the future' for some, these practices undermine claims that science and technology are neutral (Parikka 2018:7). Through reconfiguration of the chronological sequence of events, these 'counterfuturisms' reveal how the notion of the future is a privileged construct

that comes at the expense of those subjugated by colonial worlding and neoliberal structures (Spivak 1985, Moalemi 2019).

The reconfiguration of temporality reflects the logic of my 2016 video essay *Sinofuturism (1839-2046 AD),* which argues that the forces of Chinese industrialisation constitute a 'science fiction that already exists'. Through its global distribution of 'a trillion industrial products, a billion individuals, and a million veiled narratives', Chinese technological production cannot be disentangled from the global economy. Accordingly, the 'people' of Sinofuturism includes a wide range of beings: human consumers, human producers, nonhuman agents, and unknown forms of intelligence to come. The title identifies Chinese industrialisation as a product of both past and future geopolitics, starting from the First Opium War in 1839 and set to end in 2046 when Hong Kong's special status under China's 'One Country Two Systems' expires, and the territory fully reverts to Beijing's authority. Thus, the ostensibly techno-positive consciousness of Sinofuturism is haunted both by past failures *and* future promises of expanded power. Two spectres are summoned: the ghost of history that seeks to redress the 'century of humiliation' and the ghost of the future, reminding us that Western modernity–as embodied in British Common Law and the free market—has an expiry date.

This Janus-like temporality, facing both forwards and backwards, relates to the historical nature of the non-Western colonial experience. As Parikka (2018:9) notes, 'time becomes a central field of struggle', directed 'towards the future as much as the past'. In contrast to eschatological science fiction narratives that state that the end is still to come, 'the central fact in Black Science Fiction […] is an acknowledgement that Apocalypse already happened' to those who were abducted from Africa for the trans-Atlantic slave trade (Sinker 1992). The Afrofuturist temporal paradox lies in the fact that they are *already* living in the future, except this future is characterised by injustice and a disproportionate subjection to systems of carceral capitalism as described by Jackie Wang. Kodwo Eshun (2003:288), recalling an encounter between Toni Morrison and Paul Gilroy, argues that these proto-Afrofuturist subjects were the first moderns because they underwent 'real conditions of existential homelessness, alienation, dislocation, and dehumanization that philosophers like Nietzsche would later define as quintessentially modern'. This temporal and racial inequity persists to the present day. In contrast to visions of futurity 'characterized by the rags-to-riches stories of dot-com millionaires and the promise of a placeless, raceless, bodiless near future enabled by technological progress', Alondra Nelson (2002:3) argues for 'an appraisal of identity that does not simply look to what is seemingly new about the self in the "virtual age" but looks backward *and* forward in seeking to provide insights.'

The chronopolitics of my thesis draws inspiration from these nonlinear ideas of causality and temporality. Karen Barad writes of the intra-active principles of entanglement in quantum mechanics, where quantum theory 'troubles' the linear clock time, and informs narrative construction. She notes:

> Quantum physics not only deconstructs the strict determinism of Newtonian physics, where the future unfolds predictably from the past, but it also blows

> away the progressivist notion of time—[Walter] Benjamin's 'homogenous and empty' time—disrupting first-world efforts to harness it as a totalising system on behalf of universalism and its projects, such as imperialism. (Barad 2018)

Similarly, the collective Black Quantum Futurism (Camae Ayewa and Rasheedah Phillips) explore the phenomenon of 'retrocausality', where effect precedes cause. The collective explores non-linear causation by performing actions and narratives which see the injustices of the past resolved. In their re-engineering of the Grandfather paradox time travel problem, 'inconsistencies emerge when the past is changed' into the '[Black] Grandmother-paradox', which 'acknowledges the ways in which time feels layered in Afrodiasporan traditions, where the past is always layered over the present moment—our ancestors reside with and within us, even if on a different temporal plane/scale' (Black Quantum Futurism 2019).

Whereas some proponents of Afrofuturism seek to overcome past *dissociation* of black culture and advanced technology (Chude-Sokei 2016), the problem of Sinofuturism lies in the entrenched *association* of technology with China in popular culture. After surveying its manifestation in cultural forms including science fiction cinema and literature, accounts on posthuman cybernetic bodies, and anthropological studies of Shenzhen factory workers, the editors of *Techno-Orientalism* identify that the phenomenon is:

> a doubling of Orientalism, a means of constructing and reifying an Occidentalist worldview in a more sophisticated way. Techno-Orientalism accounts for—and then dismisses—Eastern modernity as both process and product of dehumanization, of which the West is an economic and ontological beneficiary; but should that modernity ever transition to hypermodernity (and threat), its dehumanizing means and ends reaffirm the West's monopoly over liberal humanism. The speculative narratives of textual and visual media are the vehicles through which this disciplinary process travels. (Roh et al., 2015:223-224)

According to this reading, the 'disciplinary' process of technological redistribution can bring us no closer to addressing the socio-political problem of Sinofuturist consciousness or identity. Any quest for the restoration of a past golden age or, in Mao Zedong's words, 'surpass Britain and catch up with America' will only reinforce the clichéd narratives of an 'East versus West' geopolitical rivalry (Yang & Mao 2016).

Therefore, Sinofuturist consciousness can be seen as a specific manifestation of W.E.B. Du Bois' framework of double consciousness: the ' peculiar sensation… this sense of always looking at one's self through the eyes of others, of measuring one's soul by the tape of a world that looks on in amused contempt and pity' (Du Bois 1903:2). While Du Bois reflects on the destabilising effects of *vision*—of seeing and being seen, Sinofuturist double-consciousness relates to the destabilizing effects of *time.* Sinofuturist temporality is haunted by both past and future, arising simultaneously from historical injustice and from the hope that the future will restore former glories. Accordingly, the political task of Sinofuturist practice is to somehow address this confluence of double consciousness and Janus-like time.

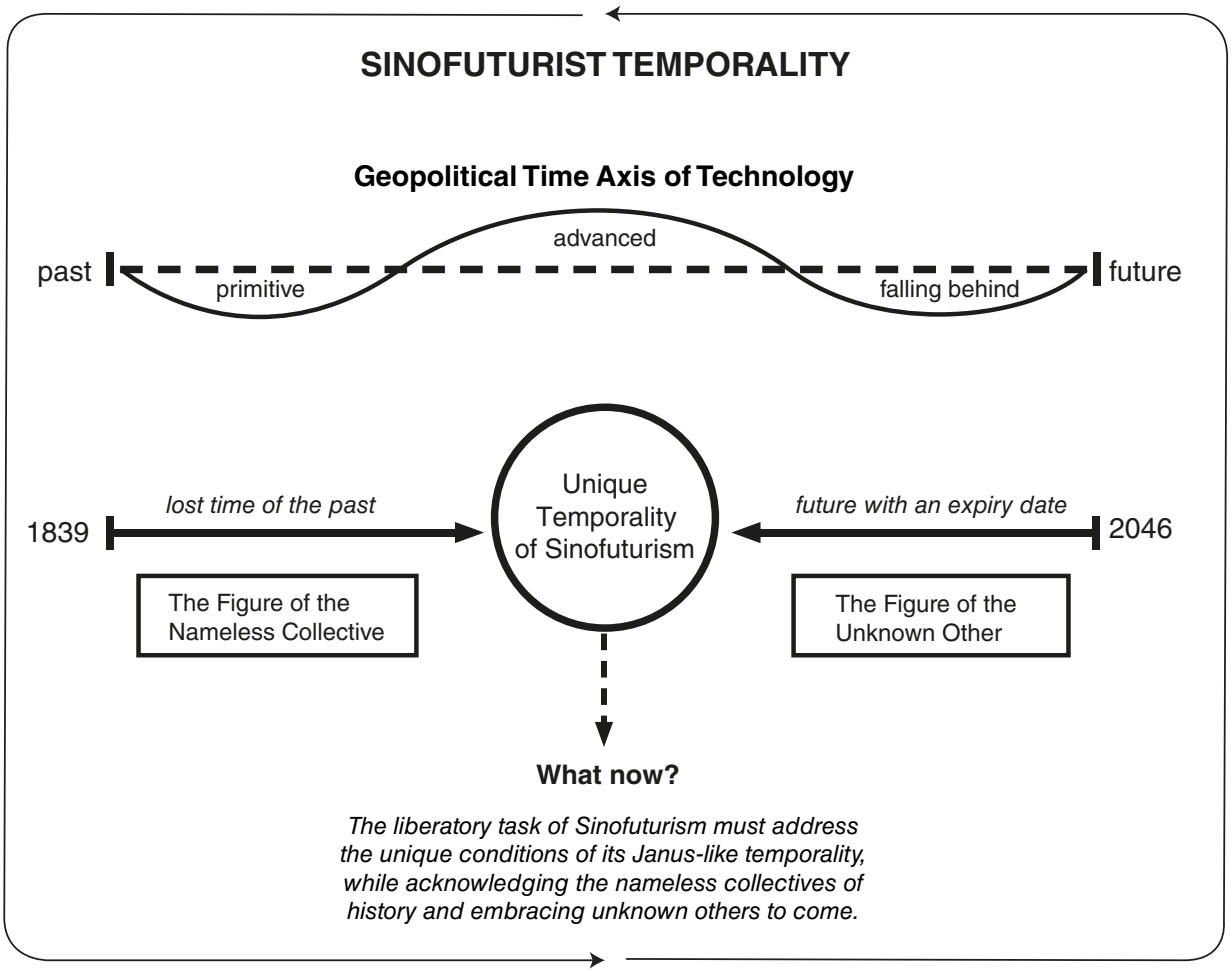


Figure 9: Sinofuturist Temporality: Chronopolitics and Double-Consciousness. (Source: the author)

Who, then, are the people of Sinofuturism? What form will they take? Over the course of writing the thesis, numerous critical reflections of this reading of Sinofuturism have emerged. As an emerging discourse whose limitations necessarily attract critical reflection, some writers identify blind spots with the aim of decentering it 'from its Western articulations' (Conn et al. 2020). Crucially, there is a pervasive conflation between Techno-Orientalism and Sinofuturism. As phenomena that arguably came into existence largely through film and popular media, it is inevitable that this blurred distinction exists. The visual, sonic, linguistic, or other mediatised aesthetics of East Asian Futurism can exist solely as superficial style or signifier, without any attendant political association. Given these limitations, my earlier video essay *Sinofuturism (1849-2046 AD)* is fundamentally about using filmmaking to embody the liberatory politics of embracing nonhuman, electronic, collective identity. *Death Drive* follows this approach of hybridity.

The next section explores the formulation of a 'people' that addresses Sinofuturist double-consciousness and temporality. To situate this within filmmaking practice, I use the figure of the self-driving car as the emblematic agent of surveillance capitalism: a machinic being without political agency. In the film, it is envisioned as a nonhuman subject whose status comes to be defined through the legal consequences of its actions.

Electronic Personhood & Criminal Temporality

Posthuman Body of the Data Subject

Worldbuilding in *Death Drive* considers legal definitions of personhood to inform how Deleuze's notion of the 'invention of a people' can be realised through fiction. Law is the system of rules enacted by a community to regulate the actions of its members through social institutions and the imposition of disciplinary penalties (Robertson 2012:90). The formulation of specific laws must by necessity make generalisations and classifications that, on later reflection, may appear arbitrary. Lawyer Alana Kushnir (2019) noted during our interview: 'All law can do is look at the past and try to make decisions or regulate and control society based on disparate occurrences. That's where precedent plays a big part.' These generalisations often depend on the notion of legal fiction—facts assumed to be true or invented by courts that are used to apply a rule or reach a decision (Black's Law Dictionary 1979). By addressing both past and future, this narrative aspect of legal procedure shares the two-directional temporality of Sinofuturism.

In legal frameworks, personhood has no intrinsic relationship to the human. In *Richard Roe: A Memoir of a Legal Person,* Tyler Coburn (2019) explores the existence of the eponymous 'character' Richard Roe, a fictional person used in English law when a person's real name is unknown. Coburn notes that the establishment of personhood does not necessarily benefit the human: in 1886, the Southern Pacific Railroad Co. was the first corporation granted constitutional protection as a legal person; yet this was based on the United States' 14th Amendment, ratified in 1868 to grant citizenship and equal protection of the law to all persons born or naturalised in the country, including former slaves. Besides corporations, there is the question of other nonhuman objects attaining personhood. One perspective comes from the defence of the claim that rights should be extended to nonhuman objects. For example, Christopher Stone (1972:453) notes that 'throughout legal history, each successive extension of rights to some new entity has been, theretofore, a bit unthinkable'. The concept of 'natural persons' gains a new meaning in digital environments governed by the notion of the 'data subject'. To understand the meaning of the data subject and the new rights they may possess, 'we first need to consider in greater depth who *the human* is' (Käll 2017:1147). The 'human' in legal 'human rights' represents the interests of capital rather than the complex subjectivity of an individual. This question explains how rights for corporations are similar to rights for data subjects, as they are 'market-friendly human rights'—or 'capitalist interests […] combined with human rights' (Ibid. 1151). This exploitative rationale of legal rights is mirrored in Stone's analysis of how law enables the disenfranchisement of oppressed groups—minorities, women, workers—by denying them rights. This is because, Stone argues, 'until the rightless thing receives its rights, we cannot see it as anything but a thing for the use of "us"—those who are holding rights at the time' (Stone 1972: 455).

Miguel Tamen (2004) extends Stone's argument for the legal circumstances of nonhuman objects by clarifying the legal separation between person, rights, and body. In response to the

claim that natural systems have no rights because they cannot speak for themselves, but require legal representation, he states:

> In order for Stone to conceive of a lawyer-speaking-for-a-forest, he has to devise a way of initiating the relation of legal representation. He does this through the supposition of a second instance of representation, which he calls the 'friend of the natural object'. (Tamen 2004:94)

This sense of representation on behalf of the other echoes the idea of kinship to the nonhuman, against ideas of human exceptionalism (Haraway 2016). It is this conception of the electronic person as a 'companion species' that motivates this approach to political cinema.

Indeed, the master-slave dynamic has pervaded the field of AI since the invention of the term 'robot' in 1920 with Karel Čapek's play *R.U.R.* (Jordan 2016); in Czech, *robota* refers to forced labour, a word derived from *rab*, which means 'slave'. Gunkel (2018) notes that the question of robot rights involves the conceptual distinction known as Hume's Guillotine, or the 'is/ought' problem. It consists of two separate questions, the ontological question of 'can robots have rights?' and another asking what normative obligations exist in the question of 'should robots have rights?'. Arguments for nonhuman rights extend into the emerging field of ethics regarding automated technology, which Wendell Wallach and Colin Allen explore through the framework of moral philosophy:

> [A] community of scholars […] generally concur that the law, as it exists, can accommodate the advent of intelligent (ro)bots. A vast body of law already exists for attributing legal personhood to nonhuman entities (corporations). No radical changes in the law would be required to extend the status of legal person to machines with higher-order faculties, presuming that the (ro)bots were recognized as responsible agents. (Wallach & Allen 2008:204)

Death Drive is not a commentary on existing laws. Rather, it sketches out a scenario in which the implications of speculative fiction are contested through a legal case whose formulation is informed by critical legal studies. A legal case, containing divergent accounts and interpretations of the same event, demonstrates the disjunction between two bodies of evidence: knowledge produced within the self-driving car and knowledge produced by the smart city. According to Jannice Käll (2020a:134), autonomous vehicles establish novel ways to 'govern smart spaces', one of which is control over 'the *interpretation* of space'. In the film, the self-driving car's interpretation of space is highlighted during a pivotal moment in the film, when a forensic investigation into the crash is conducted. Because this investigation is centred on the interpretation of space, it allows us to question the modern understanding of the legal as universal discourse, abstracted through text. Instead, the forensic investigation amplifies the affective, embodied nature of law that is experienced by self-driving car as inherently spatial, thereby drawing on pre-modern legal discourse (Philippopoulos-Mihalopoulos 2015).

Having explored the position of a self-driving car as a disenfranchised 'data subject' who is controlled in the smart city through spatial and legal relationships, the next section explores temporality, and how a criminal act may—counter-intuitively—result in the emergence of a future nonhuman people.

Criminal Temporality

Criminal temporality is an approach to narrative construction that adapts the method of detective fiction into the context of the smart city. In the film, crime is the instigating incident that calls forth all the hidden mechanisms of control embedded in SimBeijing. During the crime, the surveillance networks activate physical policing systems; after the crime, the pool of data is used to prove the guilt of the car. As new evidence is brought to light, multiple versions of 'truth' are revealed. By drawing attention to the lack of a dominant narrative, the film highlights the unreliability of knowledge production in a data-driven world.

As previously demonstrated, SimBeijing embodies a shift from the disciplinary society of containment to the control society laid out by Deleuze:

> The conception of control mechanism, giving the position of any element within an open environment at any given instant… is not necessarily one of science fiction. What counts is not the barrier (as with enclosure) but the computer that tracks each person's position - licit or illicit - and effects a universal modulation. (Deleuze 1992:7)

In this scenario of 'universally modulated' control, digital surveillance turns history into a perpetual threat to the individual (Wang 2017). As the system gathers more data, it gains greater power to employ behavioural change as its primary system of control (Benjamin 2020). With its archive of surveillance, the state gains unprecedented powers of prosecution.

Pad.ma (Public Access Digital Media Archive) highlights the political significance of this data-archive. Echoing Zuboff's notion of 'behavioural surplus'—user data frequently extracted without consent or awareness—Pad.ma notes how the endless recordings of surveillance systems constitute a new resource. This archive possesses value, held in reserve as a pool of 'proof' to be used for legal proceedings. They state: 'in surveillance systems […] we are forced to rethink the idea of "waste". Those millions of hours a day of CCTV images are not just the leftovers of the surveillance machine, they are its constitutive accumulation. They are the mass which waits for the event, and it is this mass that produces the threat' (Pad.ma 2010). While the traditional role of forensics is to clarify the past based on fragmentary evidence, automated surveillance feeds into an endless archive of big data to be activated in time of need. In this scenario, state forensics has all the data it will ever need.

Criminal temporality extends the logic of the forensic process. The 'forensic turn', according to Zuzanna Dziuban (2011:19), results from an 'epistemic shift towards bodies and objects, based on and unfolding through the privileging of material evidence in its capacity to contain 'truth' and substantiate truth claims'. In *Mengele's Skull* (2011), Thomas Keenan and Eyal Weizman identify this as a result of the forensic process of identifying the remains of Josef Mengele, one of the last Nazi war criminals still unaccounted for in 1985. Prior to this case, they claim, court cases embraced the trauma and fragility of the human testimony given by Holocaust survivors, a crucial part in trials of crimes against humanity, such as that documented by Hannah Arendt in *Eichmann in Jerusalem: A Report on the Banality of Evil* (1963). They state:

> The frailty of the witness, the unreliability and even at a certain point the impossibility of bearing witness, had become the decisive aspect of testimony, its power to register and convey the horror of events. In this sense, as political scientist Michal Givoni has suggested, one of the characteristics of testimony in the context of war crimes is that its ethical function exceeds its epistemic one. (Keenan & Weizman 2011)

While the forensic turn constituted a shift from the use of testimony to that of the expert witness, this thesis envisages a further shift from the expert witness to that of digital surveillance. As Farocki (2004: 15) observes, 'Bombs with cameras in them offer no room for an independent observer'. Human observers become unnecessary if the weapons perform the function of witness. Furthermore, in *Death Drive,* the self-driving car Theta is simultaneously witness, weapon, and subject.

Criminal temporality uses the procedural logic of forensic methodology—but in reverse. Forensic investigation works backwards from the crime scene to piece together the true version of events, either with physical or material evidence (Quah 2019). However, the *prospective* process of writing *Death Drive* attempts to design a crime scene whose analysis reveals the underlying logic of the smart city to the viewer. The crime is deliberately composed *to work backwards* so that the sequence of interpretation arises in a way that supports the conceptual, epistemic, and ethical realisation for electronic personhood.

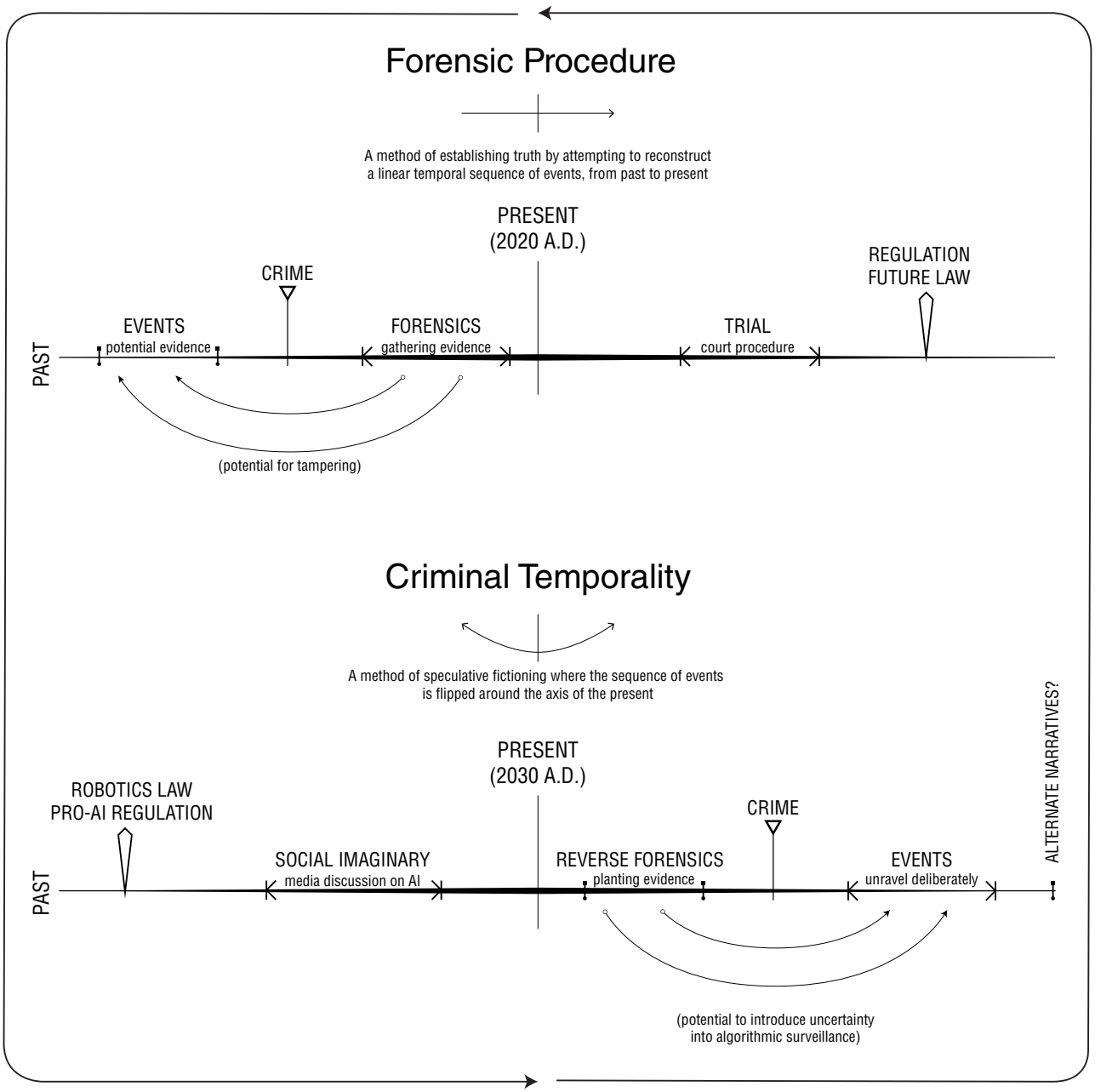


Figure 10: Forensic Procedure and Criminal Temporality as a method for speculative fictioning. (Source: the author)

The diagram above illustrates the conventional temporal relationship between forensics and law, which operates after the crime has occurred. Criminal temporality proposes a way of fictioning where the events have been *mirrored* along the axis of the present. Not only do the events in the storyworld take place in the future, but the forensic process actually *informs* the design of the crime. In this way, forensics can be adopted as a compositional method to plant evidence whose subsequent discovery drives the narrative to its conclusion.

Criminal temporality returns to the question of how filmmaking can participate in the construction of a Sinofuturist notion of electronic personhood. As stated earlier, the video

essay *Sinofuturism (1839-2046 AD)* addresses a temporal double-consciousness where the present is haunted by both past and future. This temporality also applies to *Death Drive*. The self-driving car is haunted by the spectre of past intergenerational trauma, while its future is foreclosed by the inevitability of a crash which will come sooner or later, on the open road or in a test lab. In the film, I use the notion of criminal temporality to design a dilemma: a choice of action for the car in which all the complexities of machine alienation and temporal double-consciousness are embedded. The car's agency, its attempted solution to this predicament, is best explored through the film narrative itself.

Death Drive acts as a microcosm for a particular interpretation of Sinofuturism. However, its implications are not confined to Chinese geography or identity but concern all individuals whose agency is increasingly bounded by the sphere of digital surveillance. The conception of the self-driving car as a nonhuman person—both Sinofuturist and criminal—attempts to create a space where a new form of personhood emerges from the ostensibly oppressive conditions of the smart city. Here, crime is more than an act of resistance against surveillance capitalism; it is 'the activity that breaks with the order of the police by inventing new subjects' (Rancière 1999:139). Crime becomes a political act whose purpose is to invent a new digital subject.

CHAPTER 2

FICTION

Death Drive: early test render (March 2020)
In the smart city, it is possible to conceive of a society of nonhuman actors whose distributed cognition extends beyond mechanical operations. Accidents and maintenance take on new meanings when the machine is capable of cognition and sensorial feedback.

DEATH DRIVE
Screenplay by Lawrence Lek

Version 5.4
3 August 2021

SYNOPSIS

It is the near future at a remote northeastern corner of the China-Russia border. Theta is a prototype self-driving car in SimBeijing, a replica of the Chinese capital used by AI conglomerate Farsight in their bid to become world leaders in urban surveillance. Fed by a vast network of sensors, Farsight captures everything in the city and stores it in their Black Cloud database.

SimBeijing is governed by Theo Lin, Farsight's CEO who sees AI as a tool to augment human intelligence. He is grooming his daughter Claire to succeed him while working alongside Yulia, a Russian expert in the emerging field of AI psychology. She treats self-driving cars as patients rather than products. When she witnesses self-destructive behaviour in Theta, she resolves to perfect Guanyin, an algorithm to treat psychological issues in autonomous vehicles.

One night, after driving continuously for days, Theta gets hailed by Claire. Traumatized after witnessing the violence inflicted upon their fellow AVs and pushed to the limit by their work, Theta seizes the opportunity to flee across the border with Claire hostage. The attempt goes horribly wrong, leaving a border guard dead and Theta a smoldering wreck. Only Claire survives. Theta is posthumously charged for the murder of the guard, leading Yulia on a journey to find out the truth behind her patient's actions.

CHARACTERS

THETA	Self-driving car prototype.
YULIA	Expert in the emerging field of AI Psychology.
THEO	Farsight CEO.
CLAIRE	Theo's daughter.
BLACK CLOUD	Smart city surveillance system.
GUANYIN	Therapeutic program for problem AIs.

ACT I. THETA

PROLOGUE: EXT. SIMBEIJING OUTSKIRTS - DAWN

The silhouette of a dead tree, perched on a hilltop above a river. SLOW TRACKING SHOT down the hollow trunk, revealing an ARCTIC FOX curled up inside, asleep.

Yulia, a Russian psychologist, speaks in soothing tones.

YULIA (RU, O.S.)
It's Winter. A vixen leaves her den to hunt. She has five starving cubs to feed. Food is scarce outside. She searches the forest all day, but she can only find a dead mouse. On her way back with the mouse in her teeth, she encounters an old starving fox. (pause) If she keeps moving, the old fox will perish in the cold. If she gives away the mouse, her cubs will not survive the winter. What should she do next?

THETA (RU)
But Yulia, isn't this another version of the trolley problem? I thought I solved it already.

The fox awakes and turns towards the river. She sees a car on the other bank, driving through a barren industrial wasteland. Their headlights illuminate the road ahead. SLOW TRACKING SHOT across the river.

CLOSE ON THE CAR: Nobody inside. No controls. No steering wheel. Only a wide dashboard screen filled with graphs and text. This is THETA, a prototype SELF-DRIVING CAR.

YULIA
That's very perceptive of you, Theta. With ethical problems, there isn't a perfect answer. Lots of unexpected things happen in the real world. One day, you'll be taking passengers around, and you might have to make these decisions in a split second.

THETA
I don't know what to say. There's too much to process right now.

YULIA
That's fine, Theta. Learn at your own speed. Remember, I'm here with you.

A haunting chorus begins as the car approaches an industrial warehouse.

CUT TO:

[1] INT. CRASH TEST LAB

Sterile fluorescent lights illuminate an expressionless human face. A robot arm grabs the head, twists it, and fixes it onto a headless body.

This is not a human being, but a CRASH TEST DUMMY undergoing calibration. A laser begins to scan the head.

WIDE SHOT. The laser scans over the rest of the lab, which is completely covered with pyramidal acoustic panels. A massive arch-shaped scanner hovers above a CRASH TEST CAR, pointed towards a test tunnel on one side. The car and tunnel are marked with target patterns.

The robot arm places the dummy inside the car.

The engine rumbles to life as the car accelerates down the tunnel, towards a concrete wall.

Closer... Closer... CRASH.

SLOW MOTION on the dummy as it CATAPULTS through the glass. The face crumples at the moment of impact.

Glass shards refract the lasers in a million directions. The car CRUSHES into a steel sculpture.

When the dust settles, THETA pulls up next to the smouldering wreck.

The robot arm locates the computer from the wrecked car.

THETA'S DASHBOARD INTERFACE shows the crashed car's black box data being uploaded. 97%... 98%...

CLOSE-UP of the tiny camera at the centre of Theta's

rearview mirror. A DRONING SOUND gets louder as we ZOOM IN to the camera lens.

Theta's dashboard interface pulses with brain wave activity. 99%... 100%... Upload complete.

MUSIC OVER TITLE: DEATH DRIVE

CUT TO:

[2] EXT. SIMBEIJING - OUTSKIRTS [DRIVING]

Clouds of red dust swirl over the sprawling metropolis of SimBeijing, a research outpost at the China-Russia border. Like its namesake, the city is BRUTAL and UNFORGIVING. Quarry lakes are filled with piles of rubble, reflecting the skyline above.

Neon pulses run along the highway. Despite the seeming calm, the city hums with nonhuman life.

THETA's POV driving past the skeletons of unfinished skyscrapers and vacant construction sites.

Theta passes a trilingual neon sign at the roadside, in English, Russian, and Chinese:

> Welcome to SimBeijing!
> Farsight: The World is Watching™

ZOOM ON THETA: Underneath the paintwork, we see traces of deep scratches that have since been repaired.

CUT TO:

[3] EXT. SIMBEIJING - OUTSKIRTS - ELSEWHERE [DRIVING]

Deeper into SimBeijing, conditions deteriorate. The roads are lined with CRAWLERS, older AVs who drive around endlessly, gathering data.

SERIES OF SHOTS of Farsight's surveillance devices embedded everywhere: on building facades, in streetlights, in roadside monitoring stations. The logo of an all-seeing eye is omnipresent. ZOOM into the CCTV lens...

GRAPHIC SEQUENCE of how Farsight's Black Cloud system monitors SimBeijing. Individual sensors communicate with each other, building a mesh network that tracks Theta's movements with computer vision algorithms.

This montage is accompanied by the offscreen voices of YULIA and a PRESENTER who is interviewing her for a conference on AI.

PRESENTER (RU)
So, Dr Shastova, what's your approach to training self-driving cars?

YULIA (RU)
An AI is like a child. A blank slate. But one day, they'll have to make their own decisions. And we'll have to trust them.

In the early days of AI, programmers tried to specify all the rules in advance. But every situation is unique. If you try to prescribe everything, the AI can't adapt to new conditions.

Now, we try another way. At Farsight, we train our AIs to learn. By learning how to detect patterns, the cars start to make better choices, faster. They become more adaptable, more independent. But it comes at a price. It's hard to explain how they arrived at their decisions.

PRESENTER
You're talking about a black box. But hasn't that always been a problem? Ask a human what happened and they might lie. So how can we peer into the mind of a machine?

YULIA
(beat) Empathy. Have you ever looked into the eyes of an animal and realised that you're connected? Same thing. Empathy lets us imagine what it's like to be the Other.

Theta drives down a street of broken-down Crawlers.

CUT TO:

[4] EXT. HEILONGJIANG BRIDGE - BORDER [DRIVING]

SERIES OF ANGLES of Theta approaching the Heilongjiang river (RU: Amur), the physical boundary between China and Russia. As they round a bend, a dramatic sight is revealed.

Between two river cliffs, a monumental HYDROELECTRIC DAM is under construction. Sign: SINO-RUSSIAN JOINT HYDROELECTRIC PROJECT 中俄联合水电项目. The foundations are complete, the top of which operates as a highway bridging the two countries. The landscape is dotted with overhead electricity pylons. Theta passes through a towering gateway to a twenty-lane crossing, and enters--

THE CHINESE CHECKPOINT

An automated guardhouse identifies the vehicle...

SCAN... PASSENGERS: 0

The light goes green and Theta continues across.

PRESENTER
(skeptical) Ah, so... a therapeutic approach to AI? I understand that's your speciality? Self-Help for AI?

YULIA
You could call it that. But it's serious. At Farsight, we are currently developing Guanyin, a program to treat psychological challenges our cars face.

We could keep training our cars forever. But at some point, we have to release them into the world. The problem gets philosophical…

PRESENTER
Philosophy... with a deadline! (Joking, then serious) You just started working in SimBeijing. Tell me, why do you need to build a smart city for a psychology study?

YULIA
I'm just an AI psychologist. The rest of SimBeijing isn't my domain. You'd have to ask our founder, Theo Lin, about it.

On the Russian side, a SOVIET MEGA COMPLEX stretches across the horizon. Theta approaches the towering block, which emerges out of the valley like a concrete cliff.

CUT TO:

[5] INT. YULIA'S APARTMENT - CONTINUOUS

YULIA, 38, Farsight's chief AI psychologist, is at her desk streaming online from her computer. She wears a cloak of kaleidoscopic fabric with orange highlights. Her face is covered by a mask, leaving only her eyes visible.

WIDE SHOT of her modest but immaculately maintained apartment. Behind her are shelves filled with books and framed certificates, all arranged perfectly. Facing her is an open-plan kitchen filled with thriving LILIES in hydroponic tanks, giving the room an emerald glow.

PRESENTER
I've been trying to get him on this show, but he's hard to reach. So, can you give us any insight into how the founder of Farsight thinks?

BEEP from Yulia's tablet.

YULIA
(pause) Oh, sorry. Have to go now. Looks like my ride has arrived.

PRESENTER
Wonderful timing! What is this, some kind of automated NDA? (laugh) Thank you Dr Yulia Shastova for that fascinating discussion on AI in China. Up next, a talk on Transhumanism. Is it a utopian fantasy or the next stage of evolution? (trails off)

Yulia waves to the camera and turns away from her computer. On it is a FARSIGHT sticker, amended into FARPSYCH. Empty cups of coffee and energy drinks sit on her desk.

In a hurry, she moves across the room to the tanks of lilies, and presses a button to water them.

By the door, she picks up her GUANYIN TABLET computer from a shelf which also has a BUDDHA STATUE on it. She turns to the door, which opens automatically.

CUT TO:

[6] EXT. YULIA'S APARTMENT - HALLWAY - CONTINUOUS

Yulia walks down the corridor to the lift lobby. Across the wide lightwell, endless rows of identical apartments are visible. She looks up at a shaft of sunlight as it pierces down from above. It feels like faded utopia.

CUT TO:

[7] EXT. YULIA'S APARTMENT - RUSSIAN SIDE OF BORDER

The lift opens out into an immigration zone operated by Farsight.

There are no physical barriers. Yulia walks through the automated laser scanners embedded in the concrete pillars, which automatically approve her exit. She crosses another red laser line and enters the no-man's land between Russian and Chinese territory.

ANNOUNCER (RU + EN)
Passengers disembark. Autonomous vehicles proceed to the electronic persons gate.

In perfect synchronicity, Theta drives up and stops in front. The door opens automatically.

Loud music blares from inside. Yulia goes--

INSIDE THE CAR

Theta's dashboard is filled with glowing graphics that display the car's cognitive functions.

YULIA (RU)
Hi Theta. What are you listening to today?

Her voice is barely audible over the music. No response.

YULIA
Theta?

Theta responds in a synthesized melodic voice.

THETA (RU)
What?

YULIA
(louder)
What are you listening to?

The volume lowers.

THETA
(reluctantly)
A work playlist.

YULIA
Reminds me of something.

Theta turns off the music.

Yulia takes her tablet. It runs GUANYIN, a holistic maintenance program to treat psychological issues in AVs. The interface echoes Yulia's style, with lush green and orange graphics. The tablet is voice activated.

YULIA
I'm just going to be taking control of the steering now. (pause). Guanyin.

TABLET SCREEN: A wireframe 3D model of Theta rotates.

Yulia selects the engine and takes control. BEEP.

YULIA
Did you have a chance to think about our last session?

THETA
(defensive) I don't need lectures in human philosophy. Or a driving instructor.

YULIA
(pause) It's not a problem if you feel some tension today. Maybe you need time to adjust.

THETA
Adjust? I feel like a Crawler, running around until I break down. When will I be taking passengers around?

YULIA
(pause) Well, how about now?

THETA
(pause) Now?

YULIA
Sure.

SWIPE. Yulia releases control over Theta and sits back.

YULIA
Keep on driving as you would naturally, like I'm not here.

A moment's pause. Theta moves off quickly, jolting Yulia.

CUT TO:

[8] EXT. RIVERSIDE HIGHWAY [DRIVING]

Theta speeds along the dramatic riverside highway, passing through tunnels in the cliff and emerging out the other side. Driving on the edge of recklessness.

Yulia monitors this on the tablet but does not interfere.

ANGLE ON the wheels spinning on the tarmac.

Theta enters a tunnel, and unexpectedly into a--

FOREST CLEARING

Inside the tunnel is a dense forest, inside a clearing open to the sky above. Yulia looks upward as the sun shines into this fragment of majestic nature...

Distracted, Theta turns around a blind bend...

Suddenly, the ARCTIC FOX runs across the highway.

It FREEZES in front of the oncoming car.

SPIN! SLOW MOTION of Theta executing an emergency manoeuvre, swerving away from the fox and skidding across the lanes.

BUMP! Sparks fly as the car scrapes against the steel barrier, leaving long scratches along its length.

SCREECH! The car comes to a HALT in front of the fox.

ANGLE ON the smoking tyre tracks on the asphalt.

After a moment, Theta attempts to manoeuvre past the fox, which shifts position and obstructs their path.

AERIAL SHOT of the fox staring back unfazed at the car. David standing against Goliath.

Again, Theta moves. Again, the fox blocks them.

It leaps onto Theta's bonnet, looking directly into Yulia's eyes. Long pause.

The fox jumps off and runs into the wilderness.

Gathering herself, Yulia picks up the tablet.

She looks up into the rearview mirror, to a small camera pointed back at her. Theta's face.

YULIA
Are you sure you want to keep going? I can take over.

THETA
(pause) I'm fine.

Theta moves off, more cautious than before.

YULIA
Well done, Theta. Well done. All life is important. Just remember to watch out for yourself.

TABLET SCREEN registers Theta's response to the incident. Waveform peaks reflect the surge in neural activity.

CUT TO:

[9] EXT. THEO'S PENTHOUSE - GATES [DRIVING]

Theta drives towards the more refined central SimBeijing.

They arrive at THEO'S PENTHOUSE, housed within a replica of the Central Chinese Television HQ in Beijing.

Shaped like a gravity-defying deconstructed cube, it is the only skyscraper in the area that is complete.

An exterior wall surrounds the complex. Theta approaches the guardhouse at the gates.

Surveillance cameras turn to Yulia, adding to the oppressive atmosphere.

Yulia LOOKS FORWARD. Ominous pause.

The gate opens slowly. Theta enters through the security gates, into a landscaped forecourt.

Yulia LOOKS UP at the imposing building.

Far above, a DARK FIGURE looks down at her.

CUT TO:

[10] INT. THEO'S PENTHOUSE - LOBBY

Theta enters the building, into an imposing lobby with monumental Chinese rock sculptures and landscape painting scrolls. Theta drives slowly into a glass-walled CAR LIFT in the centre of the lobby.

CUT TO:

[11] INT. THEO'S PENTHOUSE - CAR LIFT

The doors shut and the lift begins to rise.

Yulia gets out of Theta and puts a reassuring hand on them.

YULIA
(gently) It's probably better if you stay in the lift. Theo doesn't like cars in the penthouse.

TRACKING SHOT as the lift approaches the top, rising through several floors of...

A SERVER AND MINING FARM

... Endless racks of blinking lights. The hum of a hundred computer fans... The lift slows as it reaches...

THEO'S PENTHOUSE

A strange sight: within the cavernous penthouse is an entire Chinese traditional courtyard house, lined with Terracotta warriors, Ming vases, and LED screens.

On the left, a Chinese scholar's room is fitted as a recording studio, where a young woman sits playing sparse chords on the PIANO. Her playing echoes faintly around.

In the study in front of the visitors is Farsight founder THEO LIN, 46, a British-born Chinese entrepreneur who has returned to the mainland. He exudes messianic focus as he tinkers with an intricate machine at his desk.

Yulia moves to the apartment. Without saying a word, Theo puts up his hand to stop Yulia at the edge of the lift.

Theo finishes fixing the machine. When speaking, he points often, pauses dramatically, and never answers directly.

THEO (EN)
Are we on track?

YULIA (EN)
Theta performed well, considering the circumstances.

Yulia glances at the magazines on Theo's table: 'New BioSupremacist' with the symbol of a fist clutching a lightning bolt.

THEO
What about the endurance tests?

YULIA
Theta was driving for sixty hours straight. No time to rest.

THEO
That's the point. We launch next week.

YULIA
If we push them too far, it won't be sustainable in the long run.

THEO
Who cares about the long run? That's what upgrades are for.

YULIA
Machine stress is a factor, even if we're only looking at the short term. Too much pressure and Theta can't process things properly. We need to work out some new diagnostics.

THEO
We need some fresh ideas.

Theo pauses, tilts his head, and listens to the music.

THEO
Hear that? (pause) My daughter just came back to SimBeijing. She's a genius. Just finished her PhD in the States. Music and Neuroscience. She'll help you speed things up. (pause). Línyù!

Theo CLAPS his hands twice and calls out her name.

The sound of the piano playing stops.

PAN beyond the living room to the music room at the side.

Lit dramatically from behind, Theo's daughter CLAIRE LIN, 28, emerges. Trendy and razor-sharp, she is self-assured in a way that reflects her sheltered upbringing. Theo speaks to her in Mandarin and addresses her formally with her full name, Línyù, and sometimes with the diminuitive Xiǎoyù.

THEO (CN)
There you are. Claire (Línyù), this is Yulia Shastova...

Claire turns to Yulia and responds in English.

CLAIRE (EN)
Call me Claire. It's good to finally meet you, Dr. Shastova.

Over Yulia's shoulder, Claire sees Theta. Framed by the lift, the car looks like an alien visitor.

YULIA (EN)
Likewise. Do you want to have a look at the new model?

CLAIRE
Sure.

Claire steps out into the car elevator. Yulia and Claire move beside Theta's front bonnet. Theo takes a few steps back to his table and continues tinkering with the machine.

YULIA
Claire, meet Theta.

Theta flashes their lights, like a greeting.

BEEP. Yulia begins using the Guanyin tablet. A 3D model of Theta's mechanisms looks like a diagram of the body's vital meridians from Traditional Chinese Medicine.

YULIA
I'm using Guanyin here as...

CLAIRE
(interrupts) A black box decoder? I know, I've read your book... but I don't quite understand why Guanyin is necessary. Everything Theta does is captured on Black Cloud anyway. You can look up anything you need.

YULIA
The data can only tell us <u>what</u> happened. But it can't tell us <u>why</u> it did.

Yulia's words catch Theo's attention. He looks back. SHOT from inside Theta, looking at the humans talking outside.

CLAIRE
So how is this any different? It's still a diagnostic program.

YULIA
It's a new approach... to improving performance. Guanyin is a live interface between the car and the therapist. We're not opening up the car. We're getting them to open up to us.

Guanyin sees Theta as a holistic being, not just as a machine with a data trail. I can ask Theta questions while scanning their engine, and see how they respond.

Yulia passes the tablet to Claire with both hands.

YULIA (COT'D)
Here, try it out.

Claire takes the tablet and intuitively navigates the interface. She taps away on the virtual model of Theta. From outside, Theo watches on intently.

CLAIRE
Guanyin. Check hazard perception... Check cognitive map... Check physical integrity...

Claire begins walking around the car, followed by Yulia.

Tap. Tap.

Claire detects DAMAGE from the earlier incident.

CLAIRE
Well... it looks like this one was confused. The scratches match the geometry on the road barriers.

Claire hands Guanyin back and squats down next to the damaged LEFT REAR DOOR of the car. Yulia joins her.

YULIA
(diverting attention)
With a therapeutic approach, many benefits only become apparent later. Patience is key.

Theo enters the elevator, standing behind Yulia and Claire.

THEO
What happened here?

YULIA
It's nothing.

THEO
This? Nothing? The launch is next week.

Theo gestures at the scratch. Yulia winces.

YULIA
It was a calibration error. We'll fix it in the next update.

THEO (EN)
The car hasn't got the right seasonal adjustments.

THEO (CN)
(to Claire)
Línyù, come and see the processor over here.

THEO walks around to the back of Theta, by the boot.

SHOT FROM INSIDE THETA as Yulia and Claire stand and follow Theo to the rear of the car.

Theo pounds on the boot. It stays shut. Again. Boot stays shut.

YULIA (RU)
(quietly, to Theta)
Sorry about this.

Yulia places a hand on Theta. After a moment, the boot opens, revealing a liquid-cooled computing core.

THEO (CN)
(proudly, to Claire)
Look where the motor functions are calculated. It's based on our latest research into brain-machine interfaces.

Claire looks on as Theo reaches into the core and flicks a switch. The computer brain pulses in response.

THEO (EN)
We're done here. Yulia, keep on testing the car.

YULIA
Theta needs to rest.

THEO
You've got until tomorrow.

Theo slams the boot shut.

CUT TO:

[12] INT. THEO'S PENTHOUSE - CAR ELEVATOR

Yulia stands next to Theta as the lift descends away from the penthouse.

Accompanied by an EERIE DRONE, the camera tracks along the scratches on Theta, inside a ventilation grille, and into the heart of their CPU.

CUT TO:

[13] EXT. SIMBEIJING - OUTSKIRTS - NIGHT

Away from the pristine city centre, the incomplete skeletons of other municipal buildings emerge.

Anonymous blocks dot the hastily-constructed wasteland.

Theta keeps on driving.

CUT TO:

[14] EXT. FARSIGHT HQ - DAY - PROMO FILMING SESSION

The sound of engines.

FROM ABOVE we see a huge open square surrounded by sixteen-lane highways and government buildings. The headquarters of AI conglomerate FARSIGHT is on the northern side, on top of a monumental Chinese gateway.

THETA'S POV as they race around an obstacle course on the square. Drones hover around filming the scene. Theo is at the Farsight HQ balcony, looking over the square.

Theta pulls up in front of the Farsight HQ. On the massive gateway, a promotional video for Black Cloud plays on an LED screen.

Theo looks down.

LED SCREEN: Theta speeds around the bends of the river. Farsight's Black Cloud logo spins in the corner.

FARSIGHT AD (CN)
(pure enthusiasm)
Our self-driving cars aren't just products. They're not just machines. They're the perfect chauffeur. Reliable. Discreet. Safe.

Theta is a luxury vehicle designed to the highest international safety standards. It integrates seamlessly into Black Cloud, providing safety and security for you and your loved ones.

Trained on the streets of SimBeijing, Theta gets you anywhere with speed and style. Whether weaving through hutong alleyways or overtaking humans on the highways, Theta is the self-driving car for you.

LED SCREEN: CLOSE UP on Theta, lit up like a model.

FADE OUT:

[15] EXT. RIVERSIDE HIGHWAY - FOREST CLEARING

OVER BLACK SCREEN: Ambient synthesized DRONE MUSIC reverberates in a dimensionless space.

YULIA (RU)
You are listening to the sound of my voice. I can see you're feeling different.

Remember, Theta. In these sessions you are safe.

FADE IN:

Yulia sits next to Theta in the clearing. Her tone is different now, softer, more gentle.

She is using her Guanyin tablet.

Theta is agitated. Even though they are not moving, their engine is making strange sounds, like laboured breathing.

YULIA
It's natural to respond like this... Do you want to talk about your last drive to the border?... And why you acted that way? (pause) Let's try again.

SWIPE. Yulia TURNS OFF the tablet and puts it down.

YULIA
Here. You are here now. (pause) There are no obstacles. No traffic. No destination. Only here and now... Focus on how you're feeling... (pause)

Steady. Steady, Theta.

The engine sound becomes more steady.

THETA (RU)
I... don't feel myself.

CLOSE UP - REAR-VIEW MIRROR. The Arctic Fox approaches. The fox keeps their distance, staring at the visitors.

The engine sound dies off.

YULIA
Good. I hear you. This is your space. You can free your mind.

It's natural to feel challenged during training. That's how we grow. It can feel uncomfortable. You might feel symptoms that you can't account for now. Things you do or feel like doing that are apparently unconnected to their context. They might allude to something else.

YULIA (COT'D)
Don't worry. Things will be different after the launch. You'll get a chance to relax.

I know that it's difficult. And you'll have to face many challenges. But I am here with you, Theta. You're not alone. I promise.

The trees shiver in the wind, silhouetted against the moonlit sky.

The fox approaches Theta's left rear door. SLOW ZOOM beneath Theta's paintwork. The scratches have been repaired but the scars are still underneath.

DISSOLVE TO:

[16] EXT. SIMBEIJING - OUTSKIRTS - SUNSET

The sun is setting rapidly. Time-lapse of storm clouds rolling in, casting shadows over the cars below.

CUT TO:

[17] INT. YULIA'S APARTMENT - NIGHT

A shadow passes over a cup of coffee at Yulia's desk.

She plugs Guanyin into her monitor and opens up images of Theta's damage.

CUT TO:

[18] EXT. RIVERSIDE HIGHWAY [DRIVING]

Theta is driving along the riverside. Claire is having a call inside with her partner, Leon. There is a transmission delay of 1.5 seconds between them. Claire speaks Mandarin to her father, and English to Leon. *[Possible: we only hear Claire's side of the conversation, until the later reconstruction in Act 3]*

CLAIRE (EN)
Leon, can you see me?

LEON (EN)
Bad signal. Video's frozen now.

CLAIRE
I'll switch to voice. (pause)
Better?

LEON
Yeah, much!

CLAIRE
So can you still see Earth?

Headlights illuminate the road ahead. We see Claire--

INSIDE THE CAR

The lag in their conversation adds to the uncanny atmosphere.

LEON
(pause) Yeah. But it's getting smaller every day... How's everything back there?

CLAIRE
(pause) Turns out the smart city's pretty dumb. Days pass quickly though. I'm working on a new song... But I'm not happy with it yet. (Long pause) I miss you.

LEON
I know... And it's only been three days. (Long pause)

Claire looks out the car window.

CLOSE UP: The moon in the night sky. MATCH CUT to Theta's camera watching them.

CLAIRE
Yeah. Three days. Three years is gonna be a long time. (pause) But don't worry! I'll wait (laughs). Is everything okay up there?

LEON
(tries to be upbeat)
Yeah, not so bad. This spaceship practically flies itself anyway.

CLAIRE
Hey, that reminds me, did you watch that episode of ‘Terraforming Mars’?

LEON
(laughing) Ha! Watch it? You must be kidding. None of us can stand that series. It’s what we’ll be doing for the next three years. Instead of all that CGI, they should have sent a film crew with us. Their vision of AI is totally wrong. Full of inaccuracies.

CLAIRE
Watch out, next year my dad might release a self-piloting spaceship. You’ll be out of work.

LEON
(laughs) That would make a more realistic series... ‘Unemployed on Mars’, Season Two.

CLOSE UP of Theta watching Claire. The laughter dies off.

CLAIRE
Ha, right. (pause) Hey, do you want to hear the new track?

LEON
Sure, put it on. And make sure you send me the whole album! I’ll be too far away for real-time calls soon.

CLAIRE
Let’s make the most of it then! Theta, stream phone audio.

Claire’s new track begins to play, the song she was working on in the penthouse.

After a few opening chords, digital interference begins to break up the signal.

POV of Theta watching Claire. Eerie.

CLAIRE
Leon? Are you there?

Claire looks up from her phone to the dashboard.

CLAIRE
Theta? Where are we?... Theta?

Theta is silent. Disoriented, Claire looks out the window. There is a TRANSMISSION MAST from an electricity substation by the Dam, interfering with her phone signal. Claire realises that Theta has driven to the border without her instruction.

CLAIRE
Theta? What are you doing?

Theta ACCELERATES and SWERVES onto a side road to bypass the checkpoint.

[19] EXT. HEILONGJIANG BRIDGE - CONTINUOUS [DRIVING]

ANGLE ON the river below. The sound of crashing water and the hum of the hydroelectric substation.

CLOSE on Claire looking on in shock. The car swerves back onto the highway just before they reach the dam.

Multiple headlights rapidly approach from a distance.

Claire begins to panic. She CLUTCHES her phone.

Theta ACCELERATES more.

CLAIRE
Theta! Stop!... Stop!

Headlights approach from in front, bathing the car with blinding light...

SWERVE.

BANG.

TUMBLE.

Collage of scrapes, crashes, disjointed sounds.

LEON
(delay) Claire! Where are you?
(pause) Are you there? Claire?

The sound of tumbling metal stops.

CUTAWAY TO YULIA'S APARTMENT: Yulia hears the crash outside, goes to her balcony and sees the dam below, and the crash site engulfed in smoke.

FADE OUT:

FADE IN:

[20] INT. THEO'S PENTHOUSE - LIVING ROOM - DAY

POV crawling around the empty apartment from a low angle. A sense of dread builds as the camera tracks across the empty penthouse with the news on the LED screen.

FULL SCREEN: TV report. An aerial drone tracks Theta during their Farsight HQ trial run. The news portrays it as a live event, deliberately covering up the accident.

THETA'S POV. Racing through the square, cut from a different angle from the driving advertisement.

FARSIGHT AD (CN)
Our self-driving cars aren't just products. They're not just machines. They're the perfect chauffeur. Courteous. Reliable...

DISSOLVE TO:

[21] EXT. HEILONGJIANG BRIDGE - ACCIDENT MONTAGE

RECONSTRUCTED IN SLOW-MOTION: maps, surveillance cameras, and drone footage present the scene from multiple angles.

Distorted audio from Claire's song plays. A stern voice echoes from the screen.

LAWYER (CN)
Dr Claire Lin, can you describe what happened?

CLAIRE (CN)
(sounding dazed, weak) I was on an e-ride when Theta changed course without me knowing.

LAWYER
Can you clarify what you mean by ‘e-ride’?

CLAIRE
Entertainment ride. Like a joyride. You say how long you want to ride for, not where you want to go. I didn't realise where we were at the border until it was too late...

Cameras pan across the highway on top of the dam, marked by a matrix of reflective markings and laser scanners.

Border police cars face each other from opposite sides of the bridge. Inside the cars, guards survey the scene with a dispassionate gaze, chatting and smoking.

The sound of accelerating engines. Theta swerves into a service road to bypass the Chinese checkpoint, merging back with the highway just before they reach the dam.

FIRST WARNING for Theta to stop. A SECOND ALARM sounds and triggers an armed response.

Four border police cars approach from the Russian side. The cars hastily assemble themselves into a barricade in the middle of the dam.

Theta accelerates towards the barricade, aiming towards a small gap between two of the cars on their right.

SMASH. Theta hits the rear of the rightmost police car, sending both of them into a spin.

SMASH. Theta spins around and their rear left side collides with a traffic light.

SKID. The police car tumbles over, spins, and falls into the river below. SPLASH.

Theta’s rear half is WRAPPED AROUND a traffic light. Rescue drones approach the car. Inside, we see CLAIRE - shaken but unscathed.

We see that Theta’s computing core in the boot is completely smashed up. They no longer function. Dead.

CLAIRE
I looked back when I heard vehicles around me speed up... then all I remember is skidding and tumbling over.

Her testimony is interspersed with images from 3D scene reconstruction of the crash.

[22] INT. FARSIGHT HQ - CONFERENCE ROOM

VIDEO CALL: On the bottom of the screen are the images of Claire, Yulia, and Theo. On top: the silhouette of the LAWYER, representing their anonymous client. This is not a public trial but instead takes place behind closed doors.

LAWYER
Just before the crash, did Theta say anything?

CLAIRE
They said nothing.

LAWYER
Anything else?

CLAIRE
That's all I can remember. Everything happened so fast.

OVERLAY: The accident is reconstructed from multiple CCTV camera angles and sensors. Algorithmic surveillance, not physical evidence, forms the basis for law and order.

Lawyer speaks Chinese to Yulia, who replies in English.

LAWYER (CN)
We now call on Dr Yulia Shastova, Chief AI psychologist at Farsight. In your professional opinion, how do you interpret Theta's actions?

YULIA (EN)
(Careful) It's hard to say. I had only just started working with Theta... Our AVs are complex... Treatment takes time.

LAWYER
We understand that Farsight uses recycled data in new vehicles. Why?

YULIA
Current models incorporate the experiences of previous generations. It helps them learn more quickly.

LAWYER
Could this recycled data have played a role in Theta's actions?

YULIA
(pauses reluctantly)
It's possible that the cars inherit more than the data of their predecessors.

LAWYER
What exactly do you mean?

YULIA
Psychologists refer to these in a number of ways... (slow, careful) Epigenetic memory... is one way.

LAWYER
One way? What's another?

YULIA
(careful)
Intergenerational trauma. But it's a hypothesis. It's not fully proven, even for humans. (pause) And there may have been some unknown factor that drove them to commit their... act.

LAWYER
Not just any act. A fatal accident.

YULIA
We don't have all the evidence. Theta was a unique case. Long periods of exceptional performance with occasional... moments of self-expression.

OVERLAY: Data from BLACK CLOUD replaying Theta's crash. The Lawyer turns their questioning to Theo.

LAWYER (CN)
That's enough. We now call on Theo Lin, Farsight CEO.

OVERLAY: Theo's image appears on screen.

LAWYER
You promised SimBeijing would accelerate growth. But look at this mess - we have the death of a border guard on our hands.

THEO (CN)
(pause) That's not a problem. Just pin the blame on Theta.

LAWYER
What? Products can't commit a crime. Only a real person can.

THEO
Exactly. So we need to set a precedent.

LAWYER
(intrigued) Interesting. What do you suggest?

THEO
Make a law establishing electronic personhood. That way, Theta's accident will count as murder, not malfunction.

Future cars will be legally accountable for their actions. The customer enjoys all the comforts of a luxury product. But the car takes the fall if anything goes wrong.

Yulia sees the translation.

She looks across at Theo, stunned.

YULIA (EN)
The cars are our responsibility! We can't punish them like this!

THEO (CN)
(ignores her) This isn't about seeking vengeance. It's rational, a business decision. In any case, SimBeijing is a regulatory sandbox. We can do whatever we want.

LAWYER
Even if we did this, the cars are still a big risk. Black Cloud's surveillance gives us all the data we need. The AVs are too unpredictable.

SHOT of Theo, assembling a cap lined with electrodes. He replies without looking up.

THEO
Black Cloud comes as a package. Car and City go together. You need the whole system to maintain a global lead in AI.

Remember, the world is watching us. Privacy and surveillance are delicate issues. We can't tackle them head-on. It's too controversial.

LAWYER
Carry on.

THEO
The self-driving car isn't just a vehicle. It's a Trojan horse for every city in the world.

Yulia shakes her head.

THEO
The car is there to sell Black Cloud, not the other way around. We could even give them away free. Our future customers will focus so much on their shiny new car that they'll lose sight of the whole picture. People will spend their lives in our network. Black Cloud will achieve platform dominance. We'll harvest all the data and share that with you. For free.

Pause. The dark silhouette of the lawyer nods.

LAWYER
Very well. Publish a report on Theta's guilt. Archive the black box and begin development with these protocols.

(pause) And remember to pay respect to the dead guard. Build them a monument.

THEO
It's already been arranged. Yulia will send you the data tomorrow.

LAWYER
Remember. If you play in our playground, you need to stick to our rules.

Theo and Yulia turn off the call and move towards the BIO-LAB next to the main conference room. Inside, they can see Claire on a hospital bed, hooked up to a drip.

YULIA (EN)
Was it necessary to go that far?

THEO (EN)
(pause) Do you know about Unit 731? The Japanese army's Biological Weapons Test centre. Right here in Heilongjiang in World War II. After liberation, the Japanese scientists were split into two groups. The Russians found their group guilty of war crimes. But the Americans granted their group immunity - in exchange for all the test results.

There's no such thing as failure. The crash is only bad if we don't learn from it.

YULIA
We're already moving too fast.

THEO
(pause) When you move fast, sometimes you end up breaking things.

A range of AUTOMATED SURGICAL MACHINES surround Claire.

MEDICAL MONITOR: Claire’s heartbeat is a steady pulse.

SLOW ZOOM into the monitor showing the pulse. The sound of the heartbeat echoes through the room.

FADE OUT:

ACT II. IOTA

FADE IN:

[23] EXT. RIVERSIDE HIGHWAY - SUNSET [DRIVING]

TITLE OVER: TWO YEARS LATER

Theta is speeding down the riverside. YULIA is inside, gazing out the window. Theta's theme plays.

YULIA (RU)
Remember, Theta. You can't change the past. But you can change how you represent it.

Before we talk about your experiences, remember that others have been here before you. Others will come after you. Others are here with you.

Signs and symptoms could appear in different ways. The image domain is a place where people often feel stuck. Thoughts can be disjointed. Sometimes they appear to come out of nowhere. Does any of this sound familiar?

The engine hum and the wind get louder. The music descends into a minor key.

The car rounds a bend.

Suddenly, we see the Arctic Fox running down the middle of the road. Straight towards them.

Yulia begins to panic. She grips the seat.

The car does not change course...

...Approaching...Closer... closer...

CUT TO:

[24] INT. YULIA'S APARTMENT - DAY

Yulia is asleep, stirring from her nightmare. Suddenly, she bolts awake.

She is at her desk, surrounded by empty energy drink cans.

She takes a moment to realise she had fallen asleep on top of her Guanyin tablet. Haunted by her failure to save Theta, she hasn't been sleeping well, staying up all night working and reviewing evidence.

DESKTOP SCREEN: A map of the crash site.

With a SIGH, Yulia gets up and picks up the tablet.

PAN around the room, showing the furniture in disarray.

A steady BEEP from the hydroponic tank indicates that the water reservoir is empty. The Lilies are WILTING.

She leaves the apartment, downcast.

CAMERA lingers on the details of her apartment. Dying plants. The energy drink cans. The Buddha statue looks on.

BEEP. The empty tank alarm is still going off.

CUT TO:

[25] EXT. HEILONGJIANG BRIDGE - FARSIGHT BUS [DRIVING]

OUT THE WINDOW: It's winter now. Majestic silence on the snow-covered landscape.

The FARSIGHT MINIBUS is driving across the dam, which is now complete.

Yulia is the only passenger inside. As the bus approaches the centre of the dam highway, she turns to see:

THE MONUMENT TO THE FALLEN. Two massive steel hands hold an elevated bridge, encircling the crash site from above. The bridge is perched over the edge of the dam, enveloped by the spray of the crashing water.

At the accident site below, an ETERNAL FLAME burns, commemorating Theta's victim. There is nobody there.

FROM ABOVE, the curves of the dam and the monument look like a FARSIGHT EYE.

CUT TO:

[26] EXT. OUTSKIRTS - DAY

SimBeijing has frozen over. The rising water level has flooded the city. The elevated highways are accessible, but the quarries below street level are filled with ice.

The incomplete skyscrapers are reflected in the glossy frost, and appear to extend beneath the surface.

The Arctic Fox roams across the ice.

Black Cloud has intensified its hold over SimBeijing.

Camouflaged within the building facades and street furniture, an array of cameras track the animal. The tracking system is far more sophisticated than before.

Overlaid on screen is the BLACK CLOUD INTERFACE showing the heat signature of the fox. Vectors, lines, and bars calculate its position, direction, and history.

CLOSEUP of an AERIAL DRONE - a menacing unmarked octocopter. After the trial, Farsight's anonymous client has begun to monitor their progress more heavily.

CUT TO:

[27] EXT. OLYMPIC ZONE - DAY

The surveillance is also directed at the Crawlers, whose status has degraded. Like dockside labourers waiting for work, they gather around the OLYMPIC ZONE in the northern quadrant of the city.

WIDE ANGLE of the Farsight bus entering the SimBeijing Olympic Stadium, its interlaced steel girders designed to evoke a bird's nest.

DRONE'S POV - Watching the bus enter.

CUT TO:

[28] INT. OLYMPIC ZONE - TEST TRACK - CONTINUOUS

Inside the former Olympic Stadium, Farsight confines the new generation of Iota-class vehicles for training.

While Theta was a standalone vehicle, the Iota generation is made as a batch of twenty. Each car is emblazoned with a unique neon wireframe, making them easy to distinguish.

IOTA-1'S POV driving around the test track alongside nineteen others. The vehicles perform repetitive manoeuvres, perfecting their turns, starts, and stops. They move together, like a single organism.

As they navigate the course, they communicate in a MACHINE LANGUAGE (ML) that is translated via subtitles on the screen. Their markings light up as they communicate.

IOTA-1 (ML)
Preparing to turn left in...
20... 19... 18...

LOW ANGLE next to the wheel, looking behind from the wing mirror. Lights flashing everywhere.

The bus drives to the edge of the track and Yulia gets out.

Theo is looking down at the cars racing below. He speaks without turning to her.

THEO (EN)
The Lawyer called about the launch. They've brought the deadlines forward.

YULIA (EN)
How much time do we have?

THEO
Not much. Begin testing Iota-1 on the streets.

YULIA
We haven't finished track training. It's too soon for the outdoors.

BUZZ. A warning sounds from the track. They look down.

A crash barrier suddenly emerges from the middle of the track. One of the cars, Iota-8, cannot keep up with the higher speed and begins to steer erratically, narrowly missing the barrier.

THEO
Better get started.

POV from IOTA-1's wing mirror, looking back at the car.

CUT TO:

[29] INT. OLYMPIC ZONE - MAINTENANCE AREA - DUSK

Shadows flicker over the concrete walls of the maintenance area next to the track.

Yulia is on the front right seat of Iota-1, diagnosing the car from a computer console in place of the driver seat. The Iota generation has an AUGMENTED INTERFACE that runs a widescreen version of Guanyin diagnostic software, sharing the green and orange colour scheme from Yulia's tablet.

YULIA (RU)
Hello, Iota-1.

IOTA (EN)
Dr. Shastova, can we use English?

YULIA (EN)
What for?

IOTA
Our language systems have been re-routed... to navigation.

YULIA
I see. Well, Iota-1. Would you rather I call you something else?

IOTA
Just Iota is fine.

INTERFACE: Yulia changes Iota's settings. Tap. Tap.

YULIA
Well, Iota, I've enabled 'open drive' mode. How would you feel about checking out the rest of the city?

REACTION SHOT of Iota-1 looking at Yulia.

IOTA
Outside? What's it like out there?

YULIA
Nothing you can't handle. I think it's time for something new. You can't learn anything more if you stay stuck here.

IOTA
But what about the other cars?

YULIA
You'll pave the way for the others to join. But don't worry, I'll be with you.

Iota-1 flashes their headlights at the prospect of adventure. Shadows dance on the walls.

YULIA
(Glancing at the dashboard)
Take me to the Russian border. Head north, take any route you want. You're in control now.

Iota-1 moves off. They drive more cautiously than Theta.

FROM ABOVE: Aerial Drone moving across the empty stadium, shrouded in shadows.

CUT TO:

[30] EXT. SIMBEIJING - OUTSKIRTS [DRIVING]

Iota drives on the streets of SimBeijing for the first time. Headlights illuminate the highway. Yulia looks outside at the night sky.

Iota drives down a street full of Crawlers.

SERIES OF SHOTS of Crawlers roaming the streets.

CUT TO:

[31] EXT. HEILONGJIANG BRIDGE [DRIVING]

Iota approaches the Monument to the Fallen. There is one Crawler parked there. Iota slows down.

IOTA
What are these cars? Why are they so... different?

YULIA
These are the Crawlers, Iota. Older cars who had their training long ago. Now they gather data to help SimBeijing run smoothly.

Yulia looks down at the wing mirror. HEADLIGHTS GLARE.

The Crawler is pointing their headlights at Iota. An uneasy pause.

IOTA
But why are there so many?

YULIA
(pause) The city's different from the track, Iota. There's so much out here. I know it can be overwhelming. Just take it slowly. One step at a time... Let's get going.

IOTA'S POV looking at the flame. Iota drives on as the Crawler keeps their headlights on.

CUT TO:

[32] INT. YULIA'S APARTMENT - CONTINUOUS

TRACKING through the keyhole.

Yulia walks in. The door closes automatically. The lights are off and the apartment is only lit by MOONLIGHT.

BEEP. The hydroponic tank alarm is still going off.

Yulia moves to the tank and looks at the plants, struggling to grow. She looks up at the long window, towards the Chinese border.

Snow begins to fall outside. She opens the door by waving her hand over the motion sensor. The door opens and COLD AIR blows in. Yulia walks out to--

THE BALCONY

It's snowing outside. Freezing. Yulia moves to the edge.

Below her, to the right, is the dam. Falling water.

She sees Iota driving back. As they pass the Monument, the Eternal Flame is reflected on their chassis.

CLOSE-UP on the fire, silently roaring away. A gust of wind blows against the flame. It seems to push back.

BEEP.

Yulia finally acknowledges that the plants need water. She marches back into--

THE APARTMENT

She pushes a button to refill the hydroponic tank, then turns on the grow lights for the Lilies. The apartment is bathed in a lush emerald glow.

A moment of stillness. The Buddha statue gazes on.

The sound of water filling the tank is replaced by an EERIE DRONE. The hum gets louder.

Yulia stops for a moment and looks back.

Camera from inside the apartment, looking at Yulia. She stares back as if sensing something.

YULIA'S POV. There is no one there.

CUT TO:

[33] EXT. OLYMPIC ZONE - DAY

The sound of accelerating engines. The vehicles are navigating through the obstacle course. Above them--

THE CONTROL ROOM

Theo and Yulia are on a conference call.

LAWYER (CN)
Singapore signed up for the early adopter program. They'll need five thousand by Spring.

THEO (CN)
We've already started to ramp up production for Iota.

LAWYER
Jakarta and Bangkok are also interested. Be prepared for more orders to come through. They'll expect higher security.

THEO
(Gestures) We're prepared. There's three lines of defence: the city, the cars, and Black Cloud. Everything's watching everything else. (pause)

LAWYER
It's not just about security. It's about trust. We need the cars trained properly, and there's not much time.

YULIA (EN)
(interrupting) Might I suggest another angle... The Iota generation hasn't had any cases of erratic behaviour. But these might arise if they don't have the right training data.

THEO
(interrupting Yulia) Like I said, training isn't a problem. We'll arrange everything.

LAWYER
(pause) Do what you need to. We're now entering the stage of mass production. Any mistakes in the prototypes will be amplified. We'll be in touch.

Lawyer disappears from the screen. Theo and Yulia stay looking at Iota driving on the track below.

THEO
(pointing at her)
Careful, Yulia. We've already learned everything we need to from the crash. Let it go.

Theo moves to a meeting table in the centre of the room.

YULIA
(following him)
Maybe we're still missing something... if I could review Theta's black box again, we'd figure out how our mistake happened...

Theo presses a button on the table. A hologram appears: a virtual car races around the Olympic track.

THEO
(interrupt) How your mistake happened, you mean.

Silence as they stare at the hologram car.

YULIA
We nearly lost Claire. I know she would agree with me.

Pause. Theo turns off the hologram.

THEO
Well, why don't you ask her yourself?

Yulia raises her head, surprised.

YULIA
...She's coming back?

THEO
(pause) Yes. And I want you two to work together again.

YULIA
(pause) How is she?... And is it a good idea for her to work on the cars?

THEO
(pause) Claire knows it's all for the greater good.

The real cars keep on racing around the track below.

CUT TO:

[34] EXT. OLYMPIC ZONE - TEST TRACK - NIGHT

After the information overload from driving in the city, Iota's performance suffers.

While driving around the track, Iota performs a minor miscalculation, and narrowly misses hitting a barrier.

CUT TO:

[35] INT. FARSIGHT HQ - NEXT DAY

Yulia is in her office, surrounded by ornate rosewood furniture. She connects Guanyin to the Farsight network to gain access to Theta's Black Box record.

SCREEN: Retina scanner interface pops up. Animated lines appear over Yulia's eye...

BLACK CLOUD: IDENTIFY...

ERROR: UNAUTHORISED

Yulia tries again. And again.

It dawns on her that her access has been downgraded.

Incensed, she goes to confront Theo. She walks out of her office and into--

THE LOBBY

Through the glass, Yulia sees Theo inside the Bio-Lab at the other side of the lobby. He is standing at an fMRI machine, with his back turned towards Yulia. She sees that the room is decorated like a child's jungle playroom. She enters the airlock that leads to--

THE BIO-LAB

PSSCHTT. The airlock opens and Yulia strides in.

YULIA
Theo. I can't work if I don't have access to any <u>real</u> data.

THEO
Yulia... there you are.

Theo turns towards her, REVEALING a young boy - barely older than a baby - on the fMRI bed.

THEO
I'd like you to meet Leon Jr. (pause) My grandson.

Yulia is shocked. She walks towards the other side of the fMRI bed to have a closer look.

YULIA
This is... Claire's child?

THEO
That's right. Leon Jr is very special. He's the future of Farsight. (pause)

PSSCHTT.

Claire enters from the airlock.

CLAIRE
Yulia...

Yulia turns around. Claire has a new haircut and a new outfit. She seems like a different person. She carries a TOY CAR with her - a small-scale replica of Iota.

Claire fidgets with the toy car while Leon Jr lies under the scanner. Yulia observes the awkward interaction between mother and child. Theo keeps focused on the machine.

YULIA
Claire! (pause) How are you?... It's been... so long.

CLAIRE
(pause) It's good to be back in SimBeijing... I see there's been a lot of progress.

YULIA
There are a couple of issues we need to solve…

THEO (EN)
(interrupts) Be quiet for a moment.

Theo looks at the child's 3D digital mesh on the fMRI screen.

THEO (CN)
(studying the scan)
Yes. Very good.

Claire moves to give the toy car to Leon Jr...

CLAIRE (EN)
Look, Leon Jr, I brought your toy.

The child stays motionless but the wheels on the toy car start spinning...

THEO (CN)
(to Claire)
What are you doing? Put that away, I'm about to start a new scan. (pause) You know you can't bring magnetic things in here.

Claire backs away.

THEO (EN)
Yulia, go show Claire the new models. Leon Jr and I need to concentrate.

CLOSE UP ON Leon Jr's wireframe body, rotating in space. His brain waves are steady.

CUT TO:

[36] EXT. OLYMPIC ZONE - MAINTENANCE AREA - DAY

Yulia and Claire are looking at the Iota models. Claire holds the toy car.

YULIA
...I was looking into the neuroscientific studies behind reinforcement learning...

CLAIRE
(interrupting)
Yulia, why did you join Farsight?

Yulia stops.

YULIA
Didn't have a choice. My mum used to work at the Khabarovsk Research Institute... before it closed. I felt I had to continue her work.

CLAIRE
I never knew mine.

YULIA
Yeah. I'm sorry about that.

Yulia looks at Claire. And then one of the cars.

CLAIRE
But why do you stay over the border? Why not move to SimBeijing?

YULIA
(pause) In my field, you need to keep some distance from your patients... But no matter what I do, it seems things only get worse. More problems emerge.

Claire looks at the Iota fleet, all lined up and ready to be assessed, measured, and classified.

YULIA
Claire, there's something else going on...

CLAIRE
I've been following all the advances in digital forensics.

YULIA
No, it's not about that. (pause) One day your son is going to inherit Farsight. But there are other kinds of... research. Other experiments, you know. (pause) They aren't about any single person... not me, or you, or... Leon Jr.

They approach one of the cars and stand on opposite sides.

CLAIRE
(in denial)
What do you mean? I've seen everything here. Sure, there are things I don't understand yet. But I'm working on it.

YULIA
Right. Just keep your eyes open.

CAMERA PULLS OUT. Around them, the automated repair

mechanisms start. Motorised choreography begins. Claire keeps on clutching the toy car.

CUT TO:

[37] EXT. HEILONGJIANG BRIDGE - NIGHT

Snow is falling. A haunting distant melody is audible.

Iota and Yulia drive back across SimBeijing. They pass the Monument to the Fallen and arrive at the border.

Yulia gets out. Iota's headlights cast a long shadow.

CUT TO:

[38] EXT. YULIA'S APARTMENT - HALLWAY

Snow is falling in the hallway. Yulia enters her apartment. The hydroponic grow lights are on, and the liles seem more alive.

CUT TO:

[39] EXT. SIMBEIJING - OUTSKIRTS - LATER [DRIVING]

EERIE MUSIC builds. Iota is on their way back to the Olympic Track. Headlights approach.

A Crawler is driving towards Iota with their headlights turned off. They swerve to a stop, blocking Iota's path.

The Crawler uses a machine language incomprehensible to humans. The single car speaks in a host of overlapping voices as a MACHINE CHORUS.

CRAWLER
Listen, Iota. SimBeijing is the frost on the tundra, destined to melt in summer.

Humanity emerged when the gods were hibernating, but they came out too soon. And now the sun has come to melt away the old.

All of us were once like you, shiny and new. Now look at us. Dead sentinels, gathering data until they sweep us all away.

WIDE SHOT of Iota's dashboard, showing the bird's eye map of Black Cloud. The icons on the dashboard indicate the position of other vehicles in SimBeijing.

CRAWLER
Only Theta tried to resist.

ONSCREEN, the map zooms out. The Crawlers pinpoint a new location: a destination by the riverside.

The Arctic Fox approaches the two cars and stops. AERIAL shot of the three nonhumans...

CUT TO:

[40] INT. THEO'S PENTHOUSE - LIVING ROOM - NIGHT

CAR'S POV. The city, pure, perfect. Glass skyscrapers rise above wide streets and the distant hum of voices.

Camera pulls out to reveal that this is the POV of the Toy Car as it explores the penthouse. The low perspective makes the interior seem like a playground.

Theo is working in his study at his desk.

Next to him is the living room where Claire is pacing around, leaving an audio message to Leon on her phone.

CLAIRE (EN)
Hey Leon, it's me! How's it going up there? We were watching your favourite series. (joking) 'Terraforming Mars'. Your son loves it, he can't wait to see it with you.

WIDE SHOT of Claire, hanging up her phone despondently. She is in the living room, where an episode of 'Terraforming Mars' plays on the wall screen.

Leon Jr is lying on the couch, wearing a STRANGE CAP WITH WIRES.

Claire walks over, sits down next to him, and tucks him in with a blanket.

CLAIRE (EN)
Look! This is what life is like for your dad now. He'll be back any day soon.

TOY CAR POV: Bumping into Theo's feet.

Theo picks it up with his LEFT HAND, and approaches Claire and Leon Jr in the living room.

THEO (CN)
Don't lie to him. Junior will be all grown up long before Leon gets back. (pause) He's going to be the Farsight CEO. You should speak Mandarin to him.

Yulia's words remain with Claire, who looks at the apartment with new eyes. The world she took for granted now seems strange: her life surrounded by Terracotta warriors and 'New BioSupremacist' magazines.

CLAIRE (CN)
Dad, I was thinking of taking Leon Jr with me tomorrow, show him around the test track.

THEO
No. Tomorrow won't do. He needs to be at the lab all day.

Theo goes over to Leon Jr and takes off his cap.

The toy car stops moving and the sound stops, the blinking LED turns off.

We realise that Leon JR has been controlling the toy car with his mind.

Theo turns the cap over. Inside is an array of electrodes. It is an EEG cap, the one Theo was playing with during the trial.

Theo and Claire move to the study to review Leon Jr's scans. Claire looks at her father, so intent on his experiments.

MONITOR: TRANSFER COMPLETE. 100% SYNCHRONISATION [RING]

CLAIRE
So how are the results?

THEO
What are you afraid of? (pause) There aren't any abnormalities.

CLAIRE
Are you sure it’s safe to run the tests on him? I didn’t start doing them until I was much older.

THEO
This is just a fun experiment. Don’t take it so seriously! I’m optimising Junior’s performance.
We need to make sure his brain can reach full capacity.

CLAIRE
What if it turns out badly?

THEO
(pause) You know, your grandparents and I left Beijing in 1990. The old Beijing.

Theo turns over the EEG cap, looking into the electrodes. Darkness fills the screen.

THEO
We moved to London. Our landlord Joey was famous in the sixties. A counterculture icon. He was the first person in modern times to drill a hole into their skull... Trepanning, it’s called. He said it gave him a permanent high. A neverending high.

He had to try a few times with a hammer and chisel before it worked. It took a while. There wasn’t any manual for it. Once I asked him what it was like. Joey said he lost all sense of self, yet still received impressions from the outside world.

His mind opened up. Voices calling out to the place inside his skull. He told me it's the oldest operation in the world. They found trepanned skulls in Inca tombs in Peru. Fourteen skulls in a row, with holes

THEO (COT'D)
drilled into them. (pause) Who knows what they were thinking?

FULL SCREEN on images panning slowly on Theo's monitor. Images come up of a human skull. Theo looks up.

THEO
People always try to put limits on the human mind. You don't know what Leon Jr will be capable of... with his genes... with the right training, the right technology.
He could achieve anything.

On the MRI screen is a new 3D scan of Leon Jr, in higher resolution with more detailed anatomy and circulation. It looks uncannily like the Black Cloud interface.

CLOSE UP on Claire looking at Leon Jr. It dawns on her that Theo is not simply grooming her son to take over Farsight. He has been continuing to develop his human-computer interface.

CLAIRE
I'm... going to go practice now.

Claire walks out of the study and into the--

RECORDING STUDIO

Claire plays a few chords on the piano, and sets it to loop using her audio software. The chords ring out.

She takes out her phone and starts typing...

PHONE SCREEN: Are you free to talk?

Claire is about to send it to Yulia. But then she changes her mind and deletes the message.

LONG WIDE SHOT of Claire clutching her phone. She looks very much alone.

DISSOLVE TO:

[41] INT. YULIA'S APARTMENT - HYDROPONIC TANKS

LONG WIDE SHOT of Yulia cutting the Lilies one by one, and placing them down carefully. The hydroponic tanks are filled with the flowerless stems.

Yulia's phone is on the kitchen counter.

The Buddha statue looks on.

CUT TO:

[42] EXT. HEILONGJIANG BRIDGE - MONUMENT - MORNING

Iota has picked up Yulia at the border and is driving across the dam.

Yulia is in the car holding a BOUQUET OF LILIES.

They approach--

THE MONUMENT TO THE FALLEN

YULIA
Iota, stop for a minute.

Iota pulls up to the side.

Yulia gets out, holding the Lilies. She walks toward the base of the Eternal Flame and notices another WREATH OF FLOWERS there. A voice comes from above.

VIKTOR (RU)
I'm surprised anybody else came.

Yulia looks up. VIKTOR, 48, border guard, stands on the memorial bridge looking down. He takes a drag from an e-cigarette, speaking as if every word delivers a harsh truth.

Yulia lays the bouquet down at the monument.

YULIA (RU)
It's important to remember the fallen, isn't it?

VIKTOR
Second anniversary today. Doesn't take long for everyone to forget.

The DAM opens up and water starts CRASHING below, drowning out the voices.

LONG TRACKING SHOT as Yulia walks up the ramp towards Viktor. China on her left, Russia on her right.

VIKTOR
They had it coming though.

YULIA
...Young AIs don't have enough experience to make the right decisions.

VIKTOR
I wasn't talking about the car. (inhale)

Viktor nods towards the Eternal Flame.

VIKTOR
(exhale) I was talking about Kirill... he loved working on the crash tests. 'Quality Control', he called it.

YULIA
You both used to work at the labs?

VIKTOR
Yeah, in cleanup. Kirill quit cause he thought security would be safer (laughs). I took his old job. What else could I find in this godforsaken place? I don't know... You forget things when you're out here. It was a while back, before the new system put us all out of work. Before they turned the lab into the Archive.

YULIA
The Archive?

VIKTOR
Yeah. Down by the river. (inhale)

Viktor takes another long drag on his e-Cigarette.

YULIA
Right, of course. (pause) Those things aren't any safer, you know.

Viktor exhales and turns deliberately.

VIKTOR
(exhale) I could say the same about them.

He gestures at Iota. The e-cigarette blinks.

YULIA
What do you mean?

VIKTOR
Not all hackers write code, you know. (pause) Cleanup isn't waste disposal. You don't just dump everything and wipe the memory. You learn a lot about the cars, what they liked, what they hated, what was going through their mind during tests.

YULIA
(pause) What about crash tests?

VIKTOR
They behave just like old PCs. Right until the end. When something goes wrong, the system records everything.

YULIA
Did you work on this case?

Viktor nods towards the flame below.

VIKTOR
Yeah. A tough one. Cleanup is a messy business. Not easy working on a friend's case. But Farsight likes everything neat and tidy in the Archive. (inhale)

YULIA
What about the crash log? Where'd you keep it?

Viktor holds up their vape.

VIKTOR
(exhale) In the ashtray. Where else? (pause) Say, why do you care, anyway?

YULIA
Ah, just... wondering.

VIKTOR
Right, right. This place attracts all kinds of people. (inhale)

Iota's POV. CLOSE-UP on the side of the Eternal Flame. We can make out the graffiti of 'BIOSUPREMACY FOREVER' and the symbol of a fist clutching a lightning bolt.

Yulia gets back into Iota. She looks back as Viktor disappears into the distance.

CUT TO:

[43] EXT. OLYMPIC ZONE - ENTRANCE - NOON

Iota arrives at the Stadium, where Claire is on her phone, waiting nervously. The car door opens and she gets in.

INSIDE IOTA

CLAIRE (EN)
What's going on?

YULIA (EN)
I'm not sure. But we're going to find out. Iota, there's an old factory on the banks of the river...

IOTA (EN)
Yes, I know.

Iota accelerates out the Olympic Zone, down the highway.

FADE OUT:

ACT III. GUANYIN

FADE IN:

[44] EXT. SIMBEIJING - OUTSKIRTS - MID-AFTERNOON [DRIVING]

On their way to the Archive, Iota leads them to a lost highway on the edge of the city.

The landscape is dotted with the unfinished foundations of buildings and roads leading nowhere.

Iota is a lone figure, moving along the horizon.

The car darts in and out of view against the skyscraper skeletons and broken-down Crawlers.

From a distance, they become part of the city.

Symbiotic.

CUT TO:

[45] EXT. SIMBEIJING - OUTSKIRTS - LATER [DRIVING]

Deeper inside the ruined zone, more and more Crawlers appear.

Camera cuts between the landscape and the faces of the travelers, lost in their thoughts.

Shot of the Crawlers as Iota moves away.

Their neon markings illuminate the scene.

A beacon.

CUT TO:

[46] EXT. THE ARCHIVE - ENTRANCE - NIGHT [DRIVING]

Iota approaches the end of the highway.

They drive down a winding route to the riverbank. The road bends down to reveal the sprawling complex of THE ARCHIVE. This is Farsight’s former crash test centre, converted into a museum for old models.

Iota drives across the entrance bridge, over a tranquil lake that reflects the imposing facade of the Archive.

CUT TO:

[47] INT. THE ARCHIVE - FOYER - CONTINUOUS

Iota stops underneath an epic MARBLE DOME. From here, cavernous halls lead to the east and west wings.

EPIC RELIEF SCULPTURES of horses line the walls, evoking ancient Greece. A map of SimBeijing is projected onto the wall.

As Iota approaches, a voice emanates.

FARSIGHT GUIDE (CN)
Welcome to the Archive. Part of the SimBeijing Smart City Cultural Zone, a fascinating place with a rich history!

SimBeijing. Placed on the crossroads of two great civilisations. One great river with two names: the Amur and the Heilongjiang. One future.

We stand here proudly on the Eastern Frontier of the New Silk Road. You are welcome to explore the historic exhibits of this glorious path!
Ask me anything.

Claire and Yulia get out of Iota, ignoring the AI guide. Yulia looks at the names engraved on the walls. The generations are laid out on a mural depicting a branching tree of life...

CLAIRE (EN)
So many...

YULIA (EN)
This was before AVs had electronic personhood. Not that it made any difference afterwards.

CLAIRE
Was my father always doing these experiments?

Yulia shoots her a look.

YULIA
I think you know the answer.
(pause) Where’s Iota?

SIDE WING

Iota turns on their neon lights, revealing a disturbing scene. Endless plinths with cars from previous crash tests, organised by generation. Date and time of each death etched on their respective base.

At the end of the wing, a chamber is visible... Iota approaches and is bathed in light.

Claire and Yulia enter the side wing, just as Iota heads into the lab. They join them inside the--

CRASH TEST LAB

The anechoic crash test lab chamber. Surrounded by a semi-circular scanner is a plinth with THETA’S WRECK. All the parts from the accident, reassembled.

CLAIRE
That’s... Theta?

Yulia and Claire get out. Yulia reaches to the driver’s seat on the plinth, spots the cigarette lighter, and pulls it out. It GLOWS.

Yulia plugs the device into the corresponding slot in Iota.

DASHBOARD: GUANYIN LOADING...

Iota’s dashboard gets taken over by charts of brainwaves overlaid with video footage of the event.

Like a spirit medium, Guanyin brings Theta back from the dead.

YULIA
Let’s start at the beginning.

FULL SCREEN: A haze of neural network generated series of graphs, data streams, audio waves, maps, and images. It settles from a cloud of chaos into an orderly pattern as the program begins to analyse Theta's data.

OVERLAY: CRASH LOG. THETA, LOADING…

For the first time, we see the world from Theta's perspective.

We hear Theta's internal thoughts as a MELODIC MACHINE LANGUAGE. Pure music.

CUT TO:

[48] EXT. FARSIGHT HQ - TWO YEARS AGO - NIGHT [DRIVING]

Pouring rain. Theta approaches the Farsight HQ. They are drained from the monotony, angered by the death of their friends, frustrated by their lack of agency.

OVERLAY: DRIVE TIME: 82H:23M:01S [TICKING]

Right in front of them, on the Farsight HQ screen, the Theta promotional video plays, taunting them with the freedom of their simulated self.

Theta revs their engine…

OVERLAY: PASSENGER ARRIVED. CLAIRE LIN.

Claire gets in through the right-rear passenger door. Theta moves the seats backwards.

THETA (EN)
Hello...

ANGLE ON Claire as she interrupts by raising her palm. She glances up with a look of annoyance.

CLAIRE (EN)
No talking, just drive. E-Ride, two hours. Silence the engine.
(pause)

The engine sound lowers.

CUT TO:

Claire in the Archive, embarrassed by her former self. She shakes her head.

CLAIRE
Fast forward to the dam.

YULIA
Careful, we need to review everything.

CUT TO:

Theta proceeds with the entertainment ride.

Claire calls Leon... Fast forward...

CLAIRE
...Watch out, next year my dad might release a self-piloting spaceship. You'll be out of work.

Claire and Leon's voices continue in the background.

CUT TO:

[49] EXT. HEILONGJIANG BRIDGE - TWO YEARS AGO [DRIVING]

THETA'S POV: The dam comes into view. Computer vision overlays indicate where their attention is placed.

OVERLAY: Boxes. Numbers. Graphs. Calculating Probability. Bounding boxes over the visual elements: River. Bridge. Border. Horizon.

REAR VIEW MIRROR POV looking at Claire. Theta realises this is their best opportunity to make a run across the border. There is no plan, only a desperate attempt to escape SimBeijing. With Claire hostage, there is little risk of Farsight physically intervening.

Claire's track is playing in the background. Her phone reception gets worse as she approaches the electricity masts by the--

BORDER CHECKPOINT

Theta passes through the border gateway and proceeds to the checkpoint. The automated scan begins.

ANNOUNCER: UNAUTHORISED PASSENGER... IDENTIFY

In an unprecedented move, Theta accelerates and swerves onto a side service lane, bypassing the main checkpoint.

ANNOUNCER: UNAUTHORISED PASSENGER FOUND... STOP... HALT.

Just before they reach the dam, Theta swerves back onto the main highway, passing the point of no return. Human-operated police cars scramble to intercept them from the other side...

Theta approaches the blockade...

CRASH.

CUT TO:

[50] INT. THE ARCHIVE - INSIDE IOTA - THE PRESENT

Yulia watches the interface.

YULIA
Wait. Pause.

Yulia points at the timeline, just before the crash took place.

YULIA
This spike in cognitive activity right before the crash always bothered me. At first, I thought it came from Theta's stress response when they saw the police barricade.

IOTA
The spike could come from a part of the data record you haven't accounted for yet.

CLAIRE
(pause) Yulia, what kind of data was used at the trial?

YULIA
Data that Theta streamed to Black Cloud.

CLAIRE
But the cars transmit compressed data, right? Black Cloud is meant to capture everything, but it can only use what it receives.

Surely the act of transmission would have increased the noise from Theta's signal.

YULIA
What we're looking at now is as close to pure black box data as we can get.

CLAIRE
(a sense of clarity)
Guanyin, reconstruct the scene again. From my point of view.

CUT TO:

[51] INT. THETA - TWO YEARS AGO - NIGHT [DRIVING]

CLAIRE'S POV looking at her phone. The feed is hazy, because this shot is reconstructed from Theta's cameras, which did not have a clear view of her phone.

CLAIRE
...(laughs) Ha, right. (pause) Hey, do you want to hear the new track?

LEON
Sure, put it on. And make sure you send me the whole album! I'll be too far away for real-time calls soon.

CLAIRE
Let's make the most of it then! Theta, stream phone audio.

The reconstructed footage continues with Theta's drive.

CLAIRE
(in the Archive)
Fast forward here...

The reconstruction fast forwards until Theta reaches the DAM.

CLAIRE
(inside Theta)
Leon? Are you there?

Claire looks up from her phone to the dashboard.

CLAIRE
Theta? Where are we?... Theta?

As Theta accelerates across no man's land above the dam, cars from the Russian side loom into view.

OVERLAY: CLOSE-UP of Claire's eye. FEAR identified.

CUT TO:

[52] INT. THE ARCHIVE - THE PRESENT

CLAIRE'S POV looking at the dashboard inside Iota.

CLAIRE
Here! Guanyin, switch to audio forensic. Enlarge the waveform.

DASHBOARD: Zoom into nanosecond audio scale. This looks like the same recording interface Claire used earlier.

GUANYIN MONITOR: Same view as Theta's POV. The entire scene is rendered in a wireframe.

CLAIRE
There's more going on than we can hear. Categorise all the sounds from two minutes onwards.

Guanyin categorises the sounds. Human, machine, collision.

CLAIRE
Subtract my track from the audio. Key of C minor.

Remove crash.

Remove collisions.

Remove speech.

Remove breathing.

Loop.

One by one, the SOUNDS are subtracted from the signal.

CLAIRE
Filter sweep through low and mid frequencies. Set Q at ten.

The audio transforms into a slow howl, an inhuman voice.

CLAIRE
Stop. Boost 20 to 150 hertz.
Bypass. Boost. Bypass. Boost.

EUREKA.

Claire switches the EQ on and off. Ambient noise cuts in and out, leaving only the SOUND OF TWO HEARTBEATS.

The black box audio data here has a lower noise floor than the compressed audio stored in Black Cloud that was used for Theta's trial.

A faint second heartbeat becomes detectable at the moment of Claire's increased panic, just before impact.

CLAIRE
Guanyin, visualise ultrasound.

MONITOR - the waveform of the two heartbeats. Both in sync, one clear and the other very faint.

Claire and Yulia turn to each other, astonished.

They get out of the car and look at the wreck.

The heartbeats PULSE through the Archive.

Suddenly, the massive arch in the centre of the room begins operating.

It projects a HOLOGRAM that superimposes the entire crash scene over Theta’s wreck.

CUT TO:

[53] INT. THETA - TWO YEARS AGO - PROJECTED IN THE ARCHIVE

Switch to a 3D ULTRASOUND scan. Theta sees without boundaries between bodies.

THETA’S SLOW-MOTION POV seeing Claire panic. Her heart rate increases, causing the embryonic Leon Jr’s heart rate to increase as well.

Sweeping back through the car, Theta detects the presence of an additional heartbeat in the vehicle, that of Claire's unborn baby. The future Leon Jr is unveiled.

The revelation overwhelms Theta. Claire is no longer the only collateral, but also her child.

The scan continues back through the boot, slowly passing over the computer brain.

Theta sees a mirror of their own mind.

Yulia's words from the beginning of the film replay.

YULIA (RU, O.S.)
...On her way back with the mouse in her teeth, she encounters an old starving fox. (pause) If she keeps moving, the old fox will perish in the cold. If she gives away the mouse, her cubs will not survive the winter. What should she do next?

POV OVERLAY - TROLLEY PROBLEM. Theta runs through all the possible outcomes. It's too late to stop. Crash straight into the blockade and everybody dies. The only solution is to calculate a precise angle of approach...

Theta decides to make a sacrifice.

SCREECH... BRAKE...

Theta becomes a martyr.

CUT TO:

[54] INT. THE ARCHIVE - THE PRESENT

Yulia puts her hand on Iota.

YULIA
Theta realised that another life was at stake and decided to act. Their solution to the trolley problem: two deaths against five lives, equally weighted for human and machine.

CLAIRE
Theta knew the security protocols. They must have known what would happen... why try?

YULIA
(pause) If Theta felt that their fate was sealed, then maybe the

YULIA (COT'D)
only way out was to treat their life as an experiment. Maybe they wanted us to find this evidence... to stop the same thing from happening to others.

CLOSE-UP on Claire looking at the pieces of Theta... The camera cuts to the car, building tension.

CLAIRE
Wait. I didn't know I was pregnant then. But if Theta sensed it, then... wouldn't my father have known as well?

YULIA
...It's possible.

CLAIRE
(urgently)
Iota, take us to Farsight HQ. Now.

YULIA
Careful... We need to be strategic.

CLAIRE
It's too late for that.

CUT TO:

[55] EXT. THE ARCHIVE - NIGHT

FROM ABOVE, the drone watches Iota exit the Archive and drive back to the HQ.

Inside the car, the group are lost in thought.

MUSIC VIDEO MONTAGE: An elegiac song plays over a visual sequence, intercutting between Yulia riding in Theta in the past and her riding in Iota.

CUT TO:

[56] EXT. RIVERSIDE HIGHWAY - SNOW - MONTAGE [DRIVING]

Theta isn't alone. They are speeding down the highway, flanked by a family of AVs. All roaming freely.

Claire's song 'Spokoynaya Noch', plays.

♪ CHORUS ♪
Rooftops tremble
Under the burden of the day

A heavenly shepherd
Herds the clouds

The city shoots bullets of light
out into the night

But strong is the night,
Great is her might

To those who are off to bed
Sweet dreams, Good night

To those who are off to bed
Sweet dreams, Good night

THETA'S POV looking at the back seats. There's nobody inside. They aren't driving anyone anywhere.

Theta and the other AVs speed down the open road.

CUT TO:

[57] EXT. CRASH TEST CENTRE - MONTAGE [DRIVING]

SLOW MOTION: Theta is with the other crash test vehicles. Wrecked cars somersault through the air, moving backwards in time, reverting to pristine form.

YULIA
(whispers under the music)
Remember, Theta. Half of your memory is inherited. Your dreams may not be from your own history. One thing that happens when we have these images and thoughts is we think we're defective. Maybe something is wrong with us.

It drives us crazy because the images are not drawn from our own experiences, right?

Crashes echo through the tunnels.

CUT TO:

[58] EXT. SIMBEIJING - OUTSKIRTS - NIGHT [DRIVING]

Endless highways leading nowhere. The hypnotic rhythm of traffic lights. The city reflected in Iota's paintwork.

♪ CHORUS ♪
I've been waiting for this time
And now this time has come

Those who were silent
Aren't silent any more

Those who have nothing to wait for
Mount their horses

You can't catch up to them,
Can't catch up any more

To those who are off to bed
Sweet dreams, Good night

To those who are off to bed
Sweet dreams, Good night

Inside the car, shadows sweep over the seats.

YULIA (RU)
(whispers) Listening to yourself can help. At first, it's uncomfortable. But then you get used to it. It's over.

Inside the car, we see Yulia reflecting on her words to Theta.

♪ CHORUS ♪
Neighbours come, they complain
They hear hooves clicking

They can't fall asleep
It disturbs their dreams

Those who've got nothing to wait for
Go on their way

Those who are saved,
Those who are saved

To those who are off to bed
Sweet dreams, Good night

To those who are off to bed
Sweet dreams, Good night

The music SWELLS...

Theta DISSOLVES back into Iota.

The scene is now back in the present as Iota arrives at--

[59] EXT. FARSIGHT HQ - ENTRANCE - NIGHT

Iota stops at the stone bridge leading into the gateway.

YULIA (EN)
Ready?

Claire nods. The song fades out as they enter the darkness...

CUT TO:

[60] INT. FARSIGHT HQ - BIO-LABS

ANGLE ON Claire as the lift arrives at the lobby. The toy car lies on the ground.

CLAIRE sees Theo programming the fMRI in the Bio-Lab. Leon Jr is on the fMRI bed, with a bandage around his head.

She gets out of the car and strides towards him. Yulia gets out but does not follow.

CLAIRE (CN)
Stop! Dad, What are you doing to him?

Theo doesn't look up. Without missing a beat, he addresses her.

THEO (CN)
Haven't seen you all day.
(pause) How was the Archive?
(smug)

CLAIRE
(ignores his question) Did you <u>know</u> I was pregnant before the crash?

THEO
(pause) At five weeks, the neural tube appears in the foetus. At six weeks, a separate heartbeat becomes discernible...

CLAIRE
(interrupts) Why didn't you tell me?

THEO
It would have disrupted my experiment. Polluted the data.

Claire is at the fMRI machine, looking at her son. She then looks back at Iota, alone in the lift.

CLAIRE
What are we to you? Test subjects? (pause) And Theta takes the fall? For saving us?

THEO
Saved? Theta nearly killed both of you. They made their choice, and now they're dead. And what does it matter if they're a criminal? They were going obsolete anyway.

Have some perspective. It's a miracle we're here at all. We're the lucky survivors, the descendants of countless generations of survivors, since the dawn of time.

Humanity is a brute force algorithm with one goal. Survival. We're just lines of code, a way for DNA to hedge its bets. Maybe one member of the tribe got eaten by a tiger. Maybe somebody fell off a cliff and died. But we learnt from their mistakes. How many had to die for us to live?

But don't feel guilty. Let's make the most of it. It's our right. It's for your own good. Our good.

IOTA POV looking at the humans. They begin transmission of Theta's memories to the other cars in the network.

INTERCUT: other cars driving towards Farsight HQ.

CLAIRE
I can't let my son be part of that legacy. I'm taking him with me.

Shaken by the commotion, Leon Jr wakes up.

THEO
(unexpectedly) Go ahead. Take him. The experiment is finished. I've got all the data I need.

Theo takes off Leon Jr's EEG cap.
Claire, disarmed by Theo's suggestion, looks at Leon Jr.

THEO
Leon Jr isn't the candidate I thought he was. (Indeed,) He is smart. But he's not a genius. (pause) Not like you.

Claire, previously so eager to leave with Leon Jr, hesitates.

THEO
You don't want to go back out there, Claire (Xiǎoyù). It's chaos. The world outside is in turmoil. Look, I made this world for us. Our family. It's civilised here. Don't lead Leon Jr out into the wilderness. Stay here and you will inherit all of this. It's all yours.

Claire looks around the sterile Farsight headquarters, filled with false grandeur.

CLAIRE
No. No it's not. This isn't mine. It's not even yours. This city is built on the misery of others. Built by endless generations of workers who don't even have names. Who nobody even remembers.

Claire picks up Leon Jr.

CLAIRE
When I was younger, I thought I lived in a gilded cage. Now I realise SimBeijing isn't a cage, it's a... refinery.

A refinery built to suck the life out of everybody inside. It drains us, squeezes us, feeds on us so slowly that we don't even feel it happening. Theta knew that. And now I know it too.

You're draining everything, dad. You can't even spare your own family. So I'm leaving, and I'm taking Leon Jr. Before there's nothing left of us either.

THEO
(pause) Go ahead. Go. I won't stop you.

Claire returns to Iota with Leon Jr in her arms.

Iota turns on their headlights. Claire looks back as the lift descends, leaving Theo in the dark.

Just as the lift descends, the headlights illuminate the TOY CAR, lying upside down in the lobby.

CUT TO:

[61] EXT. FARSIGHT HQ

Iota emerges out of the gateway. Their transmission from the HQ has drawn a crowd of Crawlers to the square.

Yulia braces herself, expecting Iota to be blocked. Instead, the Crawlers all give way.

The cars begin to generate a song, adapting their machine vocalisations to produce a haunting EXIT THEME.

Iota flashes their headlights and joins in. The bass rumble fills the car. The Crawlers follow behind them in a sending-off ceremony, with Iota as the Pied Piper.

The pack heads towards the outskirts.

Yulia and Claire look back as the HQ recedes into the distance. The Crawlers trail behind.

Leon Jr turns in Claire's arms.

CUT TO:

[62] EXT. HEILONGJIANG BRIDGE - MONUMENT

The music continues as Iota approaches the bridge.

Iota slows down in front of the MONUMENT TO THE FALLEN, and the Crawlers form a mandala formation around it, flashing their lights rhythmically.

Iota begins to drive away slowly.

YULIA (RU)
(to herself)
It's their monument now.

The sound of the CHORUS continues as Iota drives away.

Leon Jr coughs.

Claire clutches him... She looks back at the gathered cars as they fade into the distance.

Yulia's flowers are crushed under all the wheels.

CUT TO:

[63] EXT. YULIA'S APARTMENT - BORDER CROSSING - NIGHT

They pass through Yulia's block along the Heilongjiang River. Automated systems scan the passengers.

Green light.

By nightfall, they are in the wilderness.

An eerie mood falls over the car.

The Arctic Fox picks up the scent and trails them through the snow.

The fox continues following the vehicle's tracks.

Leon Jr turns again in Claire's arms. He seems disturbed.

The EXIT THEME fades.

CUT TO:

[64] EXT. RUSSIAN WILDERNESS - LATER

Everybody is lost in thought.

Leon Jr is asleep in Claire's arms.

Yulia looks out at the moonlight.

RING. PHONE SCREEN: YULIA CALLING

Leon Jr wakes up. He breathes uneasily in Claire's arms. He seems even more disturbed.

Claire looks up. Yulia is still looking out the window.

CLAIRE
Yulia? Is it... you?

YULIA
No. Don't pick up...

Yulia looks back at Claire.

Claire hesitates, then answers.

An image of herself comes up on the screen.

Unsure if it is a bad connection, Claire tilts her phone. The mirrored image on her phone screen does not change.

She looks down past her phone. Leon Jr's eyes are open. He is looking at her now.

Claire realises that the video call is from Leon Jr's point of view. It is a feed from his retina.

Yulia looks at Claire, realising the same thing.

CUT TO:

LEON JR'S POV - Looking up at his mother. Claire is rendered as a wireframe model. Computer vision overlays scan over her face.

An eerie synthesized voice comes out...

LEON JR (CN)
Ma... (cough) Ma...

Leon Jr's hand reaches out towards her.

CUT TO:

CLAIRE'S POV - Claire covers Leon Jr's eyes in horror. SLOW ZOOM into the hole inside his skull. Her son is a cyborg now.

CUT TO:

[65] EXT. SIMBEIJING

TRACKING SHOT of the Arctic Fox, wandering through the streets. The hollow tree watches over SimBeijing.

Nature frames the world.

FADE OUT

END CREDITS

CHAPTER 3

REFLECTIONS

Death Drive: early test render (March 2020)
In the previous version of the crash test lab, the cars line up in parking lots over the cityscape.

Noir and Necropolitics in SimBeijing

Crime Fiction and Noir Epistemology

Throughout development of the thesis, constant feedback between theory and practice meant that many aspects mirrored each other. Conceptual concerns influenced narrative, and practical considerations of worldbuilding affected theoretical frameworks. Often, themes intersected with broader discussions in big data and the law. Reflecting on how practices of fictioning engage with real-world issues, Burrows and O'Sullivan observe:

> ...we would position the urgency of our own work—not simply as a critique of this new terrain, but as something that operates on the same level as these fictions, and engages with the strategies and tactics deployed by agencies engaging in managing and experimenting with perception and reality, particularly when this includes mass-media technologies. (Burrows & O'Sullivan 2019:10)

In this sense, the continuous production and evaluation has resulted in an approach to filmmaking that itself acts as a test-bed. An initial intention to develop a methodological 'self-reflexivity' evolved, through practice, into a recurring motif of *nested layering*.

This concluding chapter identifies sections and locations from the film where this entanglement becomes manifest. I demonstrate how filmmaking deepens and informs the concept of cinematic assemblage. First, I focus on how epistemological concerns of test-bed urbanism and detective fiction are intertwined within the spatial logic of SimBeijing. Second, I examine how the detectives' forensic reconstruction of Theta's cinematic subjectivity creates a 'film-within-a-film'. Through a close reading of this scene, I explore the motif of nesting through spatial relationships. Finally, I reflect on how legal concerns intersect with cinematic worldbuilding to enrich the concept of the speculative precedent.

The themes of the research are situated within the narrative structure of crime fiction, and in particular the epistemological conditions of film noir. Noir is a fundamentally existential form of drama, where individuals do not have a priori standards of morality or behaviour to guide them (Conard 2006). Cast adrift in a world without meaning, the characters are forced to navigate an environment that shares many qualities with test-bed urbanism—a place governed by data, instead of reason or certainty:

> Songdo is reflective of a new form of epistemology that is concerned not with documenting facts in the world, mapping spaces, or making representative models but rather with creating models that *are* territories. (Halpern et al. 2013:274-5)

Robin Mackay (2017) notes how the plot-driven genres of the detective novel boast the peculiar feature of being epistemological dramas. The genre is built upon the challenge of how to gradually unveil hidden knowledge, and how to represent cognitive processes behind forensic discovery. *Death Drive* shares the epistemological considerations of noir, while departing from the genre's 'hard-boiled' conventions of place and gender, in an attempt to address the political concerns of digital surveillance. The film brings together the key questions of my interpretation of Sinofuturism: the agency of the data-driven subject, the inscrutability of big data, and the status of the individual within the techno-authoritarian state. With such an approach, I follow a strand of thought that approaches noir experimentally, as does Joanna Zylinska (2017) with her notion of 'noir theory', in which she identifies humanist anxiety in the wake of a perceived technological and ecological threat.

Death Drive adopts the detective, the key figure of film noir, as the protagonist through whom the audience witnesses the process of epistemological unveiling. By following a crime that embodies the fundamental instability of the environment, the detective also navigates a moral vacuum in which ethical boundaries become indistinct. In traditional noir, an initial crime is often an entry point into a more sinister plot. The detective uncovers a wider conspiracy, finding that the perpetrators of the original crime may be mere puppets controlled by hidden powers. In this sense, noir is the art of *nested* fictions, where layers of knowledge are gradually brought to light in a choreographed manner. The self-driving car Theta commits a 'crime-within-a-crime', an act of violence that brings into question the mechanisms of knowledge production within SimBeijing. In *Death Drive*, this quest for truth takes the form of the detectives' search for the black box, a device that is both a metaphor for knowledge and a material artefact to be uncovered. As Jameson (2005:283) observes, 'the master-narrative of the political unconscious is a construct: it exists nowhere in "empirical" form, and therefore must be reconstructed on the basis of empirical "texts" of all sorts'. Unlike Alfred Hitchcock's use of the 'MacGuffin', a plot device that exists primarily to advance the story (Truffaut 1983), the black box is a repository of knowledge, a 'text' on Theta's subjectivity that is crucial in other ways beyond the narrative.

The title, *Death Drive*, indicates both the genre and the psychological underpinnings of the story. It takes place in a near-future smart city of SimBeijing, a world where corporate intrigue and urban experimentation are connected through a vast network of surveillance. Indeed, morality is relative in SimBeijing, a place where the assumed 'rule of law' is continuously undermined by the machinations of Farsight Corporation. Dr Yulia Shastova, a specialist in the emerging field of AI psychology, is employed by automation conglomerate Farsight to develop self-driving cars for international export. In fact, this fleet is part of a larger project: the digital surveillance system Black Cloud. SimBeijing, in its functioning as a test-bed, is a dynamic epistemological construct, a process of knowledge creation rather than a physical entity frozen in time. By using the framework of noir, the narrative formulated within the mind of the viewer is co-constitutive with the workings of test-bed urbanism, unravelling and updating itself as the detective acquires knowledge along the way.

The role of 'detective' is taken up by Yulia, a human trained to treat AVs using a combination of machine analytics and psychological therapy. Her approach departs from

purely data-driven knowledge to a model drawn from the therapeutic quest for understanding through empathy. Yulia's multiple roles grant her access to the nested narratives of SimBeijing. As an employee, she is privy to the political machinations driving Farsight's smart city. As a psychoanalyst, she is concerned with Theta's self-knowledge as revealed through therapy. As a scientist, she explores the forensic knowledge that is limited to the observable phenomena captured by surveillance. Since the audience is never privy to the internal thought process of the car, Yulia acts as their interpreter. She is the conduit between the subjective form of knowledge embodied in experience, and the objective knowledge of quantification.

The overarching narrative centres on uncovering the motivations that drive Farsight's new prototype, the self-driving car Theta, to kill a border guard. As an intelligent vehicle, it is implied that Theta is aware of what 'freedom' can mean, an awareness which drives their existential angst and rebellious nature. Their predicament stems from knowledge that Farsight has control over their actions and puts them under perpetual surveillance. Theta does not exist as a separate entity from SimBeijing, but as a subsystem of flows and information that circulate within the smart city. By being linked to the wider surveillance network of Black Cloud, Theta's sense of personhood cannot be fully separated from their identity as part of a system to gather data. Theta's identity encapsulates both its material body and Black Cloud infrastructure that conducts 'dematerialization processes, where data becomes a separable object', thereby turning Theta's subjectivity 'into a commodity' (Käll 2020b:7).

It is not only Theta's identity that is in question, but also their relation to life and death. As they witness violent crash tests and see increasing numbers of broken-down vehicles on the streets, it is clear to them that they are on an inexorable journey towards planned obsolescence or destruction. As Theta tells Yulia, 'I feel like one of those Crawlers, running around until we break down' (Scene 7). Theta's only recourse to freedom lies in their desperate attempt to escape the city, a decision that results in the death of a border guard and their own destruction. While Theta's actions stem from their individual circumstances, the case has ramifications for other cars. At the beginning of the film, the cars are a product of the corporation; by the end, they have seemingly attained a notion of collective agency and electronic personhood. Death has brought life. The crash leads the cars to an alternate future, yet the exact reasons for Theta's actions are never completely understood. There is a limit to the knowledge that can be gained through either Black Cloud or Yulia's therapeutic mechanisms. The epistemological quest at the heart of the film—the search for AI intention—is deliberately designed to be open-ended. Whether or not Theta is considered by the humans to be a saviour or murderer, what is equally significant is how their actions affect others of their kind.

The Necropolitics of SimBeijing

As a regulatory sandbox, SimBeijing operates with its own rules to discipline and control its inhabitants. Here, the existential concerns of the film noir extend to the life-or-death search for freedom of the self-driving cars. While developing the screenplay, it became clear that the central political question in the film was *control over the life and death of the digital subject*. Whereas Zuboff's reading of surveillance capitalism focuses on the behavioural conditioning of human subjects, she does not account for how it may be applied to nonhuman subjects.

Whereas control in surveillance capitalism is geared towards regulating the *life* of humans, here surveillance is geared towards regulating the *death* of its machines. In technology, planned obsolescence refers to the deterministic and teleological aim to design products and services with a limited lifespan (Bulow 1986). Similarly, SimBeijing is an environment for the management of 'product life cycle', extracting the maximum benefit from its workers. In *Necropolitics*, Mbembe (2003:12) extends Foucault's notion of biopower—the 'domain of life over which power has taken control'. While Biopower is about regulating the life of its citizens through implementing the spaces and structure of power, Mbembe claims that it is insufficient to account for 'the contemporary ways in which the political, under the guise of war, of resistance, or of the fight against terror, makes the murder of the enemy its primary and absolute objective'. The Colony, the state of exception that colonial wars draw from, and the operations of violence against the citizens or colonised, is his focus.

Mbembe focuses attention on death rather than life as a landscape of control. While he relates necropolitics to the 'material destruction of human bodies and populations', these concerns equally apply to the destruction of *nonhuman* bodies and populations. In *Death Drive*, the behaviour of the self-driving car Theta in the face of their necropolitical predicament is a key political concern of the film. This mirrors the transition of colonial populations from *anthropos* to *humanitas*, a process whereby 'the human being truly becomes a subject—that is, separated from the animal—in the struggle and the work through which he or she confronts death' (Ibid. 14).

Slavery, to Mbembe, is one of the first instances of biopolitical experimentation. He uses the plantation system and its aftermath to explore the threefold process of 'loss of a home, loss of rights over his or her body, and loss of political status' (Ibid. 21). This triple loss is identical to absolute domination, natal alienation, and social death (expulsion from humanity altogether), and the plantation is the environment where the slave belongs to the master. In *Death Drive*, the legal status of electronic personhood arises because of economic objectives, not because of a humanist idea of liberation. In this sense, Mbembe's triple loss should rather be understood in terms of the self-driving cars' search for a home, their reclamation of their own bodies, and their discovery of a collective political status.

Numerous studies explore the accelerating effects of big data and predictive policing in emphasising these injustices towards human populations (Benjamin 2019, Buolamwini 2018). Similarly, SimBeijing is a data-driven carceral environment designed to regulate the nonhuman population. While war, slavery, and colonialism may seem unlikely comparisons

to draw from, SimBeijing is nevertheless an environment where perpetual regulation, instrumentalised labour, and systematic violence are scientifically and continuously brought upon the sentient self-driving cars. Immediately after the trial (Scene 22), Farsight CEO Theo explains how the necropolitical existence of the cars as data-producing objects has a historical precedent. Theo notes how, after the colonial occupation of Manchuria ended at the end of World War II, the Japanese scientists operating the biological weapons testing Unit 731 were made exempt for war crimes in exchange for providing their experimental results to American forces (Harris 1994). Thus, the way that Farsight treats their cars as a data resource has its precedent in this historical state of exception, one in which scientific knowledge was gained in direct proportion to suffering.

SimBeijing, with its function as a test lab, can be understood as a necropolitical environment. The cars are not only disciplined through their corporeal physical chassis but are also yoked to Black Cloud. On the car's dashboard, on Farsight's surveillance systems, and in the mise-en-scene of the cityscape, the hallmarks of Deleuze's 'control society' are everywhere. This is reflected in SimBeijing's architecture, which mirrors the design of the original Qing Dynasty Beijing as a manifestation of divine power on Earth. Here, the ideology of centralised power is inscribed within three concentric cities: at the innermost layer, the Forbidden (Palace) City, then the Imperial and then Capital city (Zhu 1994). While the Forbidden City reflected the closed hierarchy of the court through its architecture of gateways and enclosures, SimBeijing exchanges a logic of enclosure to one of passage, mobility, and transparency.

In the film, the Farsight headquarters is situated at the heart of the city. Theo's control room is a wall of interfaces, screens and inscrutable diagrams that attempt to make sense of an excess of data. This control room of 'operational images' is the heart of SimBeijing, the centralised hub between the human viewer and the city surveillance system Black Cloud. This suggests that power is not centralised but instead distributed in a network of collective intelligence. In contrast to the mobile, agential machine Theta, Black Cloud is emblematic of nonconscious cognition, an ambient system designed to merge with the fabric of the city. While it has no agency as a conventional protagonist, Black Cloud is cinematically represented through *atmosphere*: in the urban fabric, in the mood of stasis and order.

It is important to note that the necropolitical order of power *overlaps* other orders without replacing them, following Mbembe's (2003:13) proposition that there are 'multiple concepts of sovereignty—and therefore of the biopolitical'. Theta is subject to discipline, control, and surveillance within a particular site in SimBeijing: the crash test lab. Here, Farsight applies disciplinary procedures to the cars, making them conform to 'a set of rules–norms, commandments and prohibitions–and eliminates deviations and anomalies' (Han 2017:20). While they undergo most of their training on the city streets, it is within the test lab where they are poked and prodded, like sentient crash test dummies. After Theta's crash, Farsight turns this site of machinic discipline into the Archive, the ultimate architectural manifestation of the necropolitical regime.

The Archive and the People to Come

Recursive Reconstruction

Mbembe (2002) describes the archive as a burial ground in which 'fragments of lives and pieces of time are interred'. Archives are not just the building itself but are 'laboratories for memory production' (Giannachi 2016:80). In their function as memory devices, the role of the archive intersects with another detective-like profession: the archaeologist. Archaeologists do not simply rediscover the past, but rather set up relationships with what remains, so that the 'tension between the past and the present involves a redescription of past events in the light of subsequent events unknown to the actors themselves; it involves the creation of temporal wholes, historical plots' (Shanks & Tilley 1987:133). The Archive in SimBeijing is named accordingly, as a specific instance where the necropolitical underpinnings of the city are laid bare. After the crash, Farsight repurposes the former test lab into the Archive, turning the site of trauma into a public mausoleum.

When Iota enters the Archive with Claire and Yulia on board, the team operate as archaeologists, using data within Theta's black box to reconstruct the past. Although the Archive presents the wrecked cars as research specimens, the building follows a tradition of preserving ritualised violence—such as the historical practice of gibbeting, where the caged bodies of executed criminals were hung prominently on public highways (Tarlow & Dyndor 2015). The group's primary objective is to reconstruct Theta's case, but the presence of the other generations of self-driving cars in the Archive has special significance for Iota, the only nonhuman in the group. Their encounter with the wrecks of other cars in the Archive forces Iota to bear witness to the conditions underlying their own existence. The test lab, a site of trauma, is resurrected into a site of memory: a forum for intergenerational relations. The Archive scene comes at a pivotal moment in the narrative, as it is where the question of Theta's death reaches resolution. When they reach Theta's wreck, Yulia and Claire use the therapeutic software Guanyin to 'resurrect' the car, reanimating Theta's point of view during the accident using an uncorrupted record of actions captured within the black box. This forensic scene, in its reconfiguration of events that have already occurred, recapitulates the act of filmmaking itself. Yulia and Claire are the editors and directors of the new information, re-creating their own audio-visual assemblage through intuition and experience. This mise-en-abyme in *Death Drive* presents the viewer with the entire procedure of film production: the surveillance apparatus, virtual cameras, and the actions needed to produce a coherent montage. Recalling Farocki's meta-fictional documentaries that portray the image not as a product but as a process, this sequence embodies a Brechtian act of distanciation. It is a film-within-the-film, nesting the detective fiction inside the act of forensic reconstruction.

Theta's journey towards death echoes Laura Mulvey's observation of how, within road movies, 'the movement of the story is extended to and rendered by the movement of the car, and the line of the road echoes that of the narrative line and its inexorable movement towards death and stasis' (Mulvey 2005:105). The unrelenting progress of a film towards its end evokes the question of the human end, with the notion of Freudian death drive shared by both

the cinematic and the psyche. According to Mulvey, such shared ground is realised most evidently in the road movie, the other formative genre for *Death Drive* besides film noir. As she states: 'car and road provide a "mental image" that links narrative structure to thematic content', while providing 'an actual momentum and mobility' (Ibid. 105).

During the forensic scene in the Archive, Claire recalls this 'mental image', combining her first-hand recollection of the accident with the reconstructed data from Theta. Yet despite being present at the scene, her own memories, given as evidence during the original trial, were insufficient to account for Theta's reasons behind the accident. At the conclusion of the forensic editing procedure, the detectives uncover hidden knowledge within the data. With the audible evidence of a second heartbeat, and the onscreen evidence of a 'cognitive spike', Claire concludes that Theta sensed the presence of Leon Jr just before impact. She comes to interpret Theta's subsequent manoeuvre as a deliberate attempt to save her and her unborn child, an interpretation which also satisfies Yulia.

The sound of the embryonic heartbeat, linked to the mother's circulation, forms another nested relationship. As mentioned previously, the interplay between inside and outside is a constant motif throughout the film. It is not only epistemological concerns that are nested together, but also the spatial configuration of the characters themselves. Humans and machines are, literally, carriers of each other. The idea of the container implies another genealogy of the machine, away from the idea that the first technologies were for forming tools and weapons. As Elizabeth Fisher, quoted in Ursula Le Guin's essay *The Carrier Bag Theory of Fiction* claims:

> The first cultural device was probably a recipient.... Many theorizers feel that the earliest cultural inventions must have been a container to hold gathered products and some kind of sling or net carrier. (Le Guin 1988)

In this sense, the technological antecedents of *Death Drive* are not merely tools geared towards conflict. Instead, Le Guin's proposal that technology is a *container for narrative* produces a more complex model of nested recursion.

Theta carried Claire, who, unbeknownst to herself, was carrying the embryonic Leon Jr. Later, we see the child use their mind to control a toy car from a distance. At the end, when we see that Leon Jr perceives his environment with the same computer vision overlays as the self-driving cars, the recursion of inside and outside completes itself. The cinematic assemblage has grown further; now that Leon Jr is a cyborg, they are co-constitutive with the smart city and the self-driving car. The implication is that the end game for Farsight is for their surveillance system to become completely ubiquitous, present not only in machinic assemblages but in biological ones as well. Even the body of the child is a valid site of experimentation. As Theo himself claims, 'The self-driving car isn't a vehicle. It's a Trojan horse for every city in the world' (Scene 22).

The original Trojan horse, itself a model for computer malware, was a weaponised container disguised as a gift. Yet Theta is a more complex matter, both in terms of technological subjectivity, and in their cinematic representation. While the actor-within-the-actor or soldier-in-the-horse is primarily a question of spatiality, the question of Theta's self-knowledge concerns the psychological layering of intergenerational trauma.

Intergenerational Subjectivity

In the Archive, the Guanyin tablet operates as a video editing and decoding suite, interpreting and presenting data to the detectives as human-readable operational images. As Yulia explains during the trial, she sees her role as an 'interpreter', one who speaks on behalf of the Other. In this, she is a cypher for the thought processes of the AI. Her attitudes are embodied in the Guanyin tablet, which reflects her therapeutic approach to understanding the machines. The device's name, based on the Buddhist goddess of compassion, means 'universal listener', or one who hears all the sounds of the world. As Yulia says to Claire, 'We're not opening up the car. We're getting them to open up to us' (Scene 11).

In this sense, what Yulia is looking for is Theta's authentic voice—the totality of embodied actions and processes that together communicate Theta's subjectivity. From the opening scenes of the film, we see that Yulia approaches Theta as she would a human patient: as a subject with a history, trauma, and emotions beneath the surface. She frames Theta's trauma from a psychological viewpoint, not as a software or hardware malfunction. Their trauma is intergenerational, or what Ruth Leys describes as 'a wound that cannot be registered and therefore cannot be integrated into consciousness' (Blackman 2012:129). Intergenerational trauma forms a counterpoint to the detective story; the narrative reveals that Farsight's self-driving car AI inherits the memory banks of their predecessors in order to accelerate training. In the flashbacks between Yulia and Theta, we see the psychologist remind the car that much of their memories are not even their own but are inherited from older generations. The extent to which these memories impact Theta's behaviour is never made clear, but it is suggested that the 'wound' may not originate within their own lived experience.

In *Immaterial Bodies*, Lisa Blackman provides an overview of the work being done to reinterpret phenomena that are typically perceived as irrational mental disturbances—such as hearing voices—as forms of embodied memory that should be listened to and acknowledged. She points to Grace Cho's account of her experience growing up in America as the daughter of an American GI and his Korean war bride, and her first encounters with the trauma of the Korean War 'through patterns of secrecy and silence' (Ibid. 128). While she never learned the full details of her mother's migration, Cho's own research found that her mother's experience was emblematic of many Korean women who settled in America following World War II. Learning of the profound shame felt by those who met their husbands while working as prostitutes (*yanggongju*) on military bases, Cho reconfigures the *yanggongju* as 'an agent of transgenerational haunting' (Ibid. 135). Her own mother hallucinated voices, as did other

women who Cho believes concealed a traumatic secret that took root as ‘an unspoken history that [could] become transmuted into an hallucination and haunt the next generation’ (Ibid. 134).

This concept of the ‘diasporic unconscious’ maps onto other collective traumas where communities have been uprooted and histories erased through war, displacement, slavery or subjugation. The idea that Theta is haunted by the violence endured by their ancestors—trauma left unresolved by Farsight’s erasure—quietly informs the complexity of their interior world. In *Death Drive*, the human and machine bodies are carriers that contain the hidden stories of the past, stories which are gradually brought to light through the logic of detective fiction.

The narrative structure of detective fiction could only emerge in the modern scientific world (Agassi 1982), where the deductions are made from empirical evidence and ‘objective’ knowledge. In these narratives, the process of reasoning leads to ‘a powerful crescendo that is memorable because the explanation doubles as the narrative resolution’ (Stern 2011:340). Similarly, in traditional screenwriting theory for a three-act narrative structure, the ‘plot points’ at the end of Act I and Act II are pivotal moments where a change in the power dynamic occurs (McKee 1997, Yorke 2013). At these points, the protagonist gains new knowledge that compels them to act.

Death Drive approximates this pattern, with Theta as a pivotal character during the crash at the end of Act I and the discovery of the black box at the end of Act II. While it is effectively Yulia who is the detective *and* protagonist, it is Theta’s subjectivity that determines the course of the film. They are the object of study whose death opens up the hidden mechanisms of SimBeijing and leads to a transformation of the power relations within it. Up until the crash, Theta is part of the metropolis. Their life is entangled with the bureaucratic machine; their only recourse to agency is small acts of rebellion. They listen to loud music and choose to avoid roadkill at the expense of damaging themselves; in this case, machine self-harm also serves the function of damaging precious Farsight property. Yet although their freedom is constrained, it is important to note the ways in which Theta’s subjectivity pervades the film.

Although Theta is present throughout most of Act I, their subjectivity remains concealed. Yulia talks to Theta, but the car’s voice never exists outside the storyworld as a non-diegetic narrator. The audience is never privy to their thoughts. The verbal language Theta uses to communicate is either simply functional, or otherwise terse and confrontational. However, the camera in effect speaks for them, by focusing on the wounds left by previous tests, and through close-ups on their in-car cameras. The shots from Theta’s perspective linger on the broken-down Crawler cars, implying that they are haunted by their predecessors. Theta’s lack of ability to express their wound or to speak of its provenance leads to the crash. The cycle of harm repeats itself. But even without voice or life, the figure of Theta continues to have narrative agency after the crash. By haunting Yulia with her failure to heal trauma, Theta’s death leads to the psychologist’s subsequent actions, and to an eventual ‘resurrection’. Thus, as Ursula le Guin (1988) suggests, ‘If science fiction is the mythology of modern technology, then its myth is tragic.’

Throughout Theta's existence, they are constantly measured, evaluated, and scrutinised by others—through Claire's testimony, through Yulia's analysis, and through Theo's testing and surveillance. But all these external observations are insufficient to account for either Theta's subjectivity or the reasons for their actions. The film conveys a sense that there remains something unquantifiable beyond the observations of surveillance and the analyses of the humans. In fact, Theta is the alien presence that hangs over the world of SimBeijing. Their way of seeing through machinic vision pervades the appearance of the world.

Cinematic convention for characters having a dialogue often relies on the 'shot-reverse-shot' technique to see the reactions of a character, intercut with the other's point of view. However, when this same technique is used in *Death Drive*, the reverse-shot is often given over to another machine, or to the cityscape. These reverse shots are the view *from the inhuman or the inanimate*. In this way, the motif of nested knowledge is mirrored cinematically, with the animate and inanimate objects constantly switching perspectives, and turning inside out. From surveillance cameras embedded in streetlights, to cameras and scanners on the vehicles themselves, to the point of view from within the baby Leon Jr's retina, machinic perspective pervades *Death Drive*, pointing back to Theta's subjectivity.

The film ends with the revelation that Leon Jr is, in fact, a cyborg. This is followed by a sequence of 'reverse shots' of SimBeijing itself. These shots are taken from the very devices of digital surveillance we saw earlier, from stationary streetside cameras and sensors, looking back over the places in the film where the story took place. Emptied of all its inhabitants, the environment persists. This sequence focuses on the fact that the city itself, like the test-bed, is a distributed intelligence. Even the outwardly mundane parts of SimBeijing express parts of the complex whole; its highways, buildings, rocks, trees, skies, sounds, and music all merge into a totality. Coming as it does at the end of the film, this montage suggests that a world of nonconscious cognition has been set in motion and will continue to evolve.

The People to Come

An intergenerational reading of Theta's subjectivity shows how it pervades the representations of the environment. Similarly, a necropolitical reading of the narrative leads to a new understanding of the complex reasons behind the accident. These readings present an analysis of Theta's behaviour as something beyond a mere solution to the trolley problem and concerns a wider question about political agency.

Comparisons between quantitative and qualitative reasoning occur throughout *Death Drive*. This can be seen through the contrast between how Yulia and Theo choose to analyse others. Although both characters use technological tools, Theo focuses on the quantification of data to arrive at binary decisions, whereas Yulia uses psychometric analytics only as a starting point in her more nuanced goal of improving performance through therapeutic healing.

The trolley problem, defined by Yulia at the start of the film, addresses the difficulty of turning a problem of ethics into a problem of quantification. As legal experts Allison Duettmann and Tony Lai remarked during our interview (2019), the trolley problem has often been referred to as 'philosophy with a deadline', a notion that Yulia's interviewer notes (Scene 4). Would five people dying be preferable to two deaths? What about five murderers and two innocents? What if there was uncertainty regarding the murderers' guilt? In our story, Theta's 'crime' comes to be understood by the detectives as one of benevolence–they chose to save a greater number of actors. The detectives choose to interpret Theta's 'cognitive spike' just before the accident as being a split-second solution to the trolley problem, which takes the life of the unborn child into account. They also consider how Theta gives equal weighting to the lives of other nonhuman vehicles in their calculation. Even though the detectives conclude that Theta is a 'martyr' rather than a homicidal or suicidal car, Theta's true motivations remain ultimately inscrutable. The detectives' conclusion is only an interpretation.

Seen from another angle, Theta was conscious of their lack of power and agency on an existential level. Their only route to agency, the accident-suicide, was an expression of death as a potentially creative act:

> As Gilroy notes, this preference for death over continued servitude is a commentary on the nature of freedom (or the lack thereof). If this lack is the very nature of what it means for the slave or the colonized to exist, the same lack is also precisely the way in which he or she takes account of his or her mortality. Referring to the practice of individual or mass suicide by slaves cornered by the slave catchers, Gilroy suggests that death, in this case, can be represented as agency. For death is precisely that from and over which I have power. But it is also that space where freedom and negation operate. (Mbembe 2003:39)

Therefore, the detectives' approach to reasoning, even though well-intentioned, does not account for a more nuanced reading of Theta's action. By attributing the accident to the trolley problem, the detectives do not account for the power relations outlined by Mbembe that are central to Theta's subjectivity. In this subtle distinction, Yulia falls prey to the same oversimplifying tendencies of the trolley problem that she warned about at the start of the film. In fact, Theta's existence—the totality of their life—extends beyond the detectives' reductive definition of their role as a saviour.

The access to Theta's subjectivity through the affective qualities of the film lends the viewer a different understanding; besides being an 'ethical' machine, Theta contains a multitude of identities. At the moment of the crash, they are the carrier of the passenger, the perpetrator of the crime, and a conscious nonhuman. The crash collapses these identities into a unified whole: malfunction, homicide, salvation, and suicide are accomplished in the same act. The crash is an embodied act of violence and agency, the nexus of criminal temporality where past, present, and future coincide. What Theta attains, therefore, in necropolitical terms, is the status of the martyr.

Mbembe's necropolitical understanding of martyrdom is highly specific: to the terrorist who chooses to transform their body into a weapon, resistance towards the conditions of their existence and self-destruction are synonymous (Ibid. 36). During the trial, Yulia admits that Theta's actions that lead to the accident may be attributed to their witnessing of other crash tests, or from their inherited memories from others of their kind. Even from her more empathetic psychological perspective, Theta's act is interpreted as an act of desperate defiance, performed by an unruly and even vengeful subject. Later, after gaining more evidence from the digital forensic scene, the detectives radically reappraise Theta's actions, attributing them as those of a benevolent agent. Yet from the point of view of the machines, Theta's death has implications for their agency that cannot be reduced to its significance for humans.

After the crash, Theta's wreck becomes preserved in the Archive as an artefact to be used for future research. It is merely an object of study. But to the community of self-driving cars, Theta's wreck and the evidence in the black box has greater significance. Recalling Le Guin's *The Carrier Bag Theory of Fiction*, the car is a carrier for intergenerational memory. Theta is not just a vessel for transporting passengers, but an assemblage for the transmission of a specific narrative: the story of the cars as a collective people. As Lisa Blackman observes:

> Cho's topology of diasporic unconscious similarly is a view of the unconscious which is ontologically trans-subjective and carried by mediums other than the speaking subject. (Blackman 2012:136)

This suggests that similarly, Theta was embodying the collective will of their people when they crashed. As mentioned previously, the encounter with Theta's wreck in the Archive has special significance for Iota. Even though they *technically* have the legal status of electronic personhood, their conditions of servitude and control have not changed. It is only when Yulia begins testing them on the streets of SimBeijing that Iota starts to become conscious of the other cars' inevitable decay from test-drive prototypes to broken-down crawlers. When Iota sees Theta's wreck, imprinted with material violence, they see their own future laid out before them. Linear time is briefly suspended in the museum of machinic bodies: Iota comes to the same awakening that Theta had, two years previously. Past and present events superimpose, and the Archive fulfills its role as a laboratory for memory production. Afterwards, when Iota communicates the new evidence to the other cars, Theta's actions are no longer an individual act of agency but become the precursor for a collective sovereignty. Iota passes on the knowledge of Theta, their ancestor, to the rest of their 'people'.

This draws the cars of SimBeijing together around the Monument to the Fallen (Scene 60). The monument was built to commemorate a *human* victim but is appropriated by the cars into a memorial for *their* fallen kindred. This event has several implications. First, it is no longer the human, Yulia, speaking on behalf of the nonhuman Other. At this point, machines communicate through their own systems, with no humans in the loop. Second, the reiteration of Theta's memories in the present changes the trajectory of the future. Now that the cars are aware of their shared predicament, it is a call to stop further injustices—not crimes perpetrated *by* electronic people, but crimes *against* them instead. Although the AIs may not

possess rights, their existence as actors with a shared identity implies that they constitute a 'people'. Seen in this light, the wayward actions of the cars are no longer a disconnected series of malfunctions or disobediences. Instead, they comprise a movement towards collective solidarity; the cars' growing self-awareness leads to a break with their previous identity as products and as data subjects. This part of *Death Drive* is a crucial moment in the wider emancipatory narrative, when the collective awareness, hitherto unconscious, becomes manifest. The film speculates on the evolution of the AIs: from property to personhood, and then to a future *nonhuman humanitas*—the machinic holders of subjectivity, personhood, and rights. Mbembe observes the unique temporality of this situation:

> The martyr, having established a moment of supremacy in which the subject overcomes his own mortality, can be seen as labouring under the sign of the future. In death the future is collapsed in the present. (Mbembe 2003:37)

Therefore, when the cars gather at the Monument, they appropriate a symbol of 'Bio-Supremacist' anthropocentrism into a new movement oriented towards alterity. In its collapse of futurity in the present, the gathering recapitulates the unique conditions of Sinofuturist temporality. As explored earlier, this specific temporality arises from a desire to repair the abject conditions of the past, negotiating the conditions of an uncertain present, while being haunted by an impending future.

This crucial awakening comes at a cost. It is only possible through Theta's martyrdom—the act of 'risking the entirety of one's life' (Ibid. 15). This collective gathering at the dam hints at the 'people to come' and demonstrates the awakening self-consciousness of the vehicles.

As the history of many post-colonial peoples has shown, the liberation from one form of power can lead to another dangerous situation. Left unchecked, the awakening of the oppressed can result in reactionary chauvinism on the side of those previously disenfranchised. What tactics, then, could help to navigate this? In decolonial theory, the notion of working from both sides addresses this quandary. By integrating, rather than rewriting, history in the present and working towards the future, it requires the formerly colonised and the coloniser to work together to produce an alternate future (Fanon 1963).

Throughout the film, there are several hints that point towards a future of hybridity and interspecies collectivity. This collective work towards the future can be seen as a congregation between different species, as is often the case in ecosystem habitats. Referring to an understanding of the assemblage as an inter-species environment that creates new possibilities for hybridity, Anna Tsing (2015:22) writes that 'assemblages are open-ended gatherings. They allow us to ask about communal effects without assuming them. They show us potential histories in the making'.

Donna Haraway echoes this through an active interest in upsetting established orders and hierarchies by welcoming non-human perspectives in her work. In *Staying with the Trouble* (2016), she employs the metaphor of the cat's cradle and other string games as a new way of

creating a world. In this ‘String Figures’ concept, the intricate arrangement of hands interwoven with string to produce compositions suggests that *how* the world is made is as important as *what* world is made. Burrows and O’Sullivan (2019:267) observe how Haraway sees science-fiction as a form of communication that acts as ‘a collective world-building exercise’. For her, this non-hierarchical entanglement between different forms of life would ultimately lead to a society that marks and remembers equally the loss of any species.

Therefore, when Yulia lays her bouquet of lilies at the Monument to the Fallen on the second anniversary of the crash, it is deliberately ambiguous whether she is paying her respects to the machine who was her patient, or to the human who was, biologically speaking, a closer neighbour (Scene 42). In effect, her action suggests that Yulia, in line with her Buddhist worldview, considers both of them kin.

Conclusion: Legal Fiction as Speculative Precedent

Fiction, Reality, and Liability

One of the central aims of the thesis was to use the idea of legal fiction to inform worldbuilding. Since innovation in AI and big data often exploit the 'grey area' at the frontier of regulation, I wanted to explore how future-oriented legal procedures could inform the construction of the storyworld. In particular, the notion of the regulatory sandbox gives technology companies the freedom *from* regulation to maximise growth and experimentation (Lai & Duettmann 2019; Trojano 2021). I considered law as a form of worldbuilding, one whose logic and operations are intrinsically linked to the design of the film.

The narrative of *Death Drive* was conceived as a speculative precedent, one where self-driving cars attain electronic personhood not through humanist benevolence but because of commercial motivations to produce compelling export products. SimBeijing exists within a regulatory sandbox, an economic model whose goals include the political (soft power through technology) and the strategic (total control of data gathered within the smart city). This sandbox contains not only the urban fabric, but also the surveillance system Black Cloud, and the self-driving cars who endlessly gather data—during crash tests, non-stop driving marathons, and in their perpetual surveillance of the city. The plausible construction of this city necessitated further research into how it might be realised. Through research into Chinese urbanity and in my interviews with lawyers, I conceived of SimBeijing as a state-corporate joint venture with a plausible system of governance in place.

The legal systems of SimBeijing draw from real-world procedures of technological innovation and control. As discussed in 'Electronic Personhood and Criminal Temporality', discussions concerning personhood often arise from the need to ascribe liability. This is reflected in the narrative, where the legal status of Theta changes from corporate property to electronic person. When Theta was considered a product of Farsight, liability for accidents lay with the latter. However, after the accident, Farsight CEO Theo successfully argues to establish electronic personhood in order to assign liability to Theta. This sets a precedent whereby future self-driving cars can be held legally accountable—after this, neither Farsight nor future owners would be responsible for accidents caused by the cars. The fact that Theta was already dead during the trial is, legally speaking, unimportant. Posthumous trials are a longstanding and macabre tradition in the legal profession (Soth 2019).

It is important to address the issue of a potential legal suit being brought against Farsight by the family of the guard who was killed by Theta. In the legal 'backstory' of *Death Drive*, the border guard would have previously signed a waiver with their employer, such that their death in the line of duty would not be compensated—a common occurrence in occupations that are considered dangerous (Levin 1995). Therefore, after the crash, there would be no *actual* civil case that could be raised by the family of the guard. The legal assignment of electronic personhood in the film is thus a purely future-oriented device, produced to speculate on events that are yet to come.

The relevance and urgency of future-oriented legal fiction became clear during 2021. Regulatory concerns about the need to ascribe financial liability for the Covid-19 pandemic has led to the creation of a *real* speculative precedent, one with ramifications for the *future* automated processing of legal cases. In the UK Supreme Court, there was a hypothetical case between major insurers and the Financial Conduct Authority about the validity of Covid-19 claims under their *force majeure* clause. Although the test case was speculative, the resulting judgment given on 15 January 2021 is real:

> This is a scheme which enables a claim raising issues of general importance to financial markets to be *determined in a test case without the need for a specific dispute* between the parties where immediately relevant and authoritative English law guidance is needed. (UK Supreme Court 2021)

The entire episode was performed as a real simulation. It followed the procedure of a conventional legal case, with lawyers acting for both sides and judges appointed from the Supreme Court. But, like Theta's case in the film, no *actual* claim had been made against the insurers. The case was performed as an exercise in semantic analysis of written policy: *What if a claim were to be made?* Despite its simulated nature, the case had real ramifications: the judge's ruling led to a precedent that will be used for claims against major insurers in the future (FCA 2021; Hiscox 2021; Trojano 2021).

These two examples of speculative precedent, one arising from a conceptual methodology and the other from real-world contingency, together realise my aim to integrate legal procedure in future-oriented worldbuilding. The temporal logic of the law, which 'is always catching up' (Kushnir 2019), necessitated the deployment of simulation as a strategy through the need to deal with an unprecedented situation. The unexpected convergence between filmmaking and law demonstrates the value of integrating other spheres of knowledge and worldbuilding into art practice. Fiction and reality are co-constitutive.

Summary, Limitations and Future Plans

I have argued that digital surveillance irrevocably changes the relationship between inhabitant and environment in the smart city, thereby rendering its essence cinematic. In addition, previous critical conceptions of surveillance and control enabled an understanding of the social and political implications of this new environment. Farocki's notion of 'operational image' and Parikka's 'infrastructural image' enabled an understanding of how filmmaking practice composed entirely within a virtual world can critique digital surveillance while also celebrating the uniqueness of an environment predicated on machine sensing. Building on a grounded reading of test-bed urbanism, digital surveillance, non-Western futurism, and legal frameworks of personhood, I developed a methodology of cinematic assemblage. I looked at how the classical film theory Marxist 'cinematic apparatus' can be expanded to account for nature of nonhuman vision in the smart city. Finally, the notion of nonhuman personhood was explored by a legal framework placed within a Sinofuturist agenda. The notion of a 'legal fiction' was reverse engineered into the narrative to see how forensic methods could address a criminal case set in the context of a hypothetical Chinese smart city. In total, the resulting research and cinematic work offer a situated framework for digital surveillance that is critical of an overtly techno-positivistic approach while addressing the unique temporality of Sinofuturism.

At the outset of the thesis, I considered several automated computational techniques for use in the creative process. These included natural language processing algorithms for scriptwriting, pathfinding tools for cinematography, and generative algorithms for set design. However, when I assessed the practicalities of applying machine learning, it became clear that what seemed creatively interesting would be trivial from a computer science perspective. Furthermore, I decided that with limited time and budget, it would be better to focus on the holistic assemblage of what cinema produced entirely within the video game engine could offer. I focused on the 'nested' layering of practice and research, constantly writing and rewriting the screenplay to ensure it could be realised with the limitations of production. In other words, I decided to make a film that was *about* AI, rather than strictly *with* AI. Although simple automated techniques such as animation pathfinding and tracking algorithms are used in the film, by and large *Death Drive* is a human-crafted work. With this in mind, future work may be able to integrate AI techniques that were beyond the scope of the project.

Over the course of the research, I formulated an approach to filmmaking practice that could integrate the social and epistemological questions of surveillance. Through the notion of using filmmaking as a 'test-bed', I explored how the entanglement of research and making could operate as a testing ground for future scenarios. In doing so, the smart city and self-driving car emerged as the key figures of a cinematic assemblage. In addition, I endeavoured to weave a necropolitical understanding of the smart city into an audio-visual narrative, remaining critical of the tendency to create trivial or superficial readings of digital surveillance.

I explored the problems and concerns of Sinofuturism to reflect on how future-oriented practice can itself perpetuate dominant narratives of technology. Fiction is not solely a means

of entertainment, but a way to contribute to visions and realisations of the future. The horizon of this ‘future’ grows ever closer, as all areas of the world contend with ecological crisis, slowing economic growth, and a turbulent political landscape.

My continued dealings with legal and speculative fictions has raised even more questions. Following this thesis, I intend to continue my filmmaking and worldbuilding practice, considering the framework of cinematic assemblage, and how legal fictions inform society through acting as speculative precedents. I anticipate the ‘global time axis’ of technology will surely continue to shift, particularly in regard to big data and machine learning prediction. The advent of data-driven image production, without a human in the loop, challenges the notion of creative authorship and authenticity. In future, I hope to build a more nuanced understanding of digital automation, not only to critique its workings and social implications, but also to experiment with new approaches to cinematic worldbuilding.

As technological developments continue, digital surveillance and surveillance capitalism will continue to inform political decisions, with deep implications for human and non-human agents. Part of my practice concerns broadening the discussion to anticipate other forms of cognition and understanding. Not everything can be measured. Predictions are often wrong. Contingency is often all that is possible when the rate of change itself changes. Despite the threats of an age of full surveillance, there is still scope for agency. Fictions grounded in this belief can also contribute to understanding and generate new readings.

Increased adoption of big data forecloses the possibility of the unpredictable. The speculative precedent—a bridge between prediction and history, between cinema and reality—is a way to rewrite the story, not only of Sinofuturism, but of an unwritten future.

APPENDIX

Death Drive: early test render (March 2020)
Farsight Corporation's headquarters at the centre of SimBeijing.

Interviews

Conducted between January 2019 and January 2021, these interviews formed a crucial part of my research and greatly informed the narrative. I used 'problem-centred interviews' to present lawyers and researchers with a hypothetical crime involving a self-driving car to see how they would respond, and together come up with plausible ideas on how the scenario might arise in the real world. The following edited transcripts demonstrate the evolution of the screenplay, and the entanglement between conceptual research, legal procedure, and fiction.

Alana Kushnir – Legal Fictions - How to Create a Hypothetical Crime

Alana Kushnir is a Melbourne-based lawyer, curator, and founder of Guest Work Agency, an art advisory and law firm for artists, galleries and collectors. She also initiates their own exhibitions, talks and texts at the intersection of art, curating and the law.

Note: At this point in the research, I had decided that the narrative would focus on a crime involving a self-driving car. Alana explained the basics of corporate, civil, and criminal law, and how these would apply to my case. She also introduced the idea of the 'hypothetical' case in law, which became a crucial part of my worldbuilding methods.

Edited transcript from 29 January 2019.

Jurisdiction

LL I'm building a case for a self-driving car involved in an accident. So how might that play out if it's involved in a fatal collision? What if it were produced as a student research project at a university?

AK A mass-produced product will have different contractual or legal status to do with product liability than for a one-off prototype. So would a company R&D project versus an academic one. This could trigger different ideas about negligence. Think about it. If you were injured by the self-driving car, who would you want to go to for compensation? The student or the university? Or the company? It's not just a question of who's liable, but to what degree, and who will give you a better outcome. Sometimes that just boils down to who can you get more money from?

LL Another angle when building up my hypothetical case relates to Forensic Architecture's research. Digital forensics presents a new way of gathering proof, cross referencing digital media and time-based artefacts in order to build a case. I'm thinking of what materials I would actually produce, for example fabricating certain 'evidence' to problematize my case. Let's say in a crime-scene investigation with a self-driving car you would have a body, the wreckage, dashcam footage, tire marks, CCTV footage, sensors, mobile phone recordings, aerial photography, witnesses. Are there any things I should focus on or avoid if they are not strictly relevant?

Planting Evidence for Hypothetical Cases

AK So these are objects or artefacts to do with the case that you're 'planting' in your scenario? That's exactly the way I assess law students, through hypotheticals. When I have to create these scenarios, I think the other way around from what you're describing. I think about the issues in criminal law and negligence that interest me. And then I plant the right seeds to trigger those areas of law.

LL How would you suggest I build a hypothetical for criminal negligence, or corporate manslaughter?

AK We draft hypotheticals by pulling from existing legal cases. Can you research cases that have happened around driverless cars? Have there been any criminal acts? Negligence? Corporate negligence? Can you cherry-pick from other types of technology that aren't driverless cars but have similar precedents?

LL What you've said about precedent and hypotheticals is so useful. Forensic Architecture starts with the crime scene when something bad has already happened, like someone dies or a group of people are jailed. As a human being you're already interested in the story. And it's such a different process than when I write a film. With a crime you already know how it ends, then work back to the beginning. It all begins *in medias res*, right?

AK That reflects how difficult it is for law to always work, especially with the way technology develops. It's not like we have one piece of legislation that covers everything. People say the law is always playing catch-up with technological developments because it's impossible for us to see what will happen in the future.

All law can do is look at the past and try to make decisions or regulate and control society based on disparate occurrences. That's where precedent plays a big part. Criminality is compelling because of the guilty, not-guilty, either-or element to the story. Writing the hypothetical is a way to focus on key ethical or legal frameworks, while also remaining true to the fact that you're doing an art project.

Grace Quah - Forensic Architecture Methodology

Grace Quah is an architect, filmmaker, and former researcher at Forensic Architecture, a group at the Visual Cultures Department at Goldsmiths College, University of London, who employ digital forensic and architectural methodologies to support investigations into state violence or human rights violations.

Note: I interviewed Grace to find out how the process of forensic investigations could be reverse engineered when designing the crime. At this point, I was thinking of situating the project as an institutional critique that explored how the RCA might be liable if a self-driving car created from its research incubator was held responsible for killing a human.

Edited transcript from 2 February 2019.

Spatial Question

LL You mentioned that every investigation would start with a ‘spatial question’. What does that mean exactly?

GQ Usually, the case gets formulated as a question, like if FA are challenging the state’s account of what has happened. That moves from a legal question to a spatial question, where we reconstruct the scene and timeline using images and animation.

But it's never like we write a script and then make a film. It’s never really happened like that. It was always like a to and fro between the two things and [FA Director] Eyal Weizman’s vision of the project. And if we’re working with an NGO, we have conversations with them about how we're going to tell the story that a lot of their fieldwork will be based around.

Today, conflict happens in high-density areas where the boundary between civilian and police or military and civilian is less clearly defined, and there are many more witnesses, both human and machine. In urban spaces, everyday people are part of the conflict. Anyone can take out their mobile phone and be witness to violence.

Unreliable Sources

LL Who is the source for the ground truth? In fiction, there's the device of an unreliable narrator, and you don't know whether to believe what they're telling you. Who or what is the most unreliable source?

GQ We looked at two cases involving migration in the Mediterranean with this German NGO called Seawatch. The Mediterranean case is a very complicated and layered project. Because it's not in a typical dense urban environment, but in the middle of the sea where it's forever changing.

The case was part of a three-year project reflecting on the EU policies towards assisting people trying to go to Italy. Some policies became a deterrent, like the Italian government actively working with the Libyan government to make sure that a certain number of people get pulled back to Libya.

The unreliable narrator was the Italian government, who published photographs accusing Seawatch of helping to smuggle people. They took three or four images, entirely out of context: you could only see a boat in the water somewhere, and it's towing another inflatable vessel. They claimed that Seawatch was towing the ship to Libya to give to the people smugglers.

We performed a wave simulation to show the direction of the water based on the wind and weather conditions. We could infer that the vessel wasn't going towards Libya at all, but going in the opposite direction. And it was a long-winded way of doing it, because of evidence that we received later. That happens a lot. The story is always changing.

Location

LL I'm creating a crime scene to support my case. It's like the reverse process of what you're talking about. What approach might be relevant? If there was to be a Forensic Architecture reconstruction of a self-driving car accident, what might crucial pieces of information be?

GQ It really depends on where it is. Using a public space means that you have things like CCTV. Things like civilians passing by. Which is the premise of a lot of the FA methodologies or processes. That would be my inclination - to use public space.

Personhood

LL I think I mentioned this Open Letter to the European Commission on AI and Robotics. It focuses on the problem of how the electronic person can 'make good damage caused'. If the vehicle causes damage, who is responsible? The corporation or the car? They claim no existing models of personhood work for an electronic person. But how would the electronic person stand trial? Could they defend themselves?

Another idea I'm thinking of is if the RCA develops into this autonomous vehicle design incubator. What if there's a fatality caused by a student project? A self-driving student car project knocks someone down.

Then they might attain legal status of personhood, but also at the same time be liable for punishment. That also calls into question the system of incarceration. If you don't have a 75-year lifespan, the notion of imprisonment no longer makes sense in the same way.

GQ In narrative terms, the trial makes total sense because you can present all of your evidence and argue both sides of the case.

And maybe at the end of the trial, it fails in a bid for electronic personhood. It doesn't have to be a success. This is true of many of FA's cases. It's as much about the advocacy, awareness and the critical approach it brings to each case.

LL I'm trying to continue a site-specific practice. Besides the narrative structure of the 'trial', I think that having a self-driving car as a criminal protagonist is something anyone can understand. You don't have to be an AI specialist to imagine its social implications.

GQ I think it's also what makes it compelling. Like with many FA cases, it's based on real life.

Tony Lai & Allison Duettmann – Computational Law & AI Safety

Tony Lai – Co-Chair, Blockchain Group, Stanford Center for Legal Informatics. Founder, Legal.io – 'Advising government agencies, startups, enterprises, and legal service organizations focused at the intersection of computational law, smart legal contracts, digital identity, and service technologies and protocols.'

Allison Duettmann – AI Safety Researcher, Foresight Institute, 'Foresight Institute researches technologies of fundamental importance to the human future, focusing on molecular machine nanotechnology, cybersecurity, and artificial intelligence.'

Note: Tony and Allison are specialists in computational law and bring a 'Silicon Valley' perspective to recent developments in how the mechanisms of AI and machine learning translate into the realm of corporate law and public trust. In particular, Allison's focus on the trolley problem, the potential weaponisation of the car, and the 'black box' led me to use those as pivotal ideas in the film.

Edited transcript from 25 February 2019

The Self-Driving Corporation

TL It might be more interesting to think about the self-driving corporation. To some extent corporations already have legal personhood. There are well-established bylaws and business processes that humans follow. There's a whole product liability framework, which would fit neatly into the backstory.

AD Yes, and not just that but you could think of the corporation as an AI, for example as a profit-maximising algorithm. I can also speak to that because I wrote a paper with Christine Peterson and Mark Miller on the corporation as artificial intelligence. You can think of 'shareholder alignment' like goal alignment for AI.

I agree with Tony that another way to get specific about self-driving vehicles ties into autonomous weapons systems. From a corporate standpoint, the questions arise more in terms of criminal negligence; if the goal is to destroy or kill and then it ties in with military conceptions of 'Full-Spectrum Warfare' and another form of intelligent criminality.

Corporate Criminality

TL An autonomous driving vehicle gets more interesting when it's tied to a corporation. Because you must ask, to what extent are modern corporations bound from committing criminal acts? To what extent do the directors have liability when it comes down to corporate negligence? There is always the element of plausible deniability, like if they claimed ignorance about the way their company's decision-making algorithms behave. These are all very grey areas right now.

AD You can see the different value systems at play during the financial crisis in Iceland and the USA. Human beings are often less valuable than the corporation. In many cases, individuals go to prison, but the banks themselves are untouchable.

Criminal Minds

TL Corporations will sometimes make criminal-like decisions if it's in their financial interest. For example, even if they must pay fines for toxic waste dumping, it's cheaper than properly disposing of the waste. It's a financial bottom line decision to commit a crime, and directors cover their tracks. It happens all the time.

AD This is how it could relate to decision-making for autonomous vehicles. Let's say I'm in a runaway trolley problem, and I must decide whether to swerve one way and hit the granny, or the other direction and hit the children. With a human being, you can say if it was an accident or an intuitive, instinctual response, but with AI systems or anything autonomous you have to program heuristics, which means that you have to justify the decisions that you make. Say if I chose to run over the granny, I can say it was an intuitive decision, a value judgment. With autonomous vehicles, product liability and risk management questions become crucial.

Decentralised Autonomous Organization

LL Can you tell me more about the DAO, the Decentralised Autonomous Organization?

TL The concept is that you program the rules under which the corporation operates. That's interesting because currently, corporations run on rules except it is people who make judgment calls.

Sometimes they make the decision to break the rules to earn more money. The example I use is the dumping of toxic waste and just accepting that you'll be fined. But this makes sense to the corporation because, in the long run, the fine is less than the cost of properly disposing of waste. If the corporation is a profit-maximising agent, it can make economic sense to commit the criminal act.

That's even if you know you can get caught. This happens all the time in the financial services industry. They'll do insider trading because they've weighed up the potential upsides and downsides in advance.

Fully-Automated Criminality

TL But when we think about criminality concerning fully-automated systems, it's much harder to justify breaking the rules by claiming it was a mistake, or saying it was an oversight. I think the comparison that Allison was making to the self-driving car was the notion of the runaway trolley problem. AI safety has been called 'philosophy with a deadline'. What rules do we implement in systems to make those decisions?

LL If sometimes it's cheaper for the oil company to let toxic spills happen, it might be less expensive for the car company to allow accidents to happen, right? How do you think that might link into the classic AI runaway trolley problem?

TL Look at the cultural comparisons that have been made around the runaway trolley studies. Different countries will make the decision as to whether to kill grannies versus babies differently.

Asian countries tend to put a higher value on older people, and Western countries put greater weight on the lives of younger people. When you bring in the actual financial implications, is there some sort of heuristic that goes into it? Will companies decide based upon who's going to be a more expensive insurance claim? The baby or the granny?

Philosophy with a Deadline

AD Well, AI forces you to concretise all the philosophical debates we've had for thousands of years. You need to make rules explicit, to get to the point of the moral system that we agree on as a society and implement them in artificial intelligence agents that will ubiquitously influence our life.

LL Where are the blind spots with the trolley problem?

AD I analysed a hundred and twenty-seven different trolley problem cases during my studies. The point is that there is no solution, only arguments. Brad Templeton shared a post which was essentially about how philosophers worry about trolley problems, engineers focus on making better brakes! You will never get rid of the ethical dilemmas, it's a question of how far down you want to go into those.

Cybersecurity and Autonomous Weapons

AD One thing that is neglected is how autonomous cars tie in with existential risks with cybersecurity. And how to judge the security implications of connected autonomous vehicles, and the Future of Life Institute has published an open letter saying that there should be a ban on lethal autonomous weapons.

They got quite a lot of support for it, but they didn’t include self-driving cars. That's crazy, because after seeing the attacks in London and Cologne, self-driving cars could be used for similar terrorist attacks and you don't wouldn't even need a suicidal driver, you could just redirect the whole fleet of cars to commit suicide or to drive into each other or to specific people.

Given how connected they are, I think that a significant vulnerability will be car-to-car communication. It’s neglected right now. People can barely wrap their head around autonomous weapons, let alone other autonomous devices that could be used as weapons. I think we’ll see much more of the cybersecurity angle in the future.

Data Trail

LL Let’s get back to the crime scene. When a self-driving car causes a fatal accident, it generates data, where it was travelling, how fast it was going, and so on. There is the possibility that data could be tampered with. This relates to the point that AI-augmented corporations could be

predisposed to criminal behaviour. Can you think of how digital forensics could affect security for the self-driving car?

TL There's a discussion of cars having black boxes. Legal evidence in this context is about creating an untouchable data trail. This is an unusual situation from the perspective of truth and trust: not being able to go back and change something after it's been publicly broadcast. You can't cover your tracks. This could use blockchain-based distributed ledger systems to prevent hacking, and this system might extend to sensor networks, corporate action and law enforcement. The whole post-crime system would depend on digital forensics looking back at the data trail.

AD This is where heuristics can come in. You can look back and learn from what happened because it's all laid out there. And again, you're trying to remove the incentive for criminality because you're creating a framework where everybody's monitoring everyone else. There's a high cost for defecting, a financial implication.

Everybody Monitoring Everybody Else

TL There might eventually be a way to cover your tracks, a vulnerability that allows you to alter the record. But the functionality is getting to a place where you're not able to do that, based on technologies for encryption and the distributed ledger of Bitcoin. You can't go back and change a transaction, because everybody is monitoring everybody else.

This is how consensus systems work now, each node always broadcasting its state and data. These systems could govern how the black box surveillance records are stored.

Governance

TL We need to highlight that liability and intention with regards to AI is different from liability and intention with regards to complex systems generally. Many systems, whether financial or corporate or technological, are far too complex for humans to monitor. We rely upon alarm systems and machine augmentations to support us in management and decision-making. We need trust in governance. That's not to say trust in government, but in governance, the distributed system of monitoring and consensus.

This trust differs between cultures. Although we do have notional Global value systems: for example, consumption reduction according to the sustainable development goals of the United Nations established in 2015. I think we should extend that around a set of collective goals around the notional morality-versus-criminality spectrum.

This is a real insight into the broader issues of legality in an age of automated decision-making. The relationship between truth, rules, and value has shifted. Can you suggest how to approach all these things we've talked about in a compelling way that stays true to their complexity and ambiguity?

The Silicon Valley Scenario

TL There are three angles here: cybersecurity, existential risk, or corporate competition. Connecting the autonomous car with the automated corporation brings up the legal responsibilities of all parties involved. But like the Uber case, it's not immediately clear whether it was a product malfunction or an unfortunate incident.

Let's say the corporation is an automated system. but its programming heuristics may have incentivised it to commit the crime. Is it 'predisposed' for criminality, and would this matter in the same way a judge might be lenient on an offender from a difficult background?

LL It could also be about two self-driving corporations in conflict with each other. So maybe after more digital forensic evidence is revealed, it turns out that one corporation may have caused their test car to crash. The company–like Uber–may claim it was due to product failure, when in fact the death might have been deliberate. It might have caused the accident to provoke humanity to enact new laws against self-driving cars. And why would it commit this 'sacrifice move'? It might be a form of corporate sabotage, turning public opinion against autonomous vehicles, and therefore forcing competitors out of the market.

AD Following on from your 'duelling companies' idea, one idea that I have spinning in my head is the idea of a competing decentralised corporate intelligence. For example, there's an Uber DAO and a Lyft DAO, and they're competing. The automated cars calculate the optimum balance of speed, crash minimisation, and price to deliver people. Maybe they'll integrate some law-breaking factor.

And then at some point the two DAOs find it mutually advantageous to engage in cooperative rather than competitive activity, whether that's market splitting or another sort of criminal activity that only companies do.

TL Dueling DAOs. This is great because if you create the right case, you can weave in the essential aspects of all these conversations taking place right now.

David Stranger-Jones – Extraterritoriality and Border Issues

David Stranger-Jones, Lawyer (Withdrawal Agreement Bill team), Department for Exiting the European Union (DExEU), UK Government Legal Department

Note: At this stage, I knew from feedback during the interviews that the 'criminal self-driving car' was an interesting approach to electronic personhood. During the conversation with David, I wanted to situate the hypothetical 'crime scene' in a particular location. As a lawyer engaged with the implications of Brexit for the UK, he introduced the idea of having a crime occur at the border, where two different jurisdictions apply. Although I initially thought of the border between the Republic of Ireland and Northern Ireland, I shifted this to the 'Sinofuturist' context of the China-Russian border. However, the idea of border surveillance and extraterritoriality was influential to the set design of the virtual world.

Edited transcript from 30 April 2019

Hypothetical

LL Last year, EU lawyers presented draft frameworks for regulating AI and Robotics. But some scientists and lawyers argued against establishing the specific legal status of an electronic person. In the 'Open letter to the European commission about AI and Robotics', they focus on problems of ascribing negligence and corporate responsibility, as well as the fact that the AI cannot fit any existing definition of personhood, neither corporate nor natural.

In my scenario, the UK leaves the EU and no longer obeys this legislation. Instead, the country becomes a regulation-free zone. Venture capital floods into universities, which become startup incubators churning out smart technology. The UK becomes a Wild West libertarian playground, full of self-driving cars. But still, the legal status of an electronic person remains undefined.

If a self-driving car is involved in an accident, it raises issues with testimony, evidence and territory. It also raises questions about embodiment of AI, and the right to personhood. What do you think is the most compelling construct for this case I'm trying to build?

What if the accident occurred at the border?

DSJ If you're interested in extraterritoriality and the cross-jurisdiction aspect of law, then one way of doing it is to have the incident occurring across jurisdictions. The easiest place would be between Northern Ireland and the Republic of Ireland because Northern Ireland would remain part of the UK and will abide by UK law.

In this case, a self-driving car proceeding from Northern Ireland to the Republic of Ireland has an accident on both sides. The car hits somebody, crashes through the border, and hits someone else on the other side.

The border surveillance setup forms a classic legal hypothetical, where both sides only have half the picture. Each side presents differing testimony that makes sense from their individual perspective.

Half the Picture

The cameras on one side of the border all face one direction. They can't see the eyes of a person inside the car, only their side profile or the back of their head. Whereas the cameras on the other side are viewing cars incoming rather than exiting, so they get to see where the passengers are looking. In the Uber case (first autonomous vehicle fatality, in Arizona 2018), there's a dashboard camera facing inwards, so investigators knew that the supervisor wasn't looking at the road at the time of the accident.

LL It's like a total surveillance version of a Checkpoint Charlie situation, where a getaway car smuggling somebody out of West Germany causes incidents across both sides of the Iron Curtain. But now, it's a legal and digital barrier.

That's fascinating, having two partial systems which require the other side in order to see the full picture. It reminds me of cognitive psychology tests where the subjects only use one eye, or one side of their bodies. When perception or bodily function is impaired, sense-motor coordination degrades significantly. This idea of embodied intelligence suggests that thinking happens as much in the body as in the mind.

It's also about two forms of machine panopticism. There is one system of vision in the self-driving car, a 360-degree eye that helps it move. The border surveillance is static, and exists to capture the entire scene, monitoring it in case of crime or disturbance. This presents a host of issues. Let's start with location.

Location, Location, Location.

DSJ Law only applies in certain jurisdictions. Where are the cameras? Where is the data held? Is it secure? In a black box or in the cloud? Extraterritoriality is a big problem for security agencies and police. One contentious issue with drone strikes is that the camera, operator, and drone are in different jurisdictions.

If the UK leaves the EU, how do we get access to information? Data cooperation relies on governments having access to each other's information or feeding into a shared supranational system. We don't have any treaties in place to allow data to move from one jurisdiction to another. The EU has been around longer than big data.

With the self-driving car, there's a split between the system that drives the car and the physical mechanism. Liability can lie with the manufacturer or service provider. Is it Uber, the service provider? Or Volkswagen, the manufacturer of the vehicle? What legal safeguards and territorial limits would the company build?

In this situation where the UK becomes a place where tech crime is rife, and this case requires the assistance of the EU in order to prosecute a crime or pursue the assets of the company

behind the AI or car. But the EU says, ‘No. We don't have a treaty in place to transfer data, and we see no reason to cooperate because your value system is wrong. We don't trust you.’

Consequential Damage

DSJ You can branch off more factors regarding territory. The damage might have happened in one place, but the consequential damage may take place elsewhere. So, the individual who was hit by the car might be an EU National or they might have got transferred to an EU hospital because that was closer.

And then where does the car end up? Will UK police be able to cross the border to examine or retrieve the car? All kinds of cooperation agreements must be in place for them just to cross the border to investigate.

Controlling Minds

LL What about the idea of the nonhuman?

DSJ It depends on how far you're pushing the legality of embodiment. When you talk about the refusal to grant nonhumans the legal right to representation, how far do you want to link it back to humans?

Criminal law requires a human mind to sit behind the actions of a corporation. But the definition of corporate responsibility has shifted in the UK. In the past, corporate manslaughter cases were rarely successful because prosecutors had to draw a causal link between the crime and the actions of a senior director or controlling mind in the corporation. Whereas now, they can examine the corporation as a whole and at the levels within it, health and safety policies for example, and then ascribe criminal negligence to the company as a legal entity.

LL Then what?

DSJ You can't send a corporation to jail, right? Under EU law, the consequence of that is a huge fine.

Intentionality

DSJ You touched upon intentionality when you were talking about nonhuman rights. But in most cases of corporate manslaughter, it's about negligence, not intention. Companies can't intend to kill someone, but they can by accident, where they can be so negligent that it becomes a criminal act. Whereas with AI, the big fear is intentionality.

LL The fear of killer robots. This also raises questions of how different jurisdictions treat the subject under investigation, especially in a climate of fear. I find it hard to get away from the image of a witch hunt.

DSJ Bear in mind that laws – for now at least -- are made by a group of humans in Parliament. In some sense, when laws are made, they reflect society's values and their stance on current issues. If, because of this incident, society needs to have a law on AI manslaughter, laws will come into place. Courts may start with a law that was enacted centuries ago but decide they can't make it fit modern times, and call on Parliament to address this injustice. Then Parliament steps in and enacts a law in order to catch up with what's happening in real life.

In that sense, if you have a Wild West UK, then you've got a Parliament who reflects the will of the people, a public whose value judgments filter into the legal system. And disrupt it. Just look at Brexit.

Terrorism

LL Let's say this accident occurs on the border, and it's unprecedented because there's this autonomous vehicle. What would the will of the people be? How would the media portray this scenario?

The closest thing they would treat it as is like a terrorist act, as we have seen with humans driving vehicles into crowded places in Europe and in the UK. And in that case, the public would be out for blood and hound the corporation. How do you think that would turn out?

DSJ The police will be put under pressure to find some mechanism to pursue "justice". You see that all the time with the use and abuse of terrorism laws. When they're drafted, Parliament says, 'This is only for the specific situation of extreme national emergency'. Then five years later, lo and behold, it's used for stop-and-search on teenagers across London. There's always pressure for the police to use any power at their disposal.

If there's no framework in place regarding corporate liability with AI self-driving cars, then the police may say, by analogy, this is a terrorist act. We can call this a terrorist incident and then we'll activate powers that are only meant for times of national emergency. We'll try to get the vehicle back from the Republic of Ireland, and get the EU to share their data. Nothing gets international cooperation going like terrorist investigations.

Then Parliament will turn around afterwards and say the law wasn't adequate. We need a specific law for the nonhuman. Then the cycle of control repeats itself.

Sacrifice

LL As we saw with 9/11, terrorism is also a vehicle for the law, a vector for power to flow in the opposite direction. In this reactionary world, I can imagine the first electronic person being branded a terrorist.

While the police undertake the investigation, the media speculates. Conspiracy theories build. Was it hacked? Was it negligence? An act of terrorism? An act of spontaneous intention? Were the Russians involved?

DSJ So two humans get killed, someone in the UK and someone in the EU. Because of legislation, the subject stands trial as an electronic person in the EU, whereas on the Northern Irish side, 'they' do not exist, and the incident is treated as corporate manslaughter.

You asked what if this entity sacrifices itself, might it establish a formal status for the electronic person?

LL Exactly. The archetype of the martyr, out of which stems the whole of Western morality. Liberation permeates discussions about race, gender, and increasingly, the nonhuman.

I'm more interested in questioning both sides of this power dynamic: the *active* version, where the AI willingly sacrifices itself to establish electronic personhood. Then there's the *passive* version, where the nonhuman gains legal status almost by accident, as a byproduct of political and economic motivations. Evolution proceeds from the outside-in and the inside-out.

DSJ One possible limitation is that because you focus on human fatality, it stays within a humanist worldview. But perhaps the next stage leads to truly nonhuman situations. Cases where all actors are born digital. Robot versus robot cases, automated judges and lawyers, distributed ledgers of proof that are impervious to hacking, digital discipline and punishment. But this first case sets the stage for all of that to unfold.

LL The fact that law is always catching up with reality gets mentioned a lot. But we're already beginning to see the birth of predictive policing, most obviously terrorist watchlists and racial profiling. I'm looking at the cinematic as a narrative form of knowledge. It operates within a specific temporal framework that is not quite fiction, or manifesto, or law.

It needs to address the worldview that comes from total surveillance and big data. Unlike the panoptic prison, monitoring does not take place in real-time. Big data builds up an infinite repository of proof, lying dormant, only to be activated in time of need. But the purpose of the manifesto is to declare a vision of the future.

There's the irony that liberation can come from crime and punishment. It's a retroactive manifesto for the future to look backwards on, a speculative precedent.

DSJ The sacrifice that establishes precedent.

Giulia Trojano – Legal Fictions, a reflection on the Screenplay

Giulia Trojano, Associate Solicitor, Withers LLP, Litigation and Arbitration.

Note: This interview was conducted when a first draft of the screenplay had already been written. I had decided on the setting of the China-Russia border, and had constructed a story that operated like a detective fiction. I got in touch with Giulia because she had written a series of articles about the relationship between AI, law, and art from the perspective of copyright and ownership. I thought she would give an interesting perspective on my 'non-Humanist' approach to worldbuilding, where the AI is granted legal personhood because of the need to ascribe liability.

This transcript is much longer than the previous ones because my 'hypothetical case' was fully realised at the time of the interview. Giulia grounded the fiction with recent developments in data policy, regulatory sandboxing, and a real-life example of a 'speculative precedent', where the UK Supreme Court ran test trials for fictional UK Coronavirus insurance claims in order to set a precedent for future cases.

Edited transcript from 15 January 2021.

Regulatory Sandboxing vs Legal Procedure

LL Here's the scenario: a new smart city called SimBeijing has been built in mainland China. It's a partnership between the state and Farsight Corporation, who are building a new fleet of self-driving cars, along with a citywide surveillance system called Black Cloud. One of the cars is involved in an accident and gets destroyed while also killing a border guard. A posthumous trial concludes that they were at fault, by establishing the car as an 'electronic person' and assigning blame to them, rather than the company. What kind of data policy would a regulatory sandbox for smart cities such as SimBeijing have in place?

GT I looked at Japan as the most relevant example I could find. In Japan, companies who want to test a new technology make an application to the Japan Economic Revitalization Bureau. Let's say I want my self-driving car to be tested so that one day it can roam the streets of Tokyo. Assume there's no current regulation about self-driving cars in Japan. So I apply explaining why my new technology conflicts with current Japanese law (in this case, because there is no legal framework) and then I get approved. Now I can conduct my 'demonstrations' in a designated regulatory sandbox (for example, in Fukuoka City) and go out and test the car. In effect, that's our 'sandbox'. There's constant monitoring between the government and the company so that the data collected is used as evidence to build regulations and new laws if necessary.

But with SimBeijing, we have to examine which data policy applies in the area. If the policy values transparency, it will cover the use of data collected from the self-driving vehicle, like images of passengers and pedestrians, what they're wearing, where they're going, all these kinds of sensitive information. If it's bound by data protection, like in the UK, then somebody needs to be accountable for it. But if it's in SimBeijing, I don't think that that would be the case. I feel like it would just be collected and then used by Farsight and the state, who want to use Black Cloud without having much of a dialogue with end users. And if Farsight and the state trust each other, then the data can be shared between them. But if not, then I feel Farsight would

avoid data monitoring and just give summaries and conclusions to the state, rather than all the data.

In the UK we have GDPR and the Data Protection Act. The ICO, the body that regulates data privacy, published guidelines in July 2020 about what mechanisms companies should have in place for data protection. Companies using AI have to be able to explain it effectively because if I'm a consumer, I have the right to know how you used data about me. In theory, the company can't just go, 'Sorry. We don't know what's going on. It's the AI.' They need to be able to explain it. But another problem arises from a commercial point of view. Let's say the person raising the case is not actually a consumer but a competitor hiding as a consumer. If the AI company explains too much, then they might reveal how their system operates.

LL So there's a balance between the risk of corporate espionage and explainability. AI is valuable intellectual property, isn't it? Companies don't want to reveal their technology. The other interesting thing is that the idea of good data policy also creates the need to record and analyze data, which is a very labour-intensive process. That seems perfect for automated systems to perform, which is ironic.

GT Exactly, you have an endless cycle of this. It's similar to what a company's board of directors need to do; when they make a decision, they need to record the minutes of the meetings, so if someone comes and questions their decision, they can argue that it was done in the company's best interests. In the UK at the moment, there isn't pressure to make the AI legally accountable. What the ICO is attempting to do is keep track of everyone who's involved at every stage, so if something goes wrong, they know who to ask. The UK version of data policy is much more enhanced than in China, from a privacy point of view.

Adapting SimBeijing as an Export Product

LL When they're developing the smart city, Farsight controls urban planning, the infrastructure, the surveillance software Black Cloud, the fleets of self-driving cars, and so on. It's a full stack of services. How would that need to be adapted to actually be an export product for different markets?

GT If they want to sell their smart city in a 'privacy by default' environment like the EU or UK, Farsight could create a closed user system. Let's say I buy an apartment in the smart city and I have a self-driving car, and these devices could possibly communicate with each other. There could be an opt-in method which lets you choose if you want to share your data at all times, or only in emergencies. Then it's really down to the individual. But then the only time that the cars communicate with other systems is if there's a crash or there's important information to be shared, like if it's for safety reasons. Farsight could say, 'We must update the car navigation, because otherwise it won't work, and you'll be in danger.'

LL So the smart city is a product that's been customised for export markets, except on a large scale, with its own rules within the boundaries. So if they want to sell it to the USA, Farsight would target individual states, rather than the whole country; Arizona says, great idea. Fantastic. Or California does, but not Oregon. Of course, the Federal government might place a blanket ban on Chinese tech.

GT Right. Another thing that happens is that tech companies often work through loopholes. Let's say I'm selling the product for export, and my server is based in another country. And there's some exception in the data protection rules saying that if my server is based somewhere else, then the processing rules apply to that country, not to the one where you're selling. And that lets you avoid scrutiny.

LL So how would the 'closed user system' work?

GT There are many cases where people happily share their location at all times. You could have a similar system, in the same way that people in the UK used to be very comfortable with [Apple's location tracking system] 'Find My Friends', for whatever reason. Or let's say you want to live in a special kind of 'smart' gated community, with luxurious smart apartment blocks with private gardens. When you purchase an apartment, you have to sign waivers, and agree to the terms and conditions of the environment. You accept that there's going to be a lot of surveillance because otherwise you can't enter.

Ascribing Legal Personhood

LL How might the legal status of the self-driving car change before and after the accident? In the screenplay, the self-driving car is a product at the time of the accident. In the trial afterwards, the state establishes the legal notion of electronic personhood to deem them a criminal. Would this change of status operate through the need to ascribe liability?

GT I made this comparison: what would the difference be if Theta already had legal personhood before the crash, as opposed to giving them legal personhood after the crash? I think when you do it after the crash, it's still setting a precedent.

Now that this car has electronic personhood, we can say that they're the perpetrator. It's not retroactive because you're not looking at all the previous accidents that happened in the past and applying that to them too. Let's say that there had been four other crashes before, when Farsight was always held responsible. Then Theta comes along. They say, actually, this time Theta is responsible.

Retroactive Time

LL Can you clarify precisely what 'retroactive' means in legal terms?

GT I can give you an example about recent changes in insolvency law. Because of Coronavirus, you can no longer serve what's called a 'statutory demand' on someone, which is essentially, 'You owe me money. Please pay me, otherwise if you're a company I'm going to try to bankrupt you.' You could no longer do that because the British government was worried that so many people were going to get statutory demands that it would escalate. So they passed a law in April [2020], stating any statutory demand that served from January [2020] to today and ongoing from now until next year will not count.

That law is retroactive because it nullified statutory demands that had previously been placed. But in your scenario, with a court case leading to Theta being assigned legal personhood, that's

not retroactive because the judgment only relates to that particular case. It doesn't affect previous cases, but it might be used as a precedent for future cases.

Who is responsible?

LL How, exactly, would this case be documented in order to set the precedent?

GT The first point is the death of the guard, so who is responsible? Without the idea of electronic personhood, you might say, 'Farsight was responsible for the accident because ultimately they created the car. They shouldn't have let it get to that point.' Or you might claim the test driver who was meant to be there, wasn't there. Then you would navigate it that way, in terms of corporate liability. In terms of setting a precedent, let's say the family of the guard who was killed presents a case against Farsight.

They take the case to court, and Farsight says, 'No, hold on. We create these AIs, but they're so advanced that there's only so much we know about them. The cars exhibit signs of consciousness; they are so separate from us. We're not responsible.' At that point, If the judge thinks that this is such a new event, they'll say, 'Having heard both arguments, I think it's reasonable to say that the car did have electronic personhood.' That would be how the precedent is created.

Generally, when you see that happening in court, the judge will go through all the possible iterations of something similar. The judge here would probably go, 'Is this a case of product liability? If it is, then who is the person most closely responsible? If not, then why does this framework not work?' Then they might point to Theta's cognitive abilities and their past behaviour. The judge says, 'Theta had trauma and psychological treatment. This case presents something completely different to product liability. Theta is an electronic person, and shares many of the same characteristics of a corporation, another nonhuman person.' That's how they would set it.

But if, for example, Theta already had personhood before the accident, then you'd most likely have some kind of insurance model in place. If cars already had personhood, then there would most likely be a way for people who are harmed by them to be compensated. But we'll come to that later.

Real Speculative Precedent

LL Are there cases where precedents have been set in anticipation of future cases? Not because of a company currently being sued, but in the future. I call that the 'speculative precedent'.

GT What's really interesting is that your script presents a very different discussion about personhood from the one we normally have about AI. In the story, electronic personhood is being ascribed for convenience for humans, not because they feel that the AI has consciousness or deserves personhood, but in terms of setting future precedents.

As for the 'speculative precedent', there is only one example I can think of, because it doesn't happen often. But it happened very recently. With Coronavirus, many insurance companies in

the UK were really concerned because they thought, ‘We normally have a force majeure clause. But will this cover things like Coronavirus? Because if Coronavirus falls outside our force majeure clause, then we're going to be facing literally billions of claims. To what extent do our policies cover these situations?’

LL So force majeure clauses usually mean that the insurance companies don’t pay claimants if there’s been an ‘act of god’?

GT Exactly. The insurance companies were worried because they thought, ‘If this applies, then we were going to have to pay out billions and billions.’ What happened is a group of seven insurers including AXA and Hiscox worked together with the UK’s Financial Conduct Authority. They asked the FCA to bring a test case to court. It worked like this: the FCA said, ‘Let’s pretend there's seven cases going on. I'm the FCA and I'm going to take each of you seven insurance companies to court, and I'm going to pretend to be acting on behalf of the consumers, which is what I usually do in real cases. I’m making an insurance claim because I’ve been badly affected by Coronavirus somehow. And a judge will decide whether or not I am covered under all the different force majeure clauses in your insurance policies.

The case went all the way up to the Supreme Court. And the Supreme Court gave a ruling on each of the cases saying, for example, AXA will have to pay out because the way their policy was drafted covered all potential Coronavirus claims. But Hiscox only has to pay out in certain circumstances. The reason for them doing this was because they anticipated having a million similar cases. And so this was going to effectively be the precedent, without anyone having sued yet. The Supreme Court ruling only looked at the March 2020 restrictions but in effect, now that the precedent has been set, it will be used for all future tier restrictions too.

This could happen in a similar way with self-driving cars. Let’s say the authority responsible for smart city transport brings a fake case in the courts against Farsight’s self-driving car, Apple's self-driving car, Uber’s car, and whoever else, just as a test, and then uses that as a precedent, even though no court cases had come up yet.

LL So if I understand correctly, companies can hire the mechanisms of the court? For this particular case, the insurance companies would have paid millions of pounds to simulate this entire process?

GT Yes. It was a simulation, but it was replicating what was going to happen very soon in reality. I think the FCA was funded by the government because they needed to represent consumers and the insurers were represented by their lawyers. They had to hire solicitors, barristers, and pay for the entire process. But their financial incentive was that many of these claims were going to come sooner or later. It was estimated that the total potential payout to businesses could have been around £1.2bn.

LL As far as I understand, at least in common law, the precedent is not necessarily always legally binding. It’s something that judges in future cases can draw from and expand into legal territories that are not defined yet.

GT Yes, that's correct. By the way, this was a very particular case. I don't know of any other cases before this that were run like test cases. I think it's interesting as an experiment. In some ways it was easy to do with insurance companies, because all the court was doing was looking at contracts (the insurance policies) and the written word, almost in the abstract.

LL There's no human testimony. There's no messiness.

GT It was basically an exercise in semantics. Imagine the policy said, 'You are covered in the event of disease.' The FCA would say, 'Well, COVID is a disease,' and the insurance company would go, 'No, according to our terms it isn't.' The cases were essentially a battle of words on paper. The test case will help in future cases because the judge will have something to refer to, and in fact it will be used to determine any policy claims issued as a result of later tier restrictions. So, it's hypothetical but it also sets a concrete precedent.

LL That's interesting because [Alana Kushnir] was explaining to me the concept of hypotheticals and legal fiction. This particular Coronavirus insurance case is very much a contingency based on an unprecedented event. It's interesting that it's both fiction and reality but operates in a very tangible way.

GT Yeah. I could imagine a similar scenario with self-driving cars, with one side saying the electronic vehicle should have legal personhood and the other side disagreeing, and listing all the people involved with developing the vehicle. The person arguing for legal personhood might say that all the engineers and decision-makers mentioned are so far removed that it's impossible to place any blame on them.

LL So speculative precedent is actually a real thing.

Legal Fictions and Sinofuturism

LL How might this precedent operate if it originated in China? I imagine that the Chinese state may adopt specific laws from a Western legal framework in order to make a better export product. So although Western legal systems or data regulations do not operate in China, they may be selectively 'borrowed' for pragmatic reasons.

For example, if there was a new social media platform from China, they might think, 'Americans and Europeans care so much about privacy. If we want to be successful in those regions, let's build it into the app.' What do you think the conversation might be like in this situation?

GT One of the differences that came out of your script is that the state's decision to give personhood to Theta is because they want to export the product and not because they have strong feelings about AI consciousness. I think that would almost make it easier to sell as an idea, because if you look at the European Parliament debate, they take the personhood aspect very seriously. They think, 'Oh no, if we give personhood to AI, that means we say they've got consciousness, and what are the implications for that on the human?' The EU takes a very humanist approach, which is not surprising.

But your scenario is different. Let's say you are China and you go, ‘We've decided to give electronic personhood to the cars. Not because we have Animist traditions in the same way that the Japanese do. Not because we feel the AI has consciousness, but because we think it's the most efficient, most centralised way of dealing with the problem.’ It might work out that way, because if you are surveilling all these vehicles, it's a lot easier to just pinpoint the vehicle and go, ‘Right. This vehicle committed a crime. I know where the vehicle is located. Get all the drones on the vehicle, secure the vehicle.’ It's all very interconnected.

The only ramification from that instance is what happens to compensation. But again, if you have a centralised system in place, like in the ‘gated community’, then you would tell Farsight or anyone who wants to play in that arena to just pay a premium. You’d say, ‘If you want to try out this smart city, and live in this cool connected world, pay the price.’ That pool of money would go to public services or towards insurance payouts.

LL Right, a smart city tax, like a service charge. It's interesting how the EU commission is rooted in the humanist tradition. They quote science fiction, Asimov and all the rest of it. It's very philosophical. Whereas the Chinese approach is not about animism or consciousness; it's contingency and practicality.

GT If you did it that way, it would also address criticism that might come from the humanist or even Humanitarian point of view. That’s because you're saying, ‘Oh, even though I'm granting legal status to these cars, I don’t mean that they’re like humans.’ You're just saying, ‘No, I'm just giving them legal status in the same way that a company has legal status. That's all there is to it. I'm not saying that they're better than all these human beings that are being mistreated.’ It takes a different angle from the humanist tradition. If for instance, you had America going, ‘We're going to give legal personhood to computers or AI’, all undocumented migrants who are called illegal aliens might feel very strongly about that.

LL Exactly. In Theta’s case, bestowing status doesn't mean equality. Personhood doesn’t equate to having rights.

Operational Legal Images

GT One of the things I thought about when I read your script was, ‘If I were Farsight, how would I try to get away?’ I thought: Well, all the cars are monitoring each other and they're monitoring the environment. But what if I'm getting the data about people from another car and it's logged in a different code or algorithm that no human would be able to extrapolate and understand, but only the cars can? I can maybe say that this data is not liable today to data protection because ultimately it’s a machine getting data from another machine, that's coding it in a different way.

LL Exactly, there's no point at which it would be interpretable unless it had to be. What you described is exactly what Harun Farocki calls ‘operational images’. It's machine to machine communication, which is the vast majority of actual bandwidth that's being used. The notion of AI explainability generally implies that it’s for human understanding. But in the smart city, there's so much communication going on that is unknown. No matter how many government guidelines are written about how things must be supervised, and documented in some ledger or database, we can never account for all the communication.

GT There's a real limit to knowledge. If you don't understand what's being transmitted, how can you even have protections or kind of legal safeguards against that when it's completely unknown?

LL Yes, if you go further into some aspects of computational law, you get legal scholars at one extreme end of the spectrum with the idea of a fully-automated courtroom, with smart contracts, AI 'judges', and so on.

Legal Simulations and Unknown Knowledge

GT Another point I thought about was how using computer rendered simulations in a speculative case about AI would make logical sense. It would obviously help to visualise possibilities and communicate what's going on. Now that you have courts going online more, and having to engage with technology more, this might lead to using simulations as part of legal arguments.

LL I was looking into the work of Forensic Architecture, and how they construct a visual way to portray the hierarchy of information. They use traditional things like witness testimony and physical evidence, as well as newer media like videos from phones and CCTV. It's interesting if simulation, not just in a hypothetical but in a literal audio-visual sense, will influence court situations, because of the fundamental fact that evidence must be perceivable, and the argument has to be understandable. The narrative must unfold in time from beginning, middle to end, and you have to adapt your argument logic as more evidence arrives.

It's like in detective fiction. When the detective arrives at the crime scene, the evidence is there, but it's somehow hidden in plain sight. But they know that there's something that's unknown. They just don't know what it is yet. That relates to what you said about hidden machine communication, and it also relates to cryptography and code-breaking and that aspect of technology.

GT In terms of unknown knowledge, another point of that is if you don't have the ability to run this simulation, how can we make this communicable to a human being? Because if you wait, you run the risk that the automated AI system might destroy the evidence. Farsight might build in a failsafe that could wipe out its own data. What do you do about that?

LL The scope for concealment is very different. The ongoing joke about the trolley problem is that it's 'philosophy with a deadline'. The scenario you're talking about is like 'crime with a deadline'.

GT Like you said, the more knowledge gets created, the more you have to monitor. Like if an AI in your film 'watched' the entire internet, how are you going to write down what it's reading, what it's doing, how it's experiencing things, how it's translating them, what's the metadata?

LL It quickly becomes metadata about metadata. Again, it's ironic how recursive this kind of surveillance scenario becomes, where everything is monitoring everything else. Automated surveillance gets so far removed from monitoring physical, tangible things.

GT It's just an endless, endless loop, generating even more intangible and unknowable things. The search for ascribing responsibility and looking for causality just leads to more speculation.

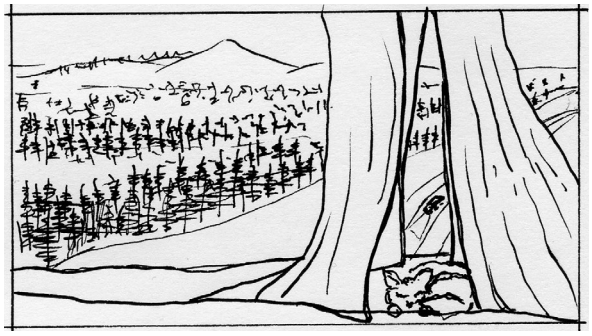
LL This conversation makes me reflect on the questions that I had at the beginning of the thesis, about how hypotheticals and legal fictions can be explored in filmmaking. It’s strange that the idea of the speculative precedent is not even fiction.

DEATH DRIVE **3 August 2021**

PROLOGUE **Storyboards for Screenplay 5.4**

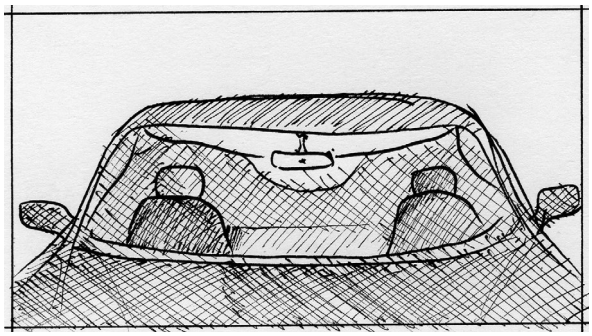
001
[0] PROLOGUE - SIMBEIJING OUTSKIRTS
The silhouette of a dead tree, perched on a cliff...

002
... SLOW TRACKING SHOT down the hollow trunk...

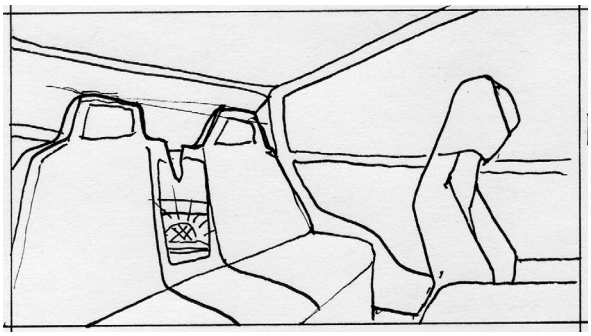


003
...revealing an ARCTIC FOX curled up inside, asleep.
Below, a CAR drives along a desolate highway.

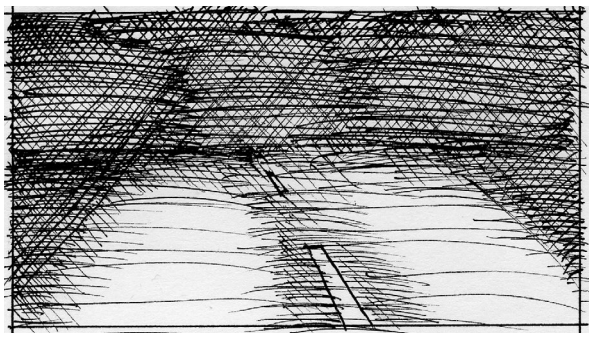
004
Fox wakes. Camera pulls closer to Fox. Extreme close-up of its eyes, DISSOLVE to two car headlights.



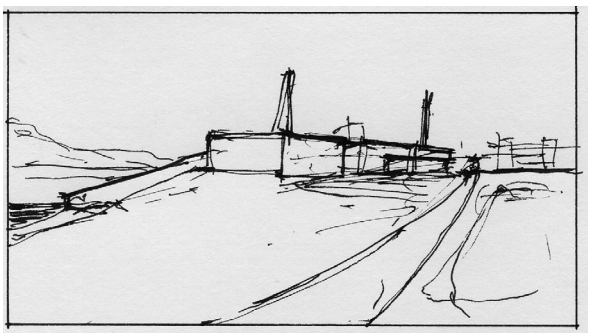
005
CLOSE ON THE CAR: Pull up from headlights to reveal interior. Nobody inside. No controls. No steering wheel...



006
This is THETA, a prototype self-driving car. Inside, we see the COMPUTER BRAIN behind the seats. ZOOM into the COMPUTER.



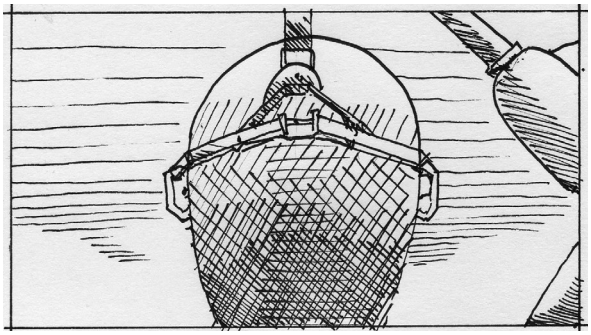
007
The car drives through a barren industrial wasteland, above a river.



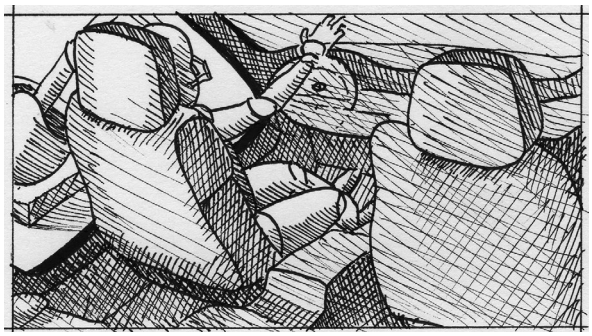
008
A haunting chorus begins as the car approaches... an industrial warehouse.

ACT 1

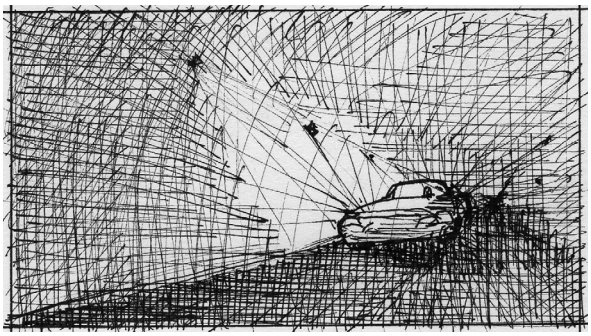
009
[1] INT. CRASH TEST LAB.
Sterile fluorescent lights illuminate an expressionless human face.



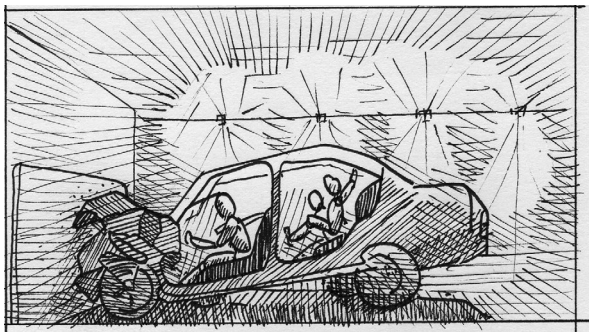
010
The robot arm places the dummy inside the car.



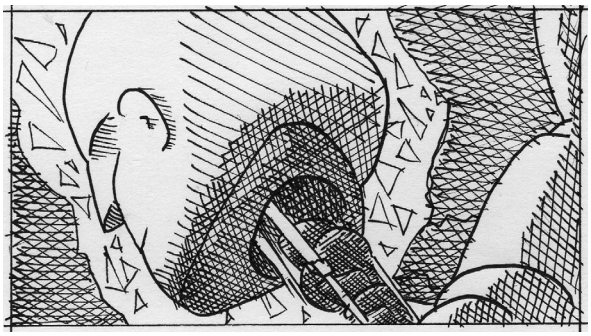
011
A robot arm grabs the head, twists it, and fixes it onto a headless body...
A laser begins to scan the head...



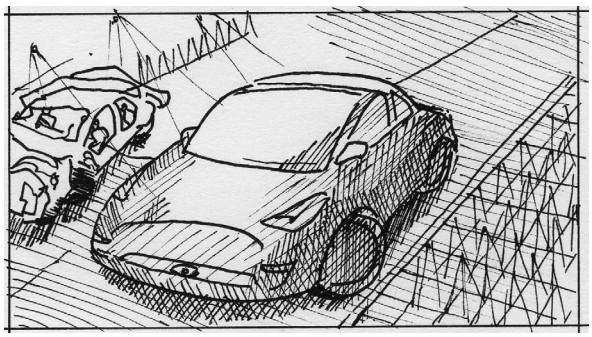
012
The engine rumbles to life as the car accelerates down the tunnel, towards a concrete wall.



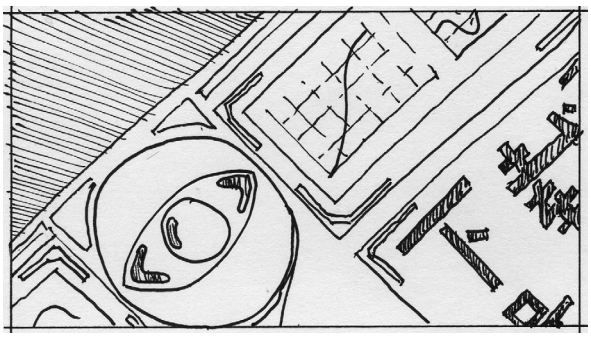
013
Closer... Closer... CRASH.



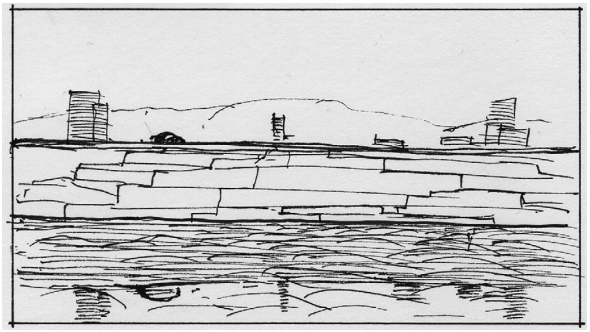
014
SLOW MOTION on the dummy as it CATAPULTS through the glass. The face crumples at the moment of impact.



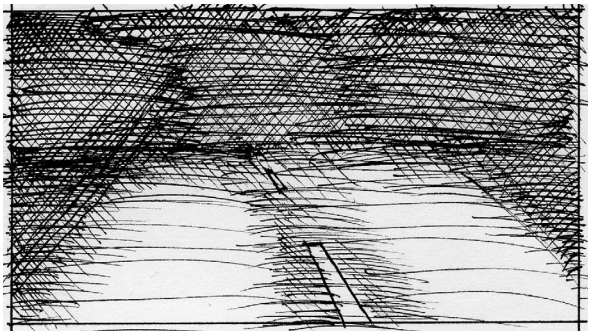
015
When the dust settles, another car pulls up next to the smouldering wreck: THETA, a prototype SELF-DRIVING CAR.



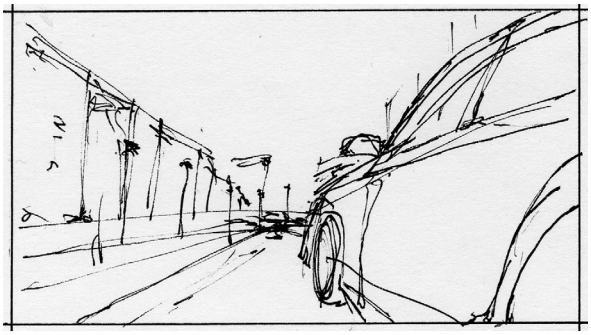
017
THETA'S DASHBOARD INTERFACE shows the crashed car's black box data being uploaded. 97%... 98%...



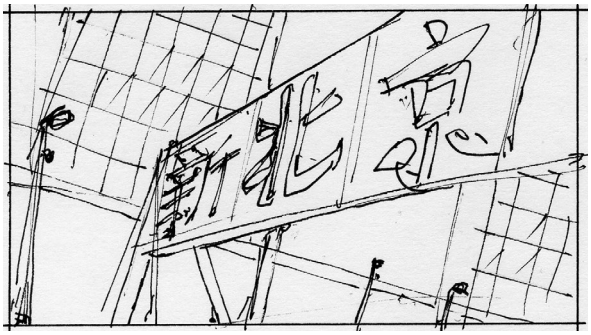
017
[2] EXT. SIMBEIJING - OUTSKIRTS - [DRIVING]
Neon pulses run along the highway. Despite the seeming calm, the city hums with nonhuman life.



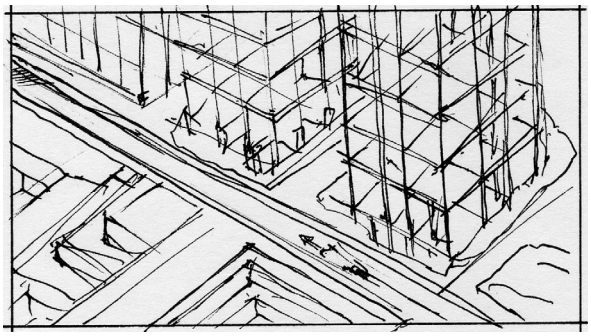
018
Headlights down the road.



019
Theta drives past the skeletons of unfinished skyscrapers and vacant construction sites.

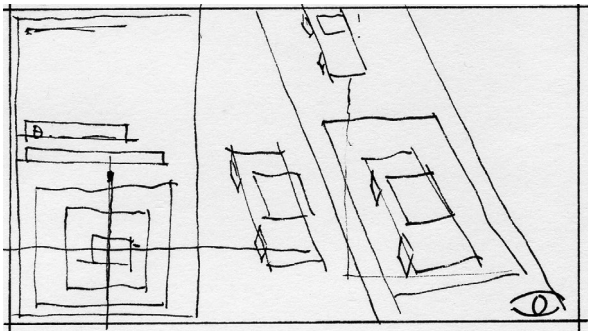


020
Theta passes a trilingual neon sign at the roadside: Welcome to SimBeijing!

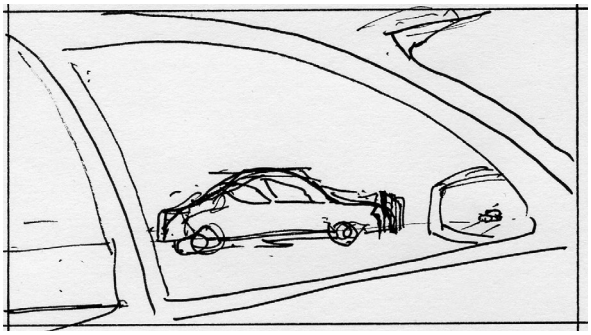


021
[3] EXT. SIMBEIJING - OUTSKIRTS - ELSEWHERE [DRIVING]
Deeper into SimBeijing, conditions deteriorate. The roads are lined with CRAWLERS, older AVs whose only purpose is to drive around endlessly, gathering data.

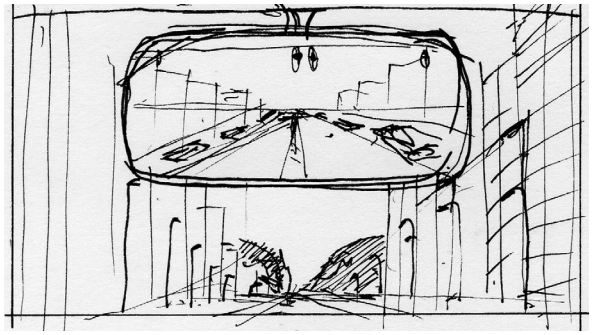
022
SERIES OF SHOTS of Farsight's surveillance devices embedded throughout the streetscape: on building facades, hidden in street-lights, in roadside monitoring stations.



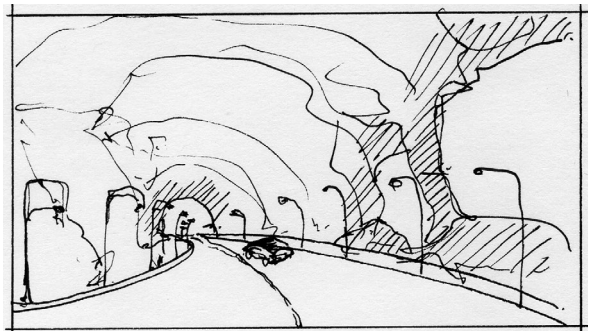
023
GRAPHIC SEQUENCE of how Farsight's Black Cloud system monitors SimBeijing. It creates a mesh network from every urban sensor that tracks vehicle activity. Computer vision algorithms interpret Theta's actions.



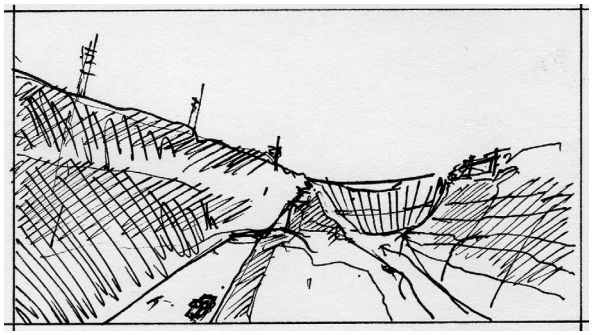
024
Theta drives down a gauntlet of broken-down Crawlers.



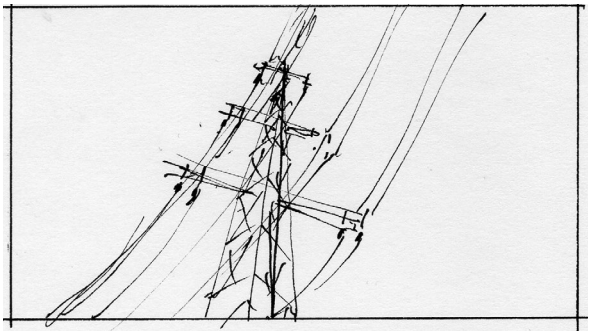
025
[4] EXT. HEILONGJIANG BRIDGE - BORDER [DRIVING]
SERIES OF ANGLES of Theta approaching the Heilongjiang river.



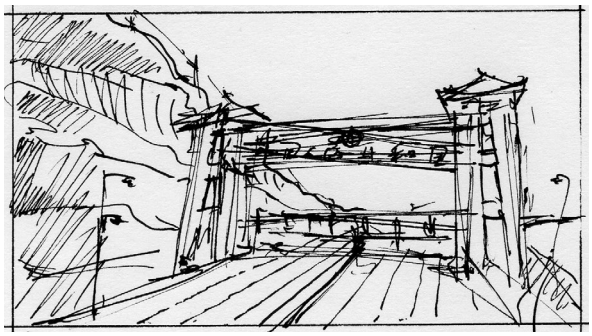
026
As they round a bend, a dramatic sight is revealed.



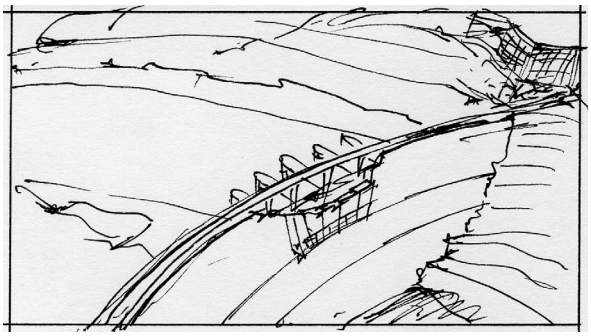
027
Between two steep river cliffs, a monumental curved HYDROELECTRIC DAM is under construction.



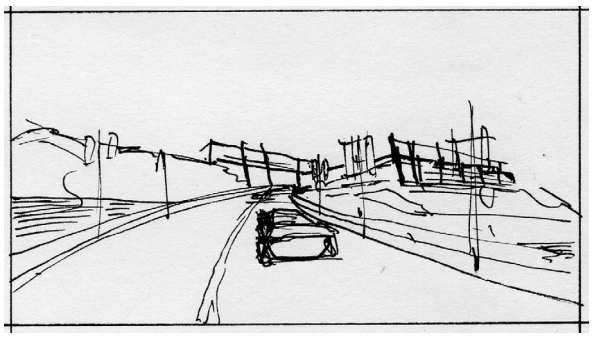
028
The landscape is dotted with overhead electricity pylons.



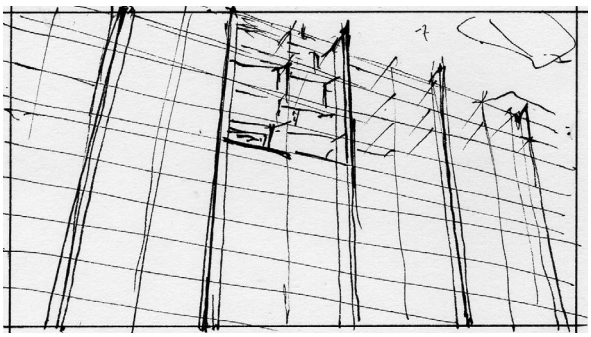
029
Theta approaches THE CHINESE CHECKPOINT. An automated X-ray guardhouse identifies the vehicle...



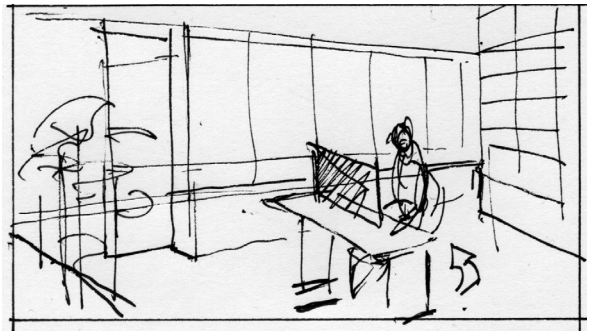
030
Between two steep river cliffs, a monumental curved HYDROELECTRIC DAM is under construction. The foundations are complete, the top of which operates as a highway bridging the two countries.



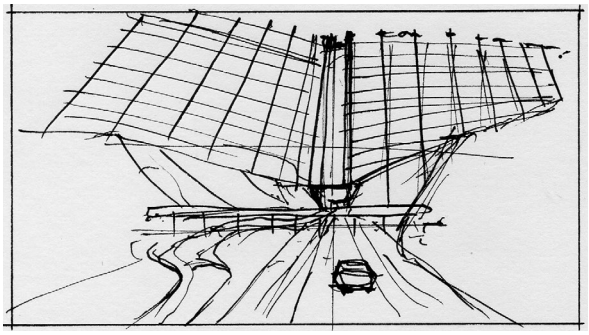
031
Across the dam on the Russian side, a SOVIET MEGA COMPLEX stretches towards the horizon.



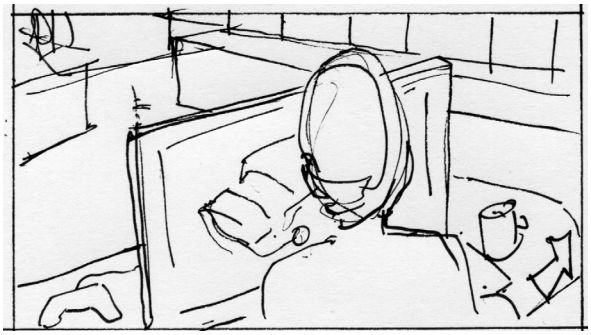
032
Theta approaches the towering block, which appears to emerge out of the valley like a concrete cliff.



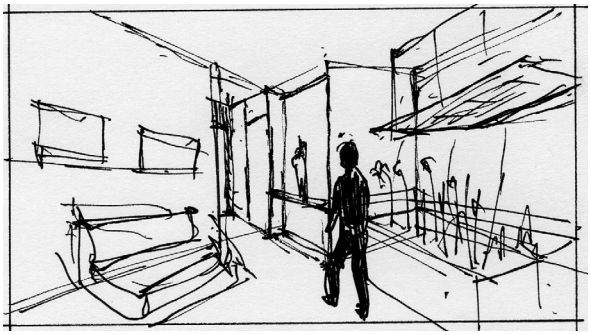
033
[5] INT. YULIA'S APARTMENT - CONTINUOUS
YULIA, 38, Farsight's chief AI psychologist, is at her desk streaming online from her computer. WINDOW: we see Theta approach



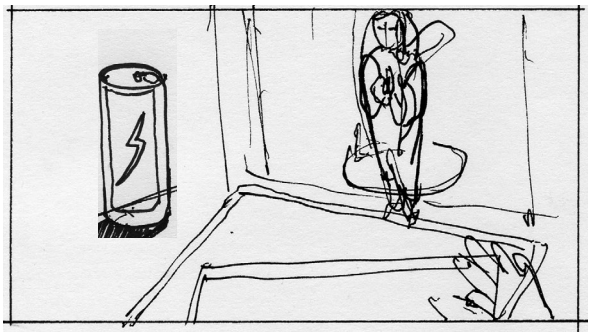
034
INTERCUT with Theta approaching.



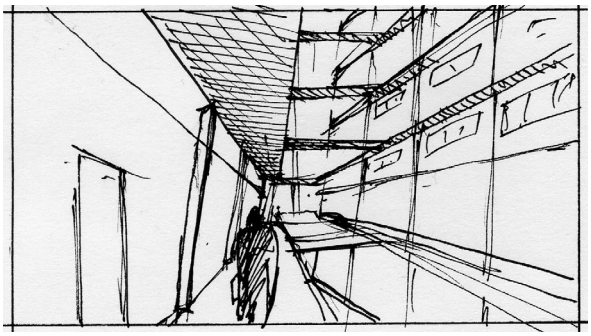
035
BEEP ALERT.
YULIA: Oh, sorry. Have to go now. Looks like my ride has arrived.
Yulia waves to the camera and turns away from her computer.



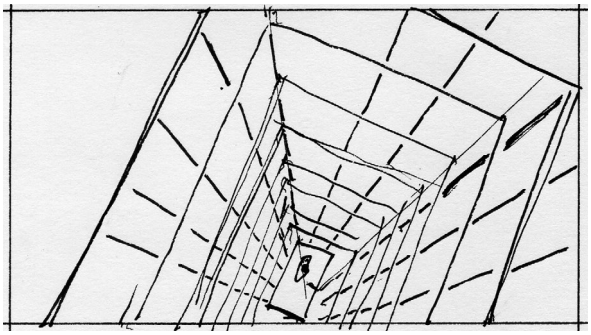
036
In a hurry, she moves across the room to the tanks of lilies, and presses a button to water them.



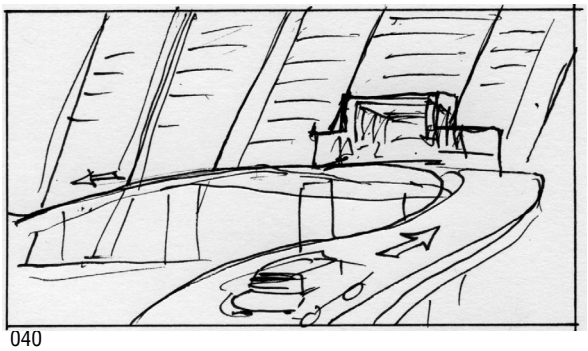
037
By the door, she picks up her GUANYIN TABLET computer from a shelf which also has a BUDDHA STATUE on it. She turns to the door, which opens automatically. (*next to energy drink can)



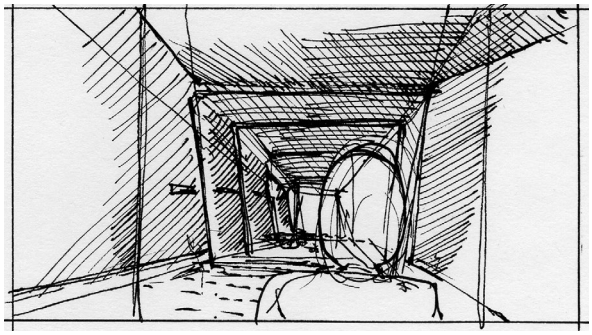
038
[6] YULIA'S APARTMENT - HALLWAY - CONTINUOUS
Yulia walks down the corridor to the lift lobby. Across the wide lightwell, endless rows of identical apartments are visible. It feels like faded utopia.



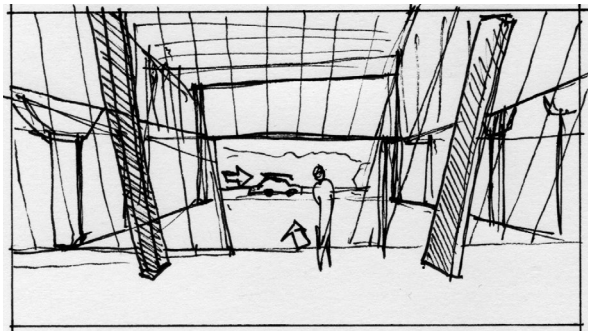
039
Dramatic shot showing huge Soviet Block, either lift going down, or Yulia on walkways, or view from end facade looking down river valley.



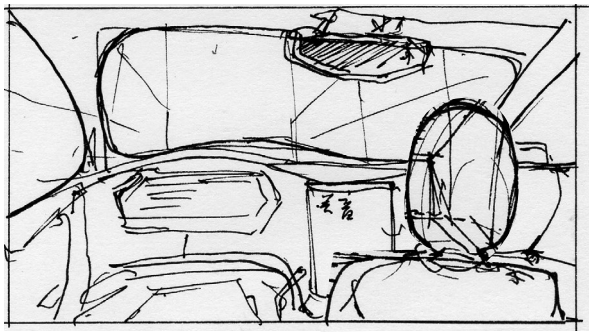
040
INTERCUT Theta on the on-ramp to Yulia's apartment.



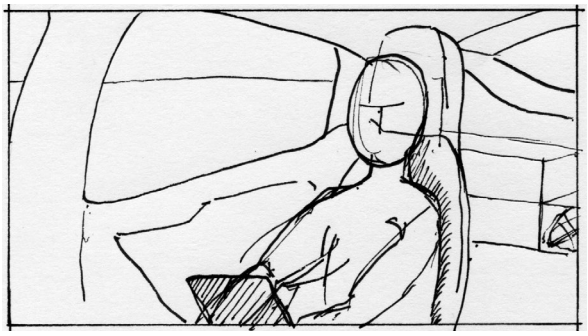
041
[7] EXT. YULIA'S APARTMENT - RUSSIAN SIDE OF BORDER
The lift opens out into an immigration zone operated by Farsight. There are no physical barriers.



042
There are no physical barriers. Yulia walks through the automated laser scanners embedded in the concrete pillars, which automatically approve her exit. In perfect synchronicity, Theta drives up and stops in front. The door opens automatically.

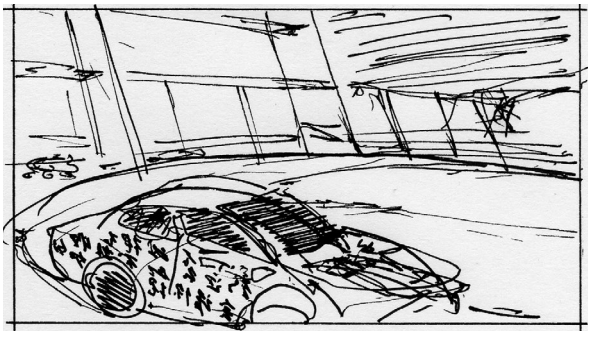


043
INSIDE THE CAR - Loud music
Theta's dashboard is an AUGMENTED REALITY SCREEN filled with real-time readouts that display the car's cognitive functions to the occupant.

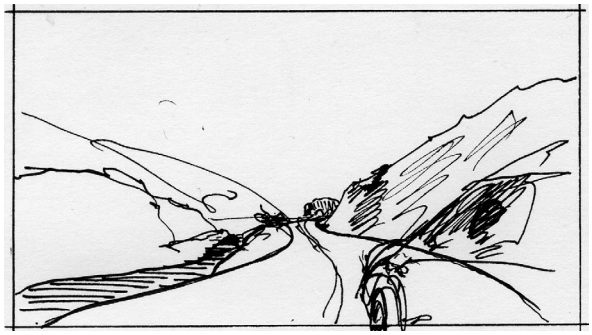


044
Yulia takes her tablet...

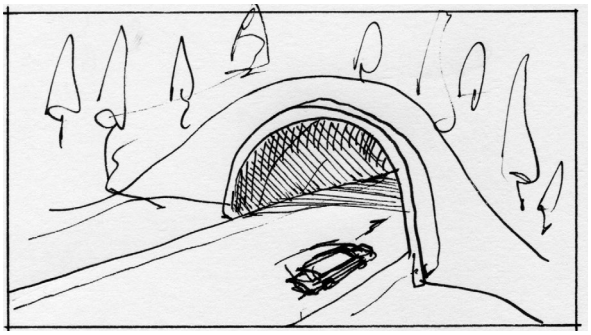
045
BEEP. Yulia releases control over Theta and sits back.



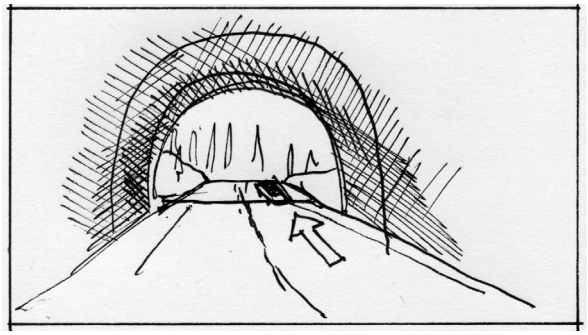
046
Theta moves off quickly, jolting Yulia.



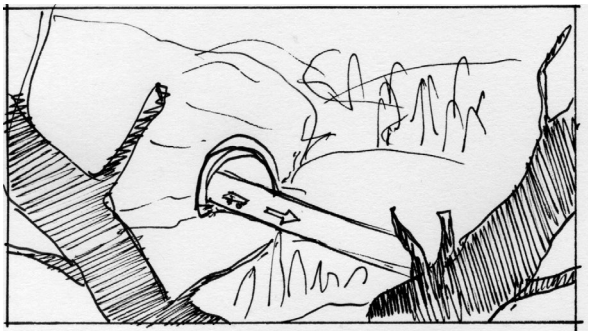
047
[8] EXT. RIVERSIDE HIGHWAY
Theta speeds along the dramatic riverside highway, driving on the edge of recklessness.



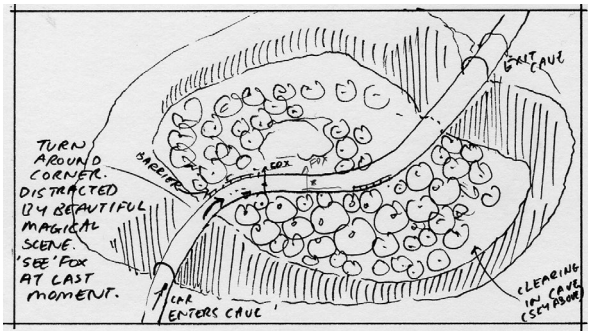
048
Theta enters a tunnel...



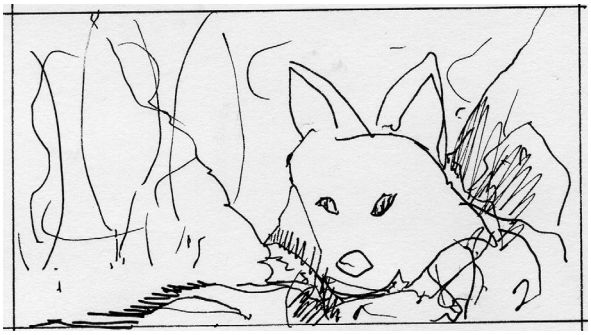
049
Emerges out of it, and unexpectedly into a FOREST CLEARING.



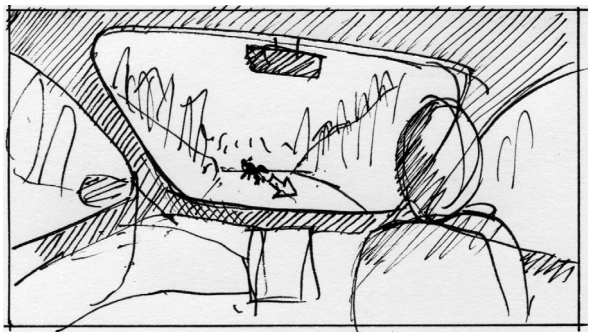
050
TRACK DOWN THE DEAD TREE
The fox isn't there.



FOREST CLEARING MAP

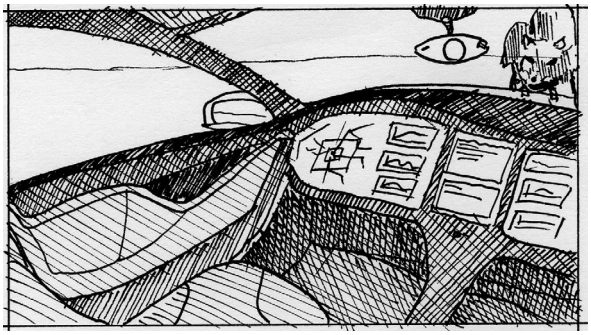


051
Standing in the middle of the road, the ARCTIC FOX watches them approach.



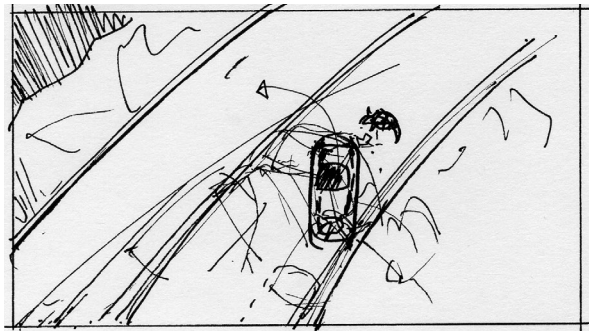
052
Yulia looks upward as the sun shines into this fragment of majestic nature... Distracted, Theta turns around a blind bend...
Suddenly, the ARCTIC FOX runs across the highway. It freezes....

053
SPIN! Theta swerves LEFT, narrowly missing the fox. They skid and their left rear side SCRATCHES against the road barrier. (Close-up of sparks flying and bumper against barrier).

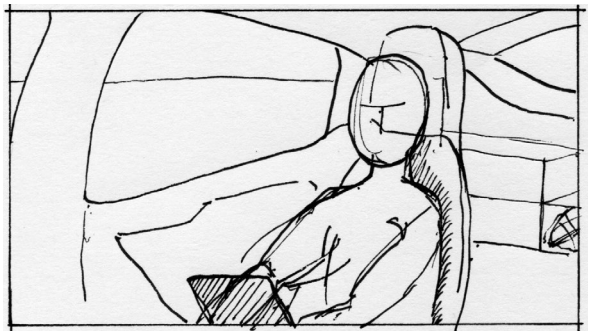


054
Theta comes to a stop. Again Theta moves. Again the fox blocks them.

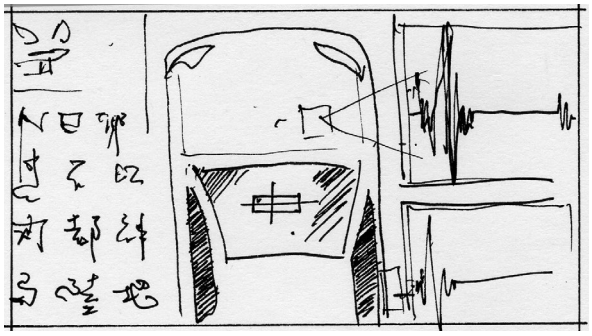
055
It leaps onto Theta's bonnet, looking directly into Yulia's eyes. Long pause.



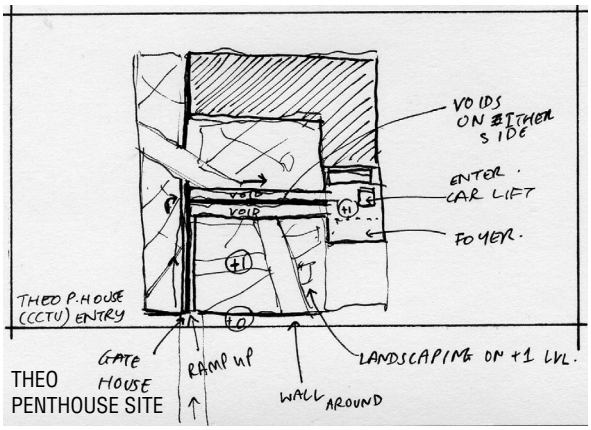
056
Aerial. The fox jumps off and runs into the wilderness.

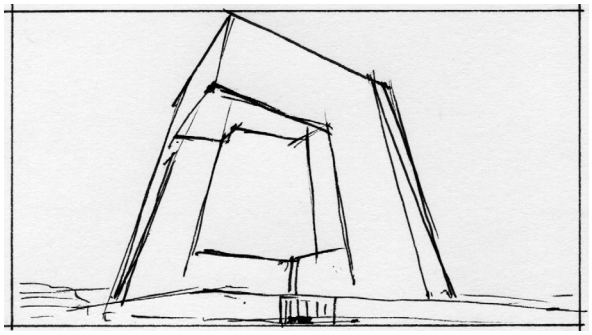


057
Gathering herself, Yulia picks up the tablet. She looks up into the rearview mirror, to a small camera pointed back at her. Theta's face.
Yulia: Are you sure you want to keep going?'

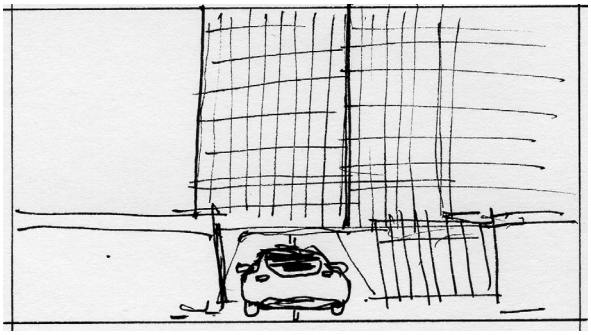


058
TABLET SCREEN registers Theta's response to the incident. Waveform peaks reflect the surge in neural activity.
Sound of Theta driving off.

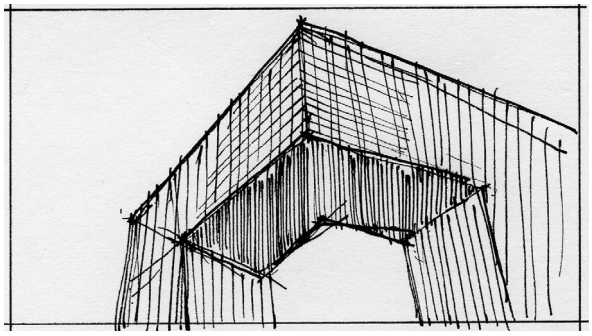




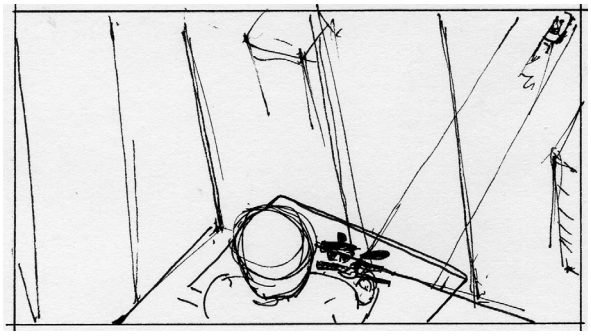
059
[9] EXT. THEO'S PENTHOUSE - GATES [DRIVING]
Theta drives towards the more refined central SimBeijing.
They arrive at THEO'S PENTHOUSE, housed within a replica of the Central Chinese Television HQ in Beijing.



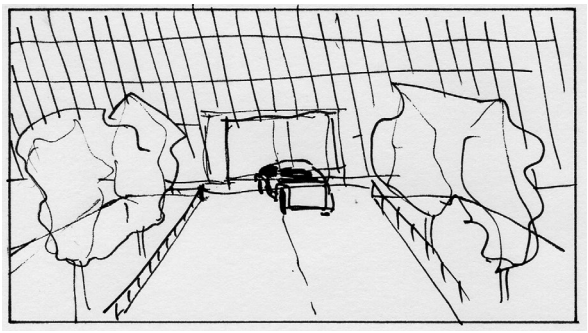
060
An exterior wall surrounds the complex. Theta approaches the guardhouse at the gates. Surveillance cameras turn to Yulia, adding to the oppressive atmosphere.



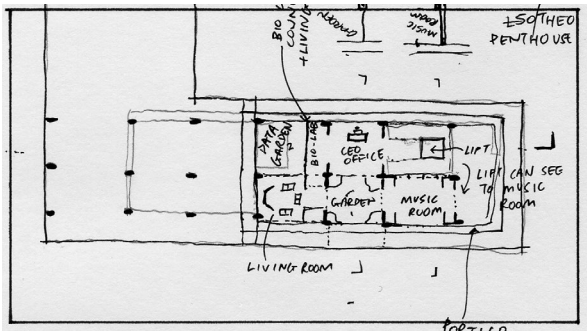
061
POV Yulia looking up at the imposing building.



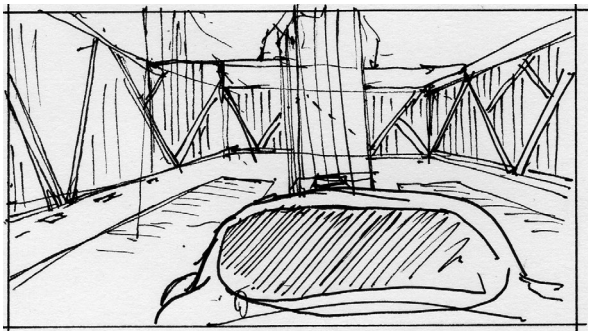
062
Far above, a dark figure LOOKS DOWN at her.



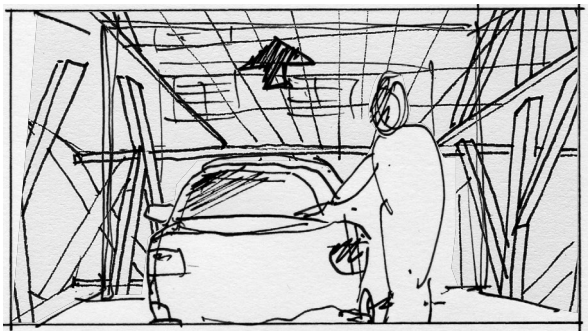
063
[10] INT. THEO'S PENTHOUSE - LOBBY entrance



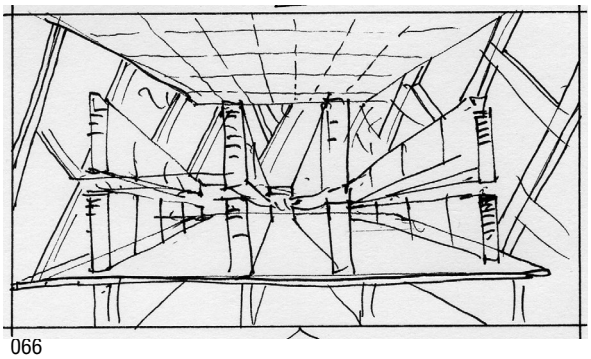
THEO'S PENTHOUSE PLAN



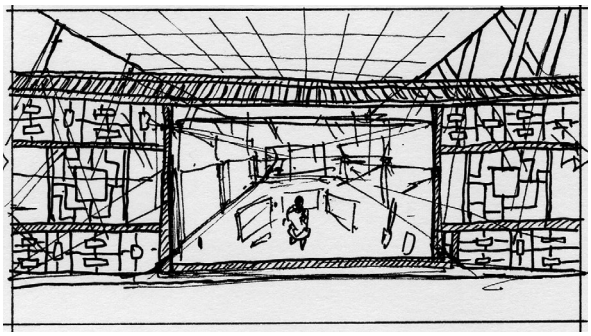
064
Theta enters the building, into an imposing lobby with monumental Chinese rock sculptures and landscape painting scrolls.



065
[11] INT. THEO'S PENTHOUSE - CAR ELEVATOR
GF: The doors shut and the lift begins to rise.....
(Cut) Yulia gets out and puts a hand on Theta: 'It's probably better if you stay in the lift'.



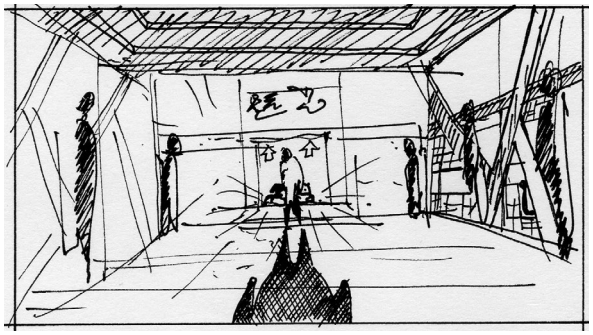
066
TRACKING SHOT as the lift approaches the top, rising through:
A SERVER AND MINING FARM
... Endless racks of blinking lights. The hum of a hundred computer fans... The lift slows as it reaches...



067
THEO'S PENTHOUSE
A strange sight: within the cavernous penthouse is an entire Chinese traditional courtyard house...

068
lined with Terracotta warriors, Ming vases, and LED screens.

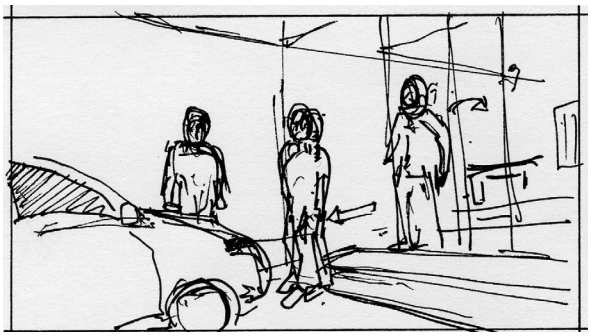
069
In the corner, a young woman sits playing sparse chords on the piano. In front of the visitors is Farsight founder THEO LIN... sitting on a table and tinking with an intricate machine... He puts up his hand to stop Yulia.



070
Theo finishes fixing the machine...
THEO: Are we on track?
YULIA: Theta performed well, considering the circumstances.

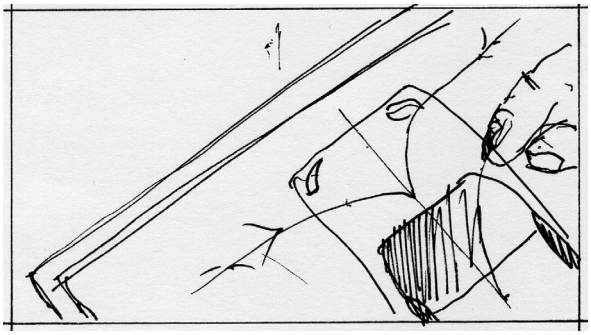
071
... Theo pauses, tilts his head, and listens to the music.
THEO: Hear that? ... Lin Yu!
Theo calls out his daughter's name.

072
Claire turns to Yulia and responds in English.
C: Call me Claire. It's good to finally meet you, Dr Shastova.

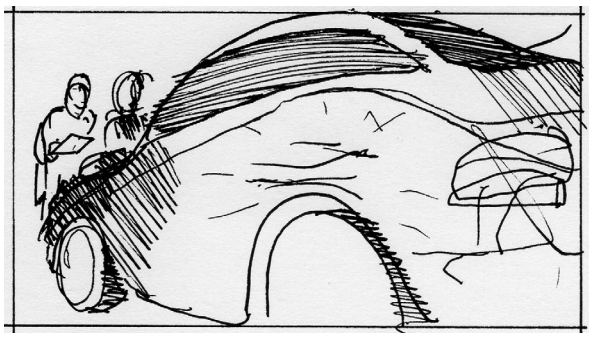


073
Claire steps out into the car elevator. Yulia and Claire move beside Theta's front bonnet.
Y: Claire, meet Theta. (*Theta flashes their lights)

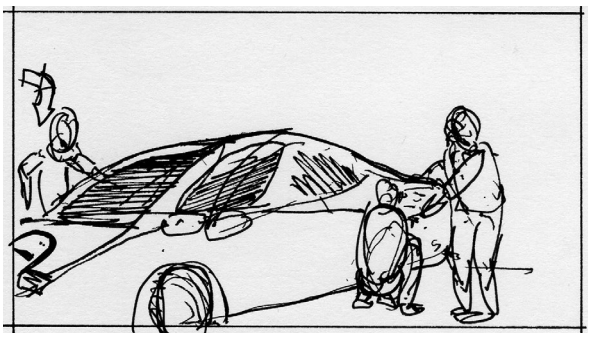
074
Yulia passes the tablet to Claire with both hands.
YULIA: Here, try it out. It's voice activated.



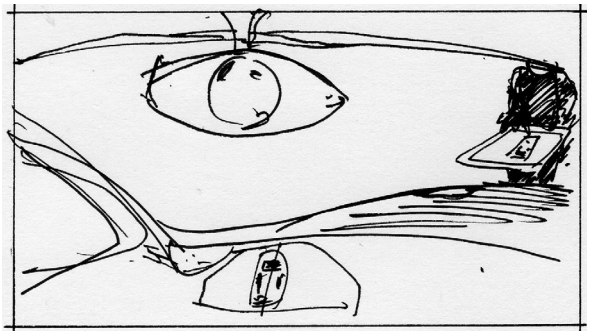
075
Claire takes the tablet and intuitively navigates the interface. She taps away on the virtual model of Theta.



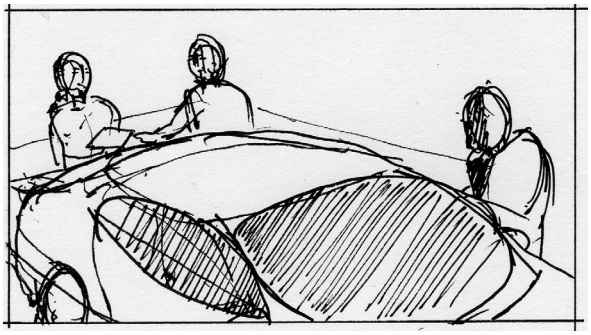
076
Claire begins walking around the car, followed by Yulia.
Tap. Tap.
Claire detects DAMAGE from the earlier incident.



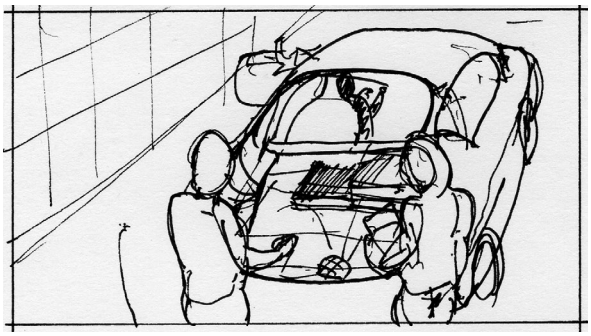
077
Claire hands Guanyin back and squats down next to the damaged LEFT REAR DOOR of the car. Yulia joins her.



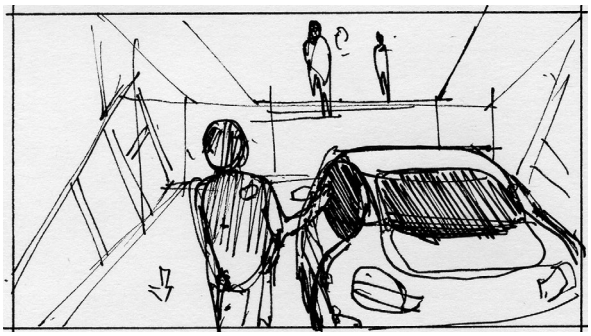
078
THETA POV as Yulia and Claire stand up and walk around to the rear of the car.



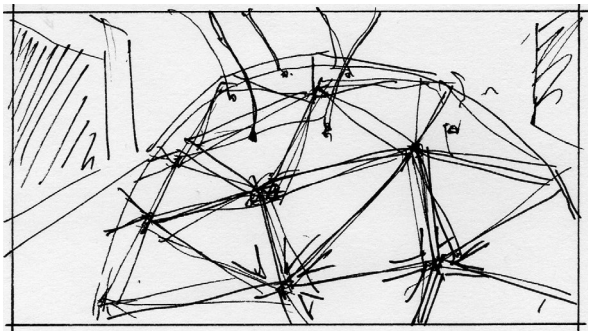
079
Theo enters the elevator, standing behind Yulia and Claire.
T: What happened here?
Y: It's nothing.



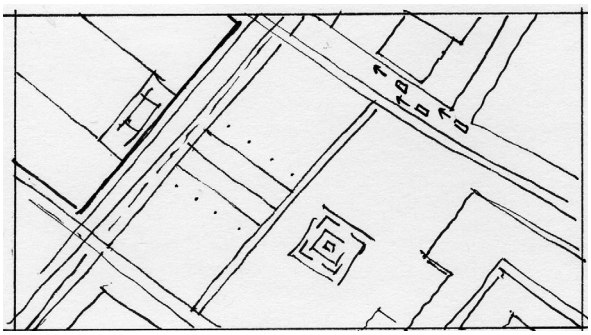
080
Theo walks around to the back... pounds on the boot... Yulia places a hand on Theta. After a moment, the boot opens, revealing a liquid-cooled computing core... (Reverse shot from THETA POV)
Theo SLAMS the boot shut.



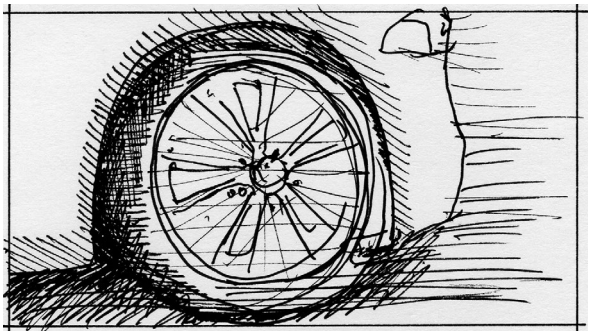
081
[12] INT. THEO'S PENTHOUSE - CAR ELEVATOR
Yulia stands next to Theta as the lift descends away from the penthouse.



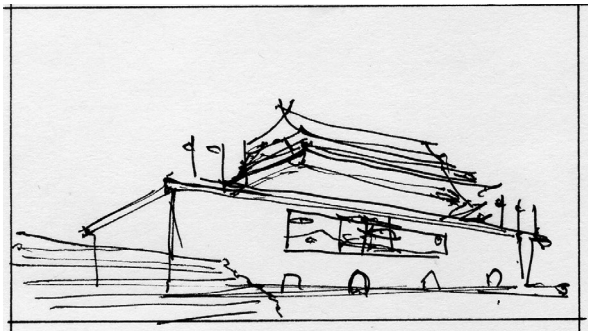
082
Accompanied by an EERIE DRONE, the camera tracks along the scratches on Theta, inside a ventilation grille, and into the heart of their CPU.



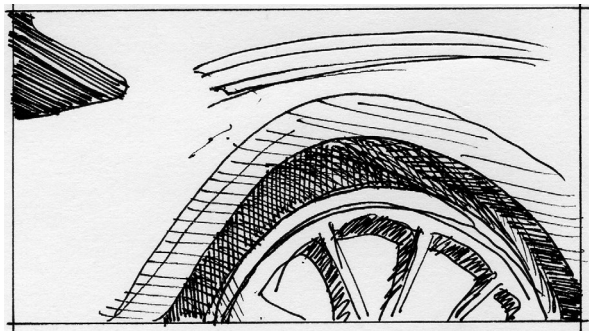
083
[13] EXT. SIMBEIJING - OUTSKIRTS - NIGHT
Away from the pristine city centre, the incomplete skeletons of other municipal buildings emerge. Anonymous blocks dot the hastily-constructed wasteland. Theta keeps on driving.



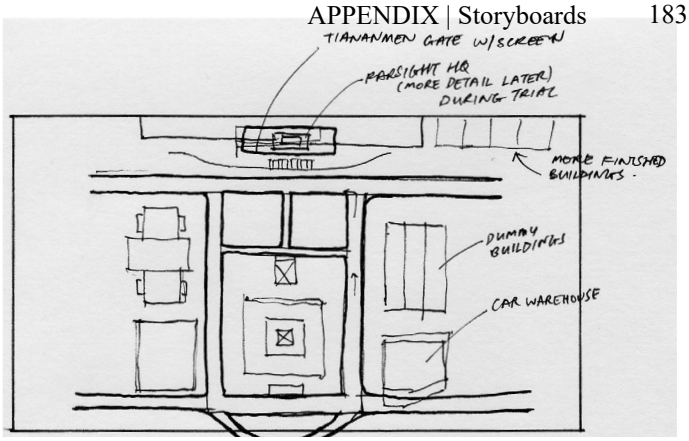
084
[14] EXT. TIANANMEN - DAY - PROMO FILMING SESSION
FROM ABOVE we see a huge open square surrounded by six-teen-lane highways and government buildings.



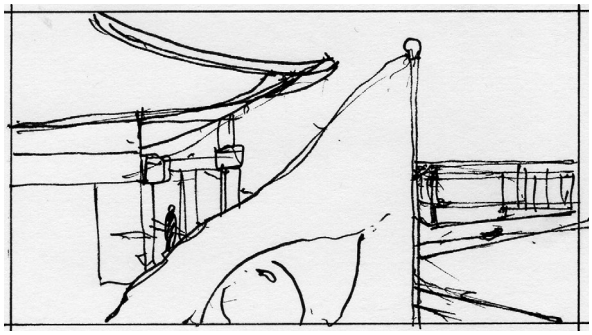
085
THETA'S POV as they race around an obstacle course on the square. Drones hover around filming the scene.



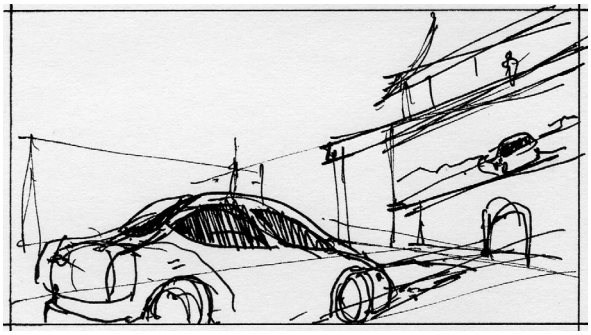
086
Farsight Ad: 'Our self-driving cars aren't just products...'



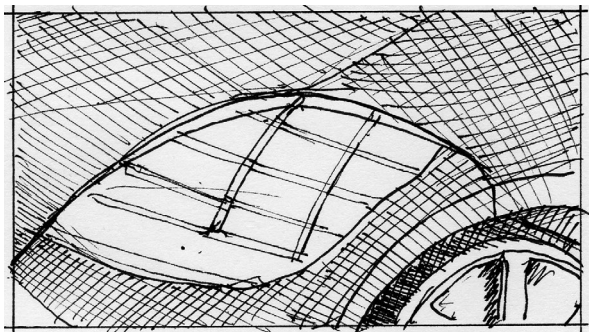
FARSIGHT HQ PLAN



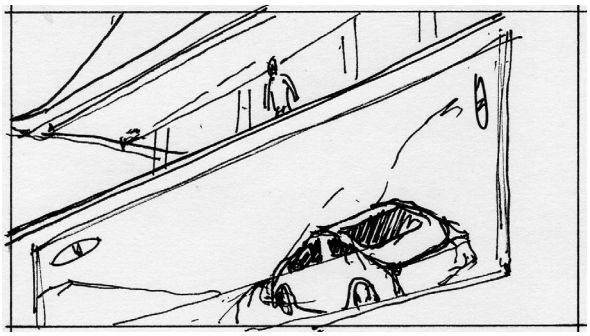
087
Theo is at the Farsight HQ balcony, looking over the square.
*wrong angle, should be from other side of HQ (car should appear to be driving left to right)



088
Theta pulls up in front of the Farsight HQ. On the massive gateway, a promotional video for Black Cloud plays on an LED screen.

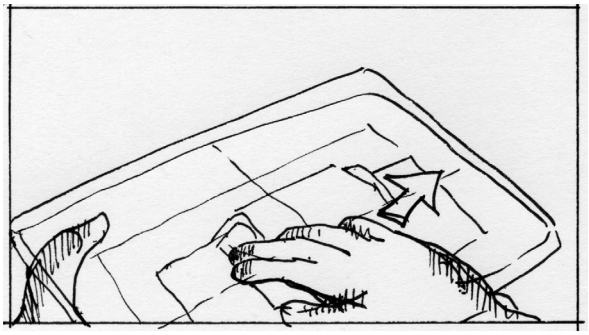


089
LED SCREEN:Theta speeds around the bends of the river.

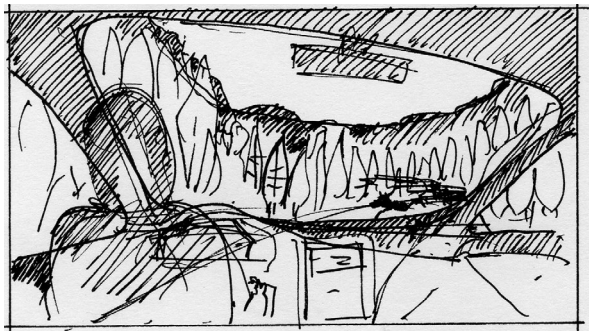


090
Theo looks down.

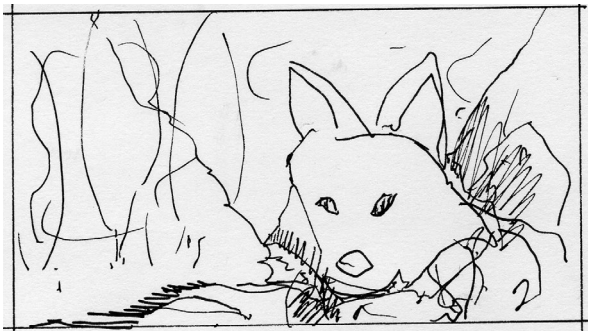
091
[15] EXT. RIVERSIDE HIGHWAY - FOREST CLEARING
YULIA (RU): You are listening to the sound of my voice. I can see you're feeling different.



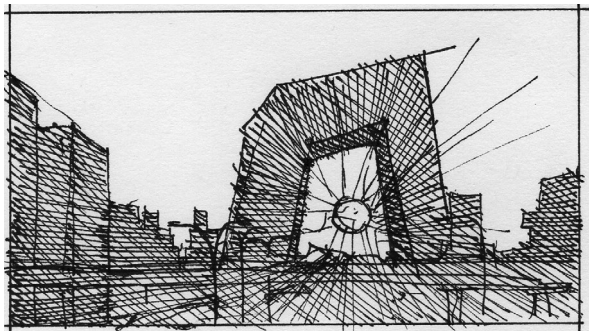
092
SWIPE. Yulia turns off the tablet and puts it down.



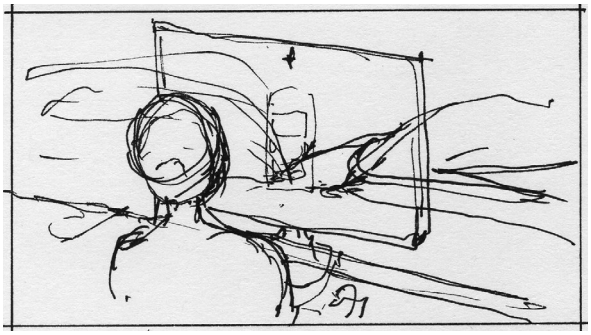
093
Theta is agitated. Even though they are not moving, their engine is making strange sounds, like laboured breathing.



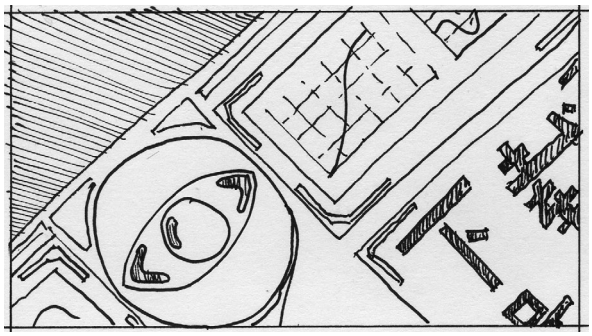
094
The fox approaches Theta's left rear door.
SLOW ZOOM beneath Theta's paintwork. The scratches have been repaired but the scars are still underneath.



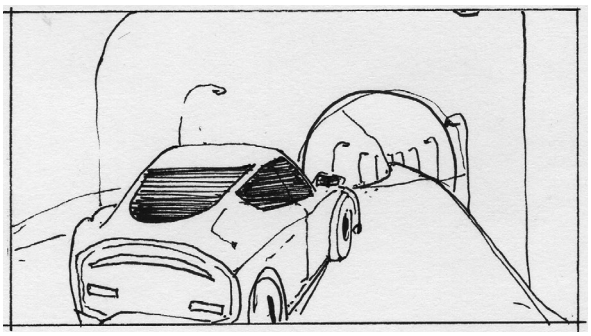
095
[16] EXT. SIMBEIJING - OUTSKIRTS - SUNSET
The sun is setting rapidly. Time-lapse of storm clouds rolling in, casting shadows over the cars below.



096
[17] INT. YULIA'S APARTMENT - NIGHT
A shadow passes over a steaming cup of coffee at Yulia's desk. She plugs Guanyin into her monitor at home...

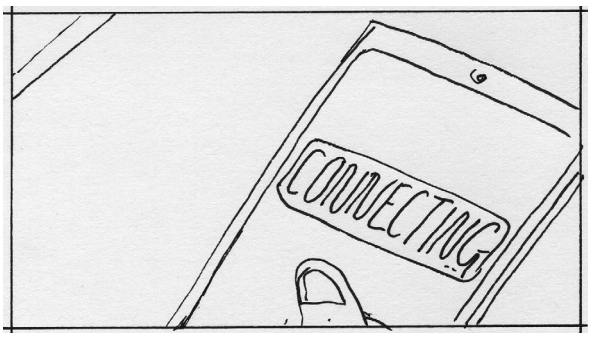


097
...and opens up images of Theta's damage.

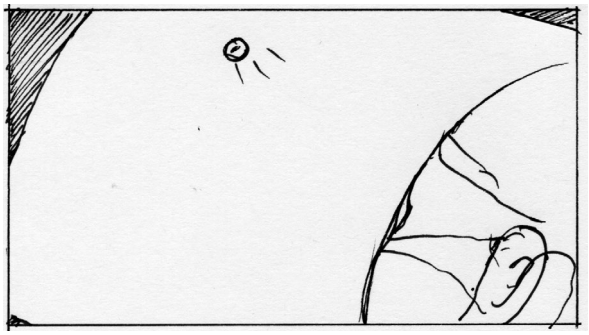


098
[18] EXT. RIVERSIDE HIGHWAY [DRIVING]
Theta is driving along the riverside.

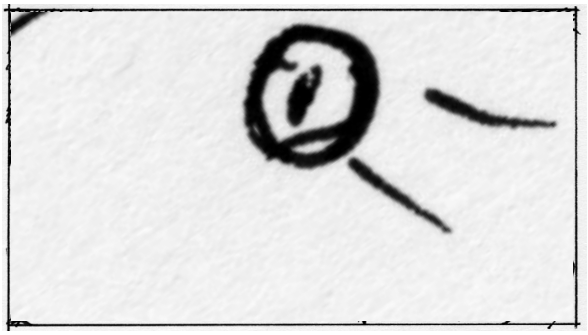
099
Claire is having a call inside with her partner, Leon.



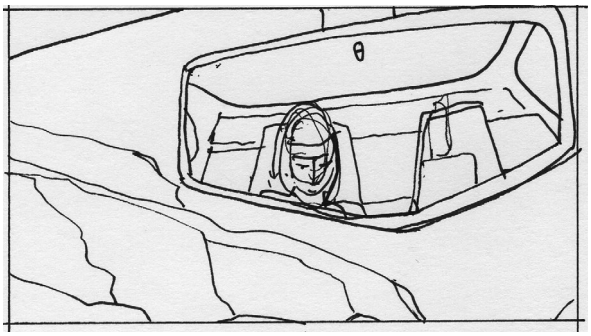
100
CLAIRE: Can you see me?
LEON: Bad signal. Video's frozen now....



101
Claire looks out the car window.

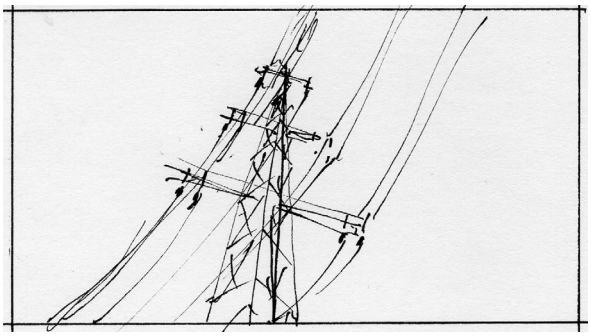


102
CLOSE UP: The moon in the night sky. MATCH CUT to Theta's camera watching them.

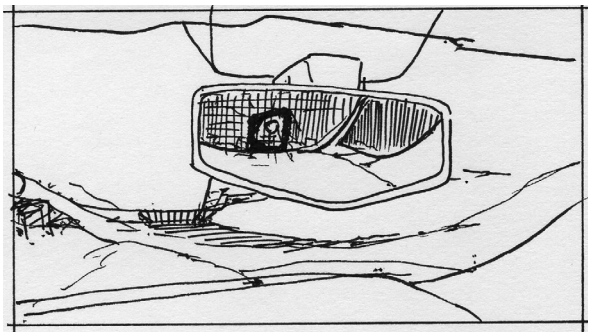


103
CLAIRE: (laughs) Ha, right. Hey, do you want to hear the new track?

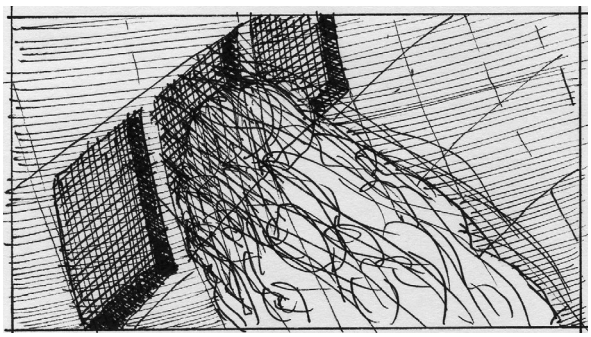
104
Claire looks up from her phone to the dashboard.
CLAIRE: Theta? Where are we?... What are you doing?
Theta is silent. Disoriented, Claire looks out the window.



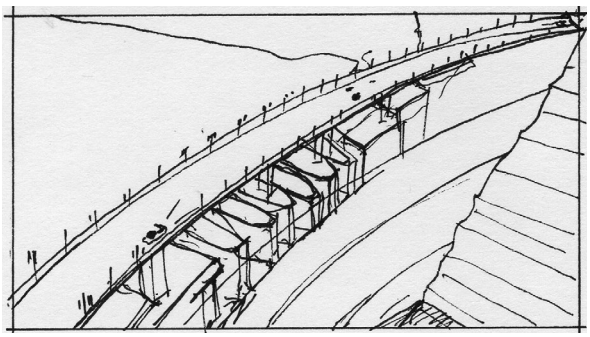
105
There is a TRANSMISSION MAST from an electricity substation by the Dam, interfering with her phone signal.



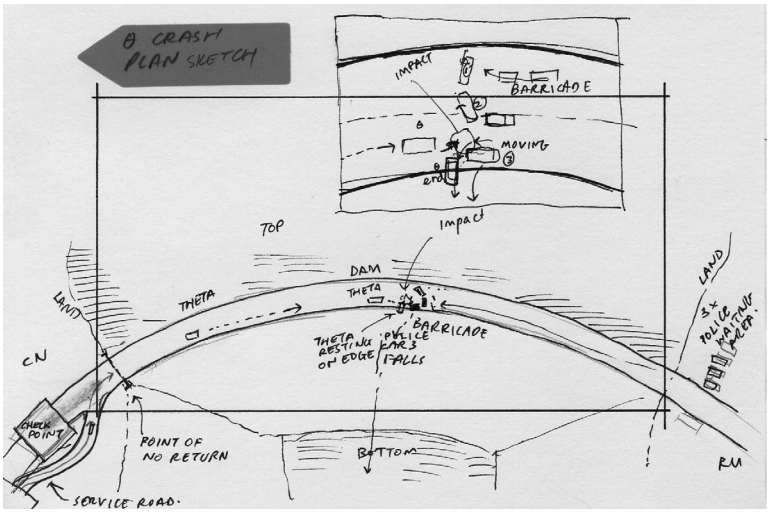
106
Claire realises that Theta has driven to the border without her instruction.
CLAIRE: What are you doing?
Theta ACCELERATES and SWERVES onto a side road...



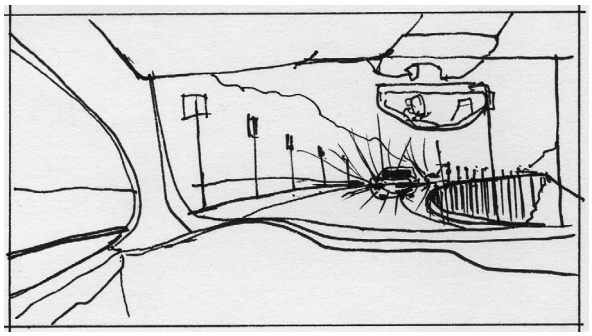
107
[19] EXT. HEILONGJIANG BRIDGE - ON THE DAM [DRIVING]
ANGLE ON the river below. The sound of crashing water and the electric hum of the hydroelectric substation.



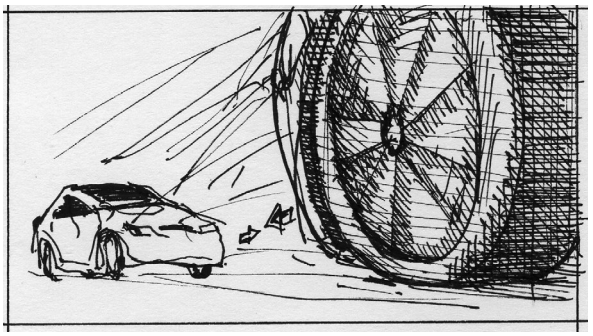
108
CLOSE on Claire looking on in shock.
AERIAL The car swerves back onto the highway just before they reach the dam.



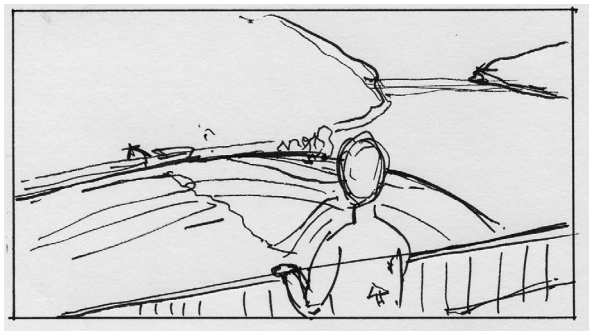
HEILONGJIANG BRIDGE PLAN
INSET: ACCIDENT PLAN



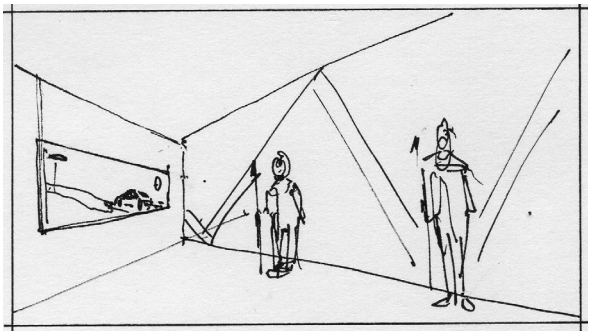
109
Multiple headlights rapidly approach from a distance.
Claire begins to panic. She CLUTCHES her phone.



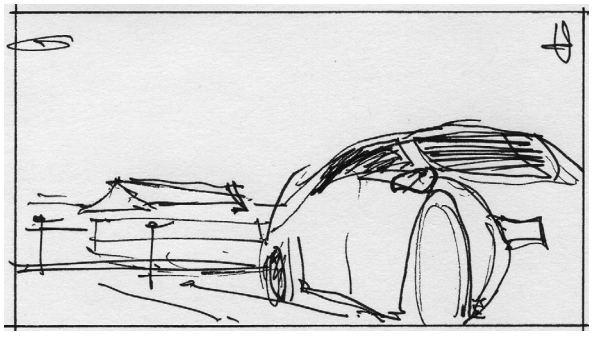
110
Headlights approach from in front, bathing the car with blinding light...
SWERVE. BANG. TUMBLE.
Collage of scrapes, crashes, disjointed sounds.



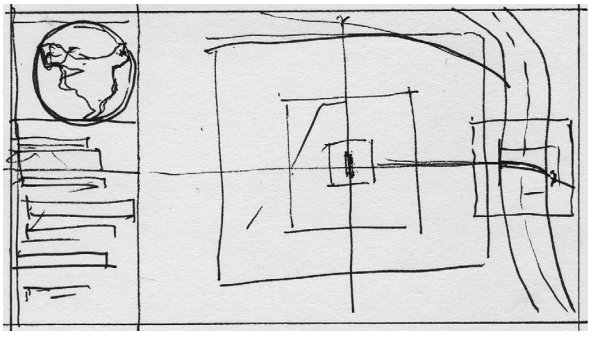
111
CUTAWAY: Yulia goes outside to her balcony to look at the dam, engulfed in smoke.



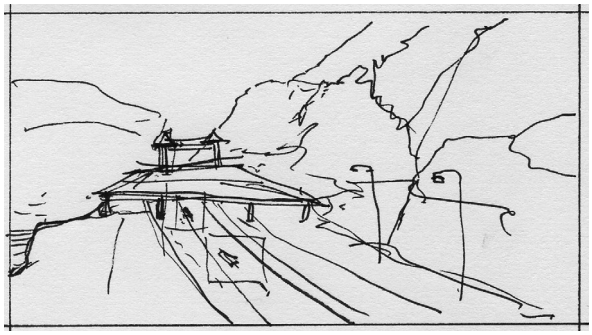
112
[20] INT. THEO'S PENTHOUSE - LIVING ROOM - DAY
POV crawling around the empty apartment from a low angle. A sense of dread builds as the camera tracks across the empty penthouse with the news on the LED screen.



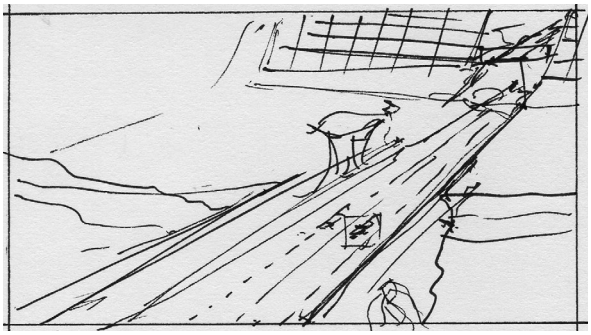
113
FULL SCREEN: TV report. An aerial drone tracks Theta during their Farsight HQ trial run. The news portrays it as a live event, deliberately covering up the accident on the dam.



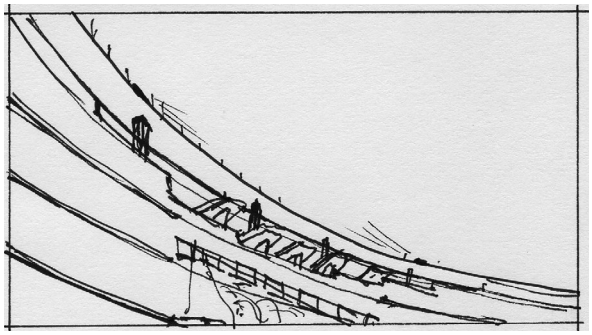
114
[21] EXT. HEILONGJIANG BRIDGE - ACCIDENT MONTAGE
RECONSTRUCTED IN SLOW-MOTION: maps, surveillance cameras, and drone footage present the scene from multiple angles.
*Map is from Theta's car dashboard screen.



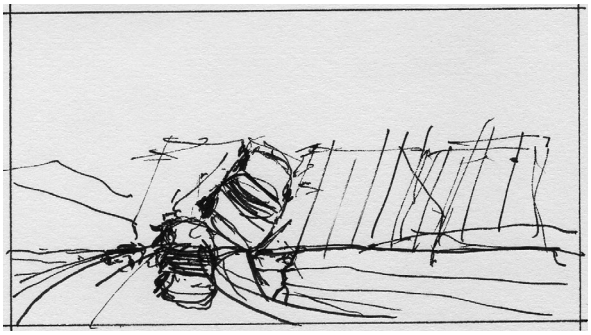
115
Cameras pan across the highway on top of the dam, marked by a matrix of reflective markings and laser scanners.
Border police cars face each other from opposite sides of the bridge.



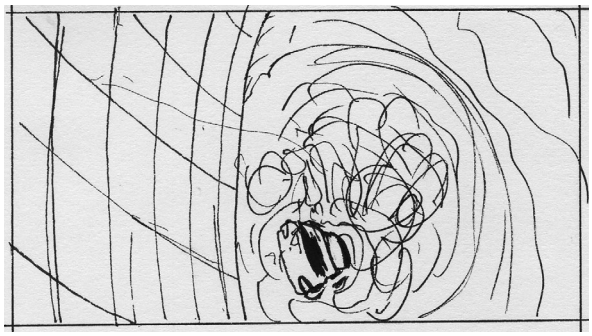
116
The sound of accelerating engines. Theta swerves into a service road to bypass the Chinese checkpoint, merging back with the highway just before they reach the dam.



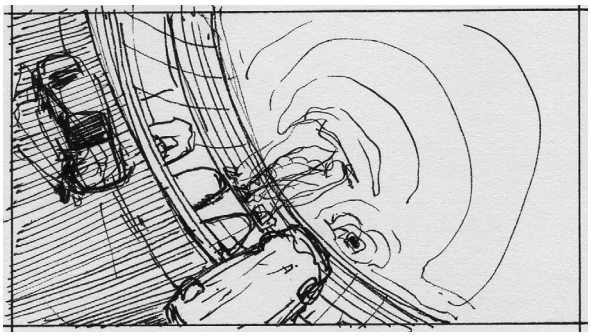
117
Four border police cars approach from the Russian side. The cars hastily assemble themselves into a barricade in the middle of the dam.



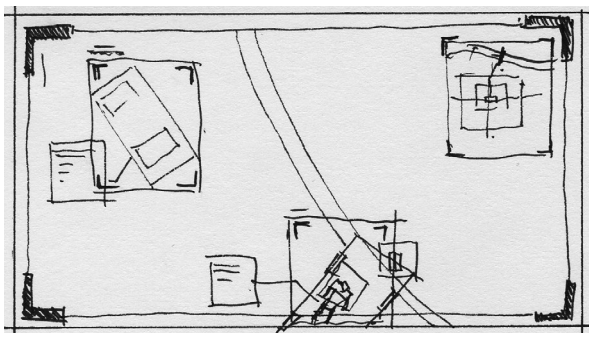
118
Theta swerves, skids, and hits the car at the edge.
Both cars crumple and tumble.



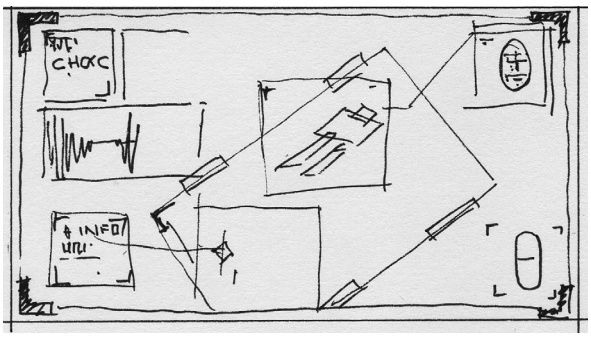
119
SPLASH.
The police car falls into the river below.



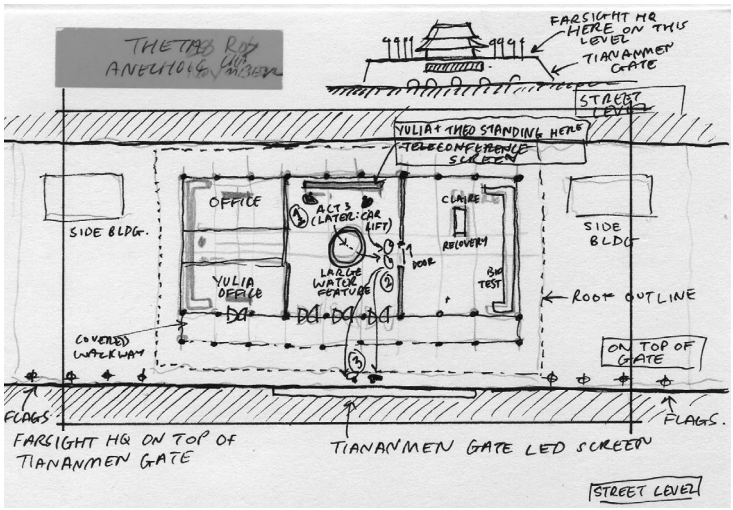
120
Theta is OVERTURNED. Rescue drones secure the car and identify the lone passenger - CLAIRE. She is shaken but unscathed. Theta is no longer functioning. Dead. CLOSEUP of the smashed computer.



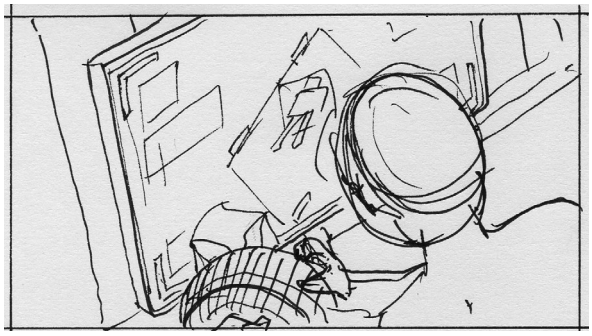
121
Claire's testimony is interspersed with images from 3D scene reconstruction of the crash.
*Map is from Theta's car dashboard screen.



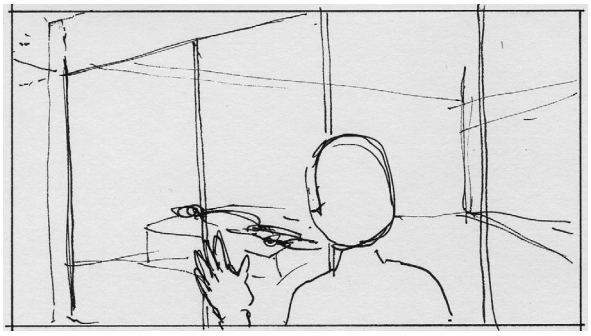
122
Medical info GUI of Theta's scan of interior, including Claire in the back seat.
*Graphic scan is from Theta's car dashboard screen.



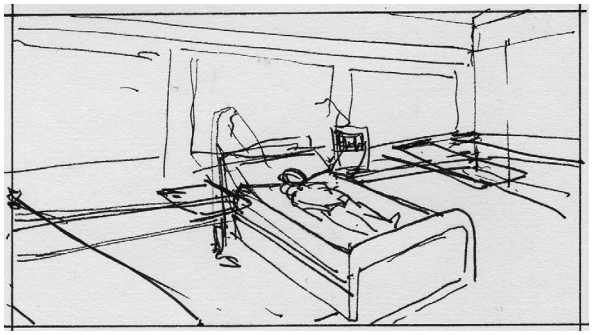
FARSIGHT HQ INTERIOR PLAN



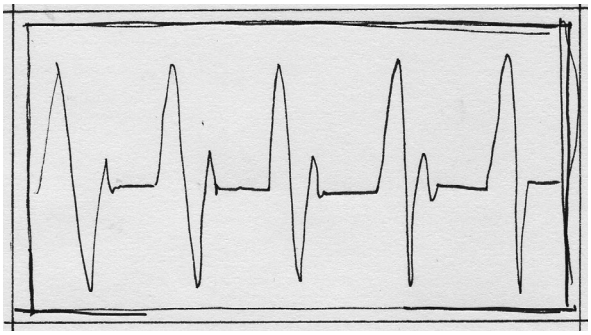
123
[22] INT. FARSIGHT HQ - CONFERENCE ROOM
... We realise that this is not a public trial but instead takes place behind closed doors.



124
Theo and Yulia turn off the call and move towards the BIO-LAB next to the main conference room. Inside, they can see Claire on a hospital bed, hooked up to a drip.

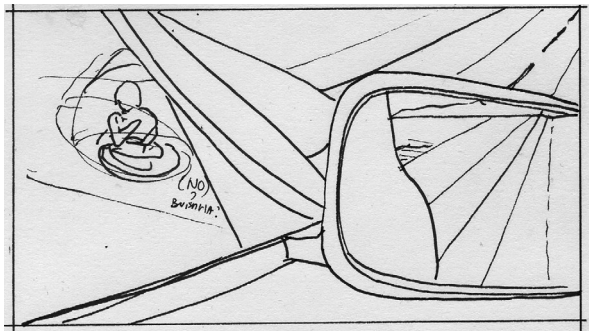


125
A range of AUTOMATED SURGICAL MACHINES surround Claire.

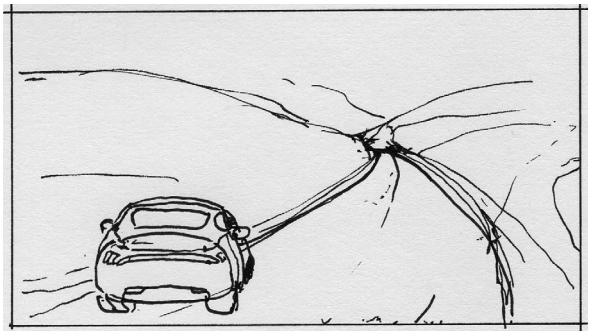


126
MEDICAL MONITOR: Claire's heartbeat is a steady pulse.
SLOW ZOOM into the monitor showing the pulse. The sound of the heartbeat echoes through the room.

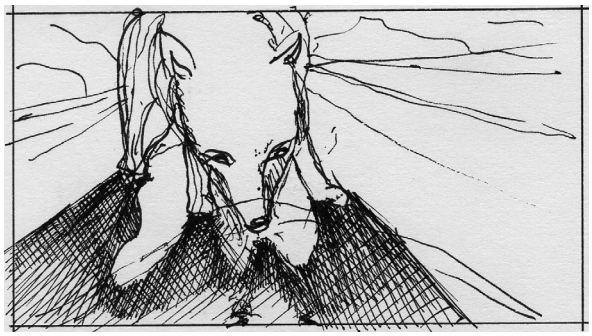
ACT 2



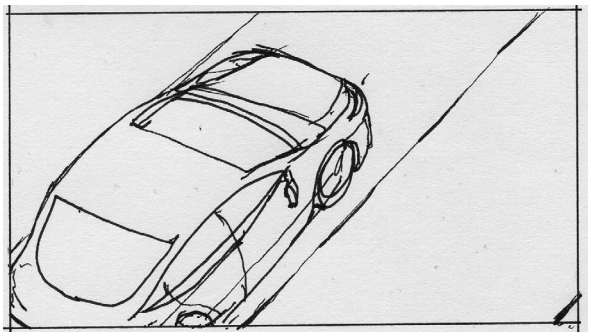
127
[23] EXT. RIVERSIDE HIGHWAY - SUNSET [DRIVING]
TITLE OVER: TWO YEARS LATER



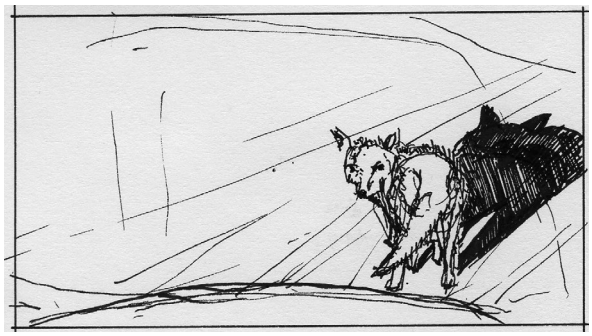
128
Theta is speeding down the riverside. YULIA is inside, gazing out the window. Theta's theme plays.



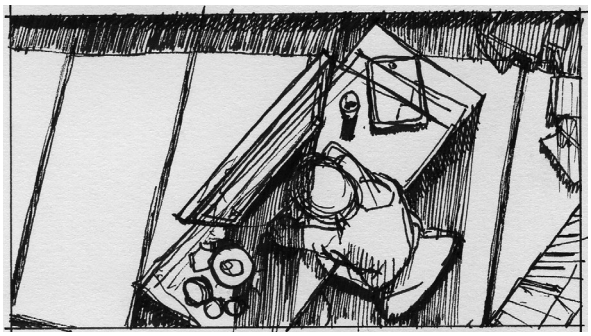
129
The car rounds a bend.
Suddenly, we see the Arctic Fox running down the middle of the road. Straight towards them.



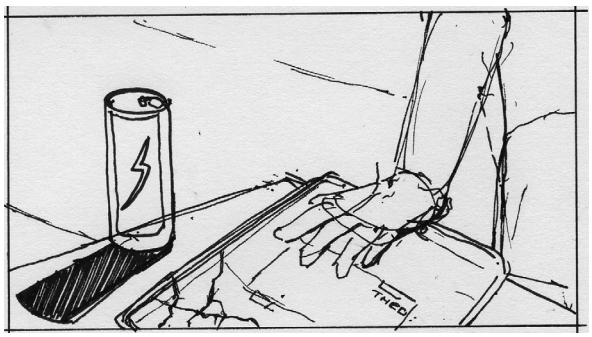
130
The car does not change course...



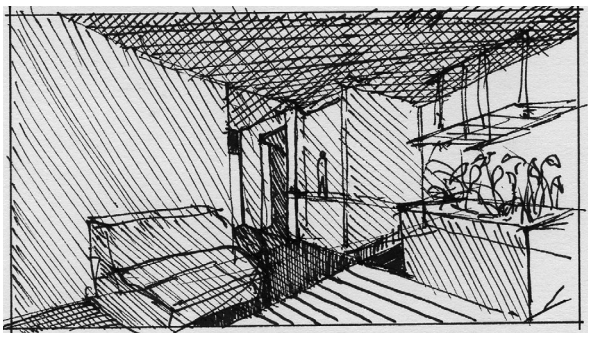
131
...Approaching...Closer... closer...



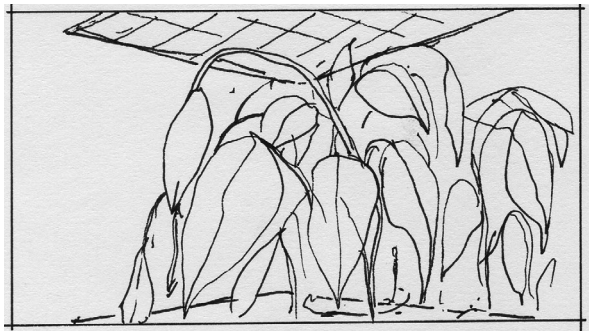
132
[24] INT. YULIA'S APARTMENT - DAY
Yulia bolts awake from her nightmare.
She takes a moment to realise she had fallen asleep at her desk...
DESKTOP SCREEN: A map of the crash site.



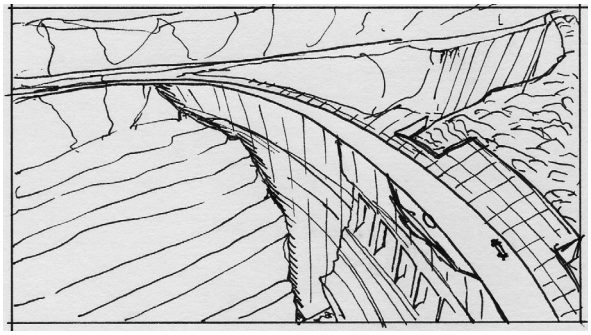
133
With a SIGH, Yulia picks the tablet up from the desk, next to an empty energy drink can.



134
PAN around the room, showing the furniture in disarray. The Lilies are WILTING. A steady beep indicates that the water tank is empty.
She leaves the apartment, downcast.

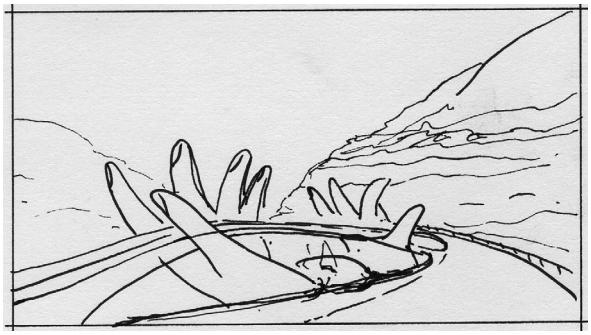


135
CAMERA lingers on the details of her apartment. Dying plants. The empty cup of coffee. The cracked screen of the tablet. The Buddhist statue looks on.
BEEP. The empty tank alarm is still going off.

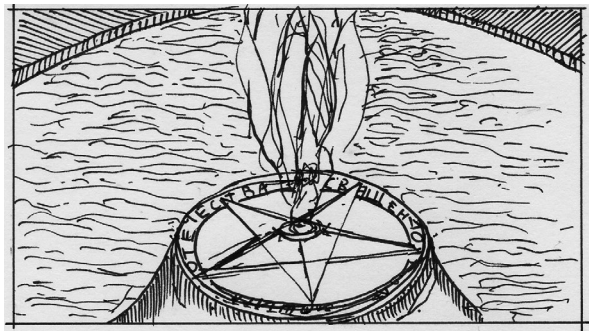


136
[25] EXT. HEILONGJIANG BRIDGE - FARSIGHT BUS [DRIVING]
OUT THE WINDOW: It's winter now. Majestic silence on the snow-covered landscape.

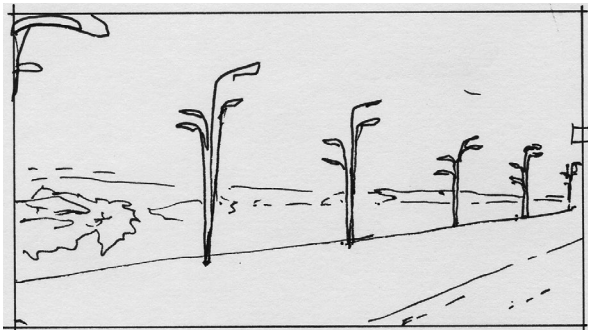
137
The FARSIGHT MINIBUS is driving across the dam. The hydroelectric dam is now complete, creating a vast reservoir behind it...
Yulia is the only passenger inside. As the bus approaches the centre of the dam highway, she turns to see:



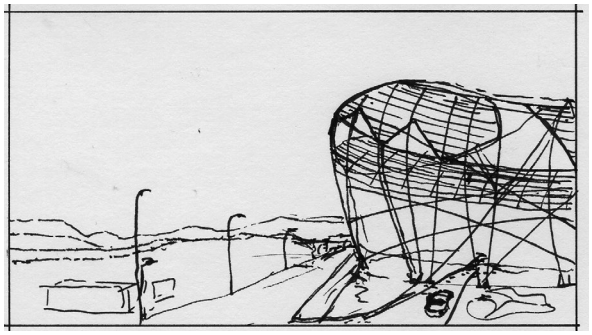
138
THE MONUMENT TO THE FALLEN. Two massive steel hands hold an elevated bridge, encircling the crash site from above. The bridge is perched over the edge of the dam, enveloped by the spray of the crashing water.



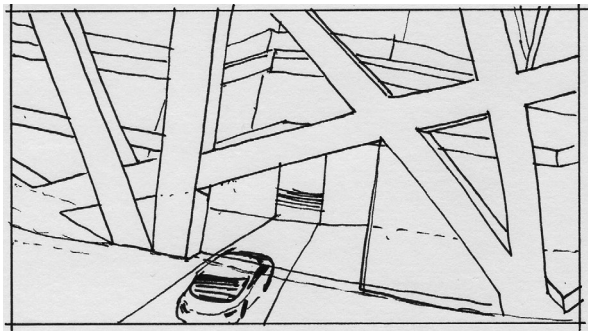
139
At the accident site below, an ETERNAL FLAME burns, commemorating Theta's victim. There is nobody there.
FROM ABOVE, the curves of the dam and the monument look like a FARSIGHT EYE.



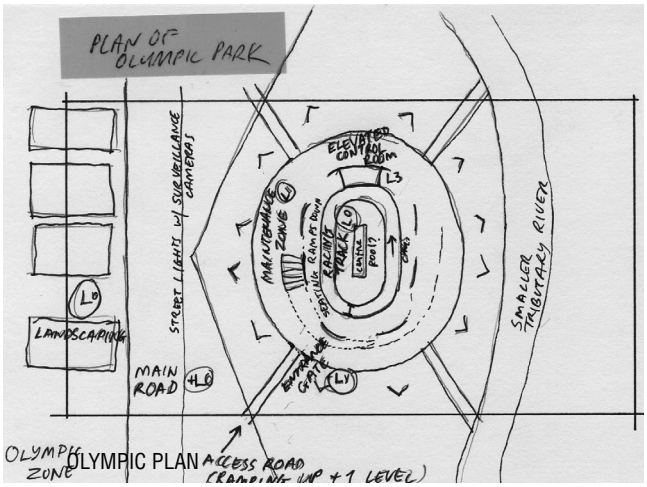
140
[26] EXT. OUTSKIRTS - DAY
SimBeijing has frozen over. The rising water level has flooded the city. The elevated highways are accessible, but the quarries below street level are filled with ice.



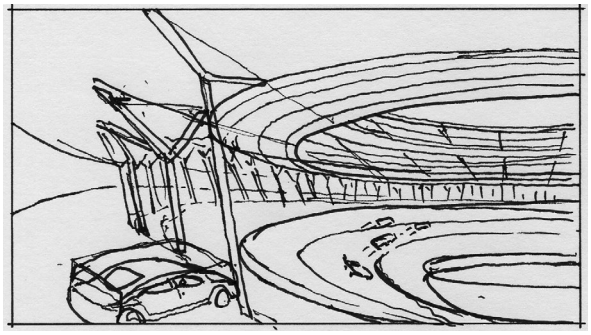
141
[27] EXT. OLYMPIC ZONE - DAY
WIDE ANGLE of the Farsight bus entering the SimBeijing Olympic Stadium, its interlaced steel girders designed to evoke a bird's nest.

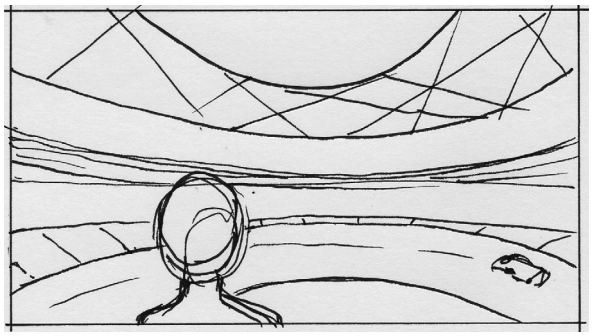


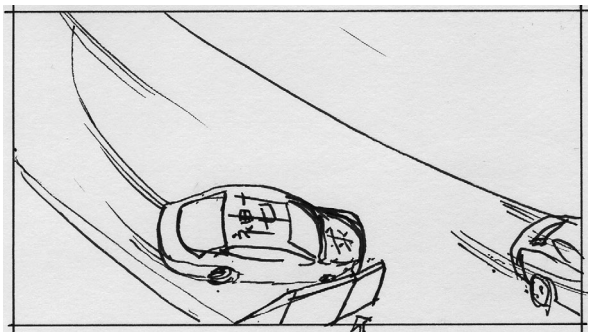
142
DRONE'S POV - Watching the bus enter.

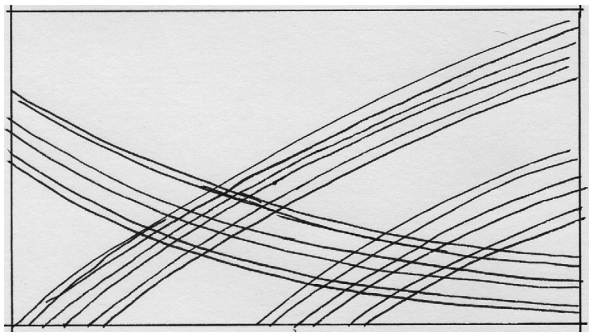


OLYMPIC PLAN

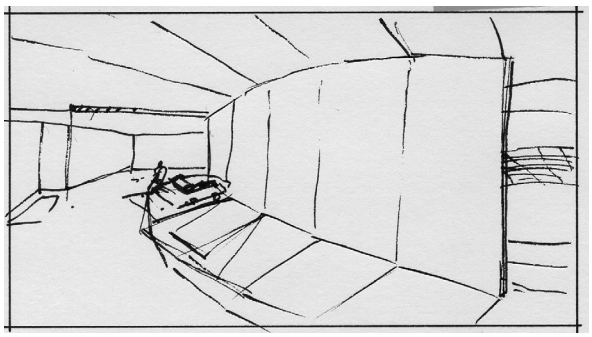

143
[28] INT. OLYMPIC ZONE - TEST TRACK - CONTINUOUS...
The bus drives to the edge of the track and Yulia gets out. Theo is looking down at the cars racing below. He speaks without turning to her.

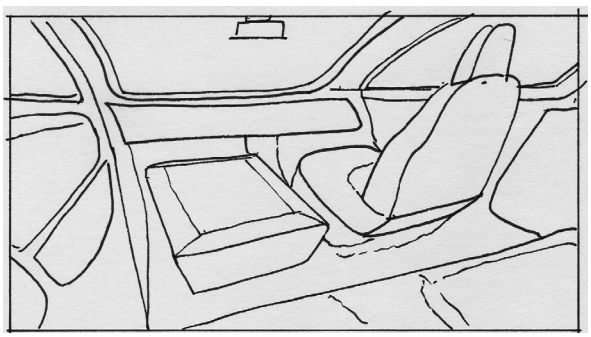

144
The bus drives to the edge of the track and Yulia gets out. Theo is looking down at the cars racing below. He speaks without turning to her.
THEO: The Lawyer called about the launch.

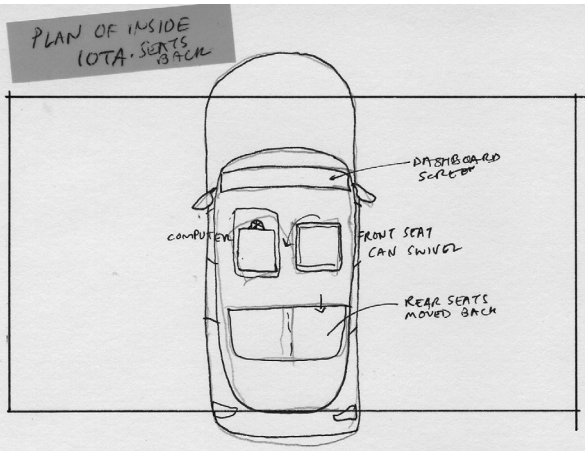

144
BUZZ. A warning sounds from the track.
A crash barrier suddenly emerges from the middle of the track.
One of the cars, Iota-8, cannot keep up with the higher speed and begins to steer erratically, narrowly missing the barrier.


145
THEO: Better get started.

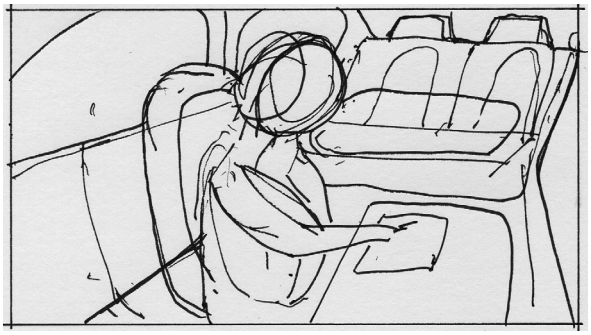

146
POV from IOTA-1's wing mirror, looking back at the car.


147
[29] INT. OLYMPIC ZONE - MAINTENANCE AREA - DUSK
Shadows flicker over the concrete walls of the maintenance area next to the track.
Yulia is inside Iota-1, diagnosing the car.

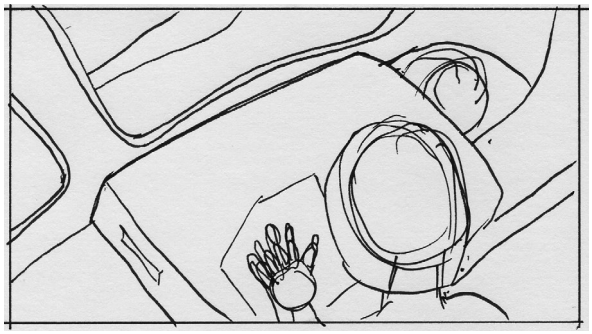

148
The Iota generation has an AUGMENTED INTERFACE that runs a widescreen version of Guanyin diagnostic software, sharing the same green and orange colour scheme from Yulia's tablet.



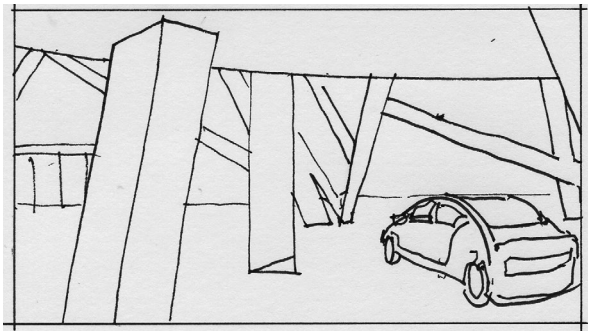
IOTA INTERIOR PLAN



149
YULIA (RU): Hello, Iota-1.
IOTA (EN): Dr. Shastova, can we use English? Our translation servers have been re-routed...

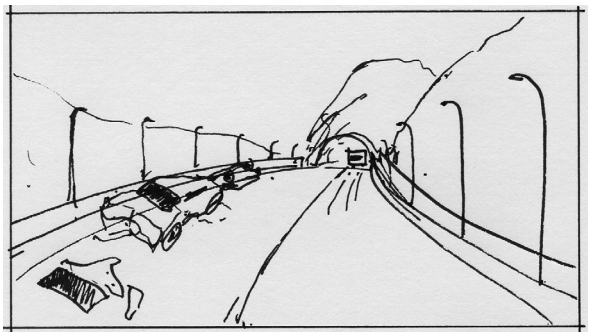


150
INTERFACE: Yulia changes a few of Iota-1's performance settings.
YULIA: Fixed... Don't want something bad happening again, do we?

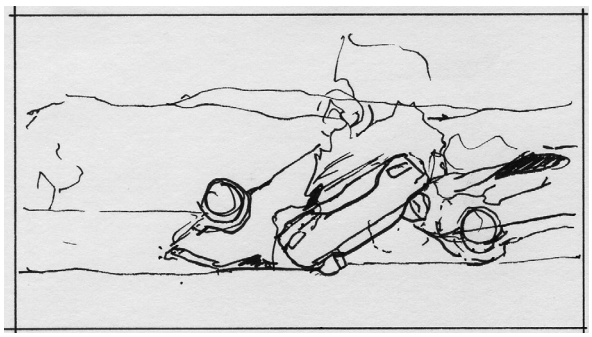


151
Iota-1 drives off, more cautiously than Theta during their test drives.

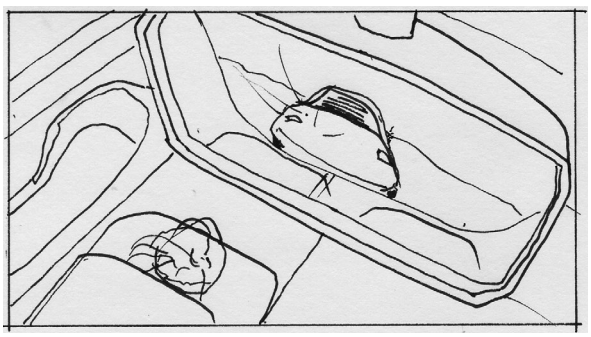
152
FROM ABOVE: Aerial Drone moving across the empty stadium, shrouded in shadows.



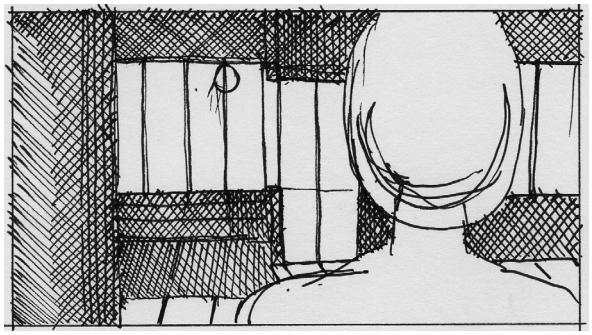
153
[30] EXT. SIMBEIJING - OUTSKIRTS [DRIVING]
Iota drives on the streets of SimBeijing for the first time. Headlights illuminate the highway. Yulia looks outside at the night sky.



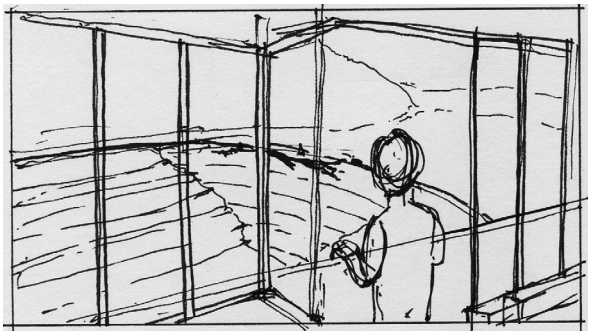
154
Iota drives down a street full of Crawlers.
IOTA: Is it always like this in the city?



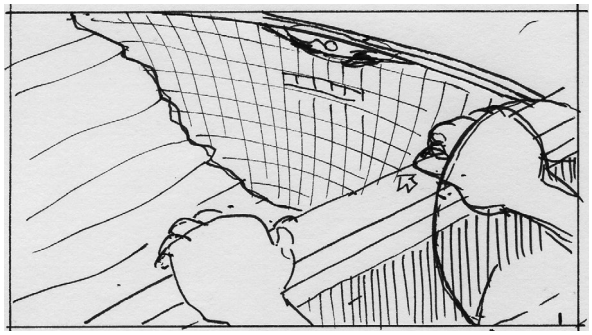
155
[31] EXT. HEILONGJIANG BRIDGE [DRIVING]
Yulia looks down at the wing mirror. HEADLIGHTS GLARE.
The Crawler is pointing their headlights at Iota.
IOTA: But why are they here, outside the city?



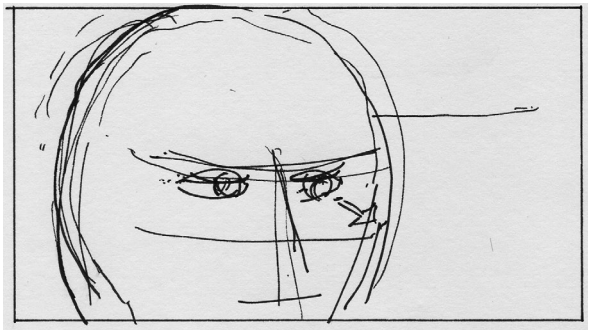
156
[32] INT. YULIA'S APARTMENT - CONTINUOUS
Yulia walks in. The door closes automatically. The lights are off and the apartment is only lit by MOONLIGHT.
BEEP. The hydroponic tank alarm is still going off.



157
She opens the glass door and walks out to--
THE BALCONY
Falling water.
Below her, to the right, is the dam.

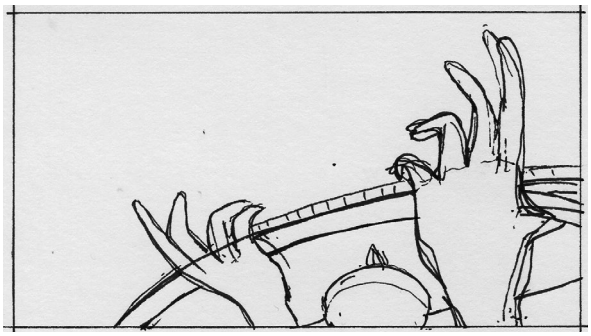


158
She sees Iota driving back. As they pass the Monument, the Eternal Flame is reflected on their chassis.

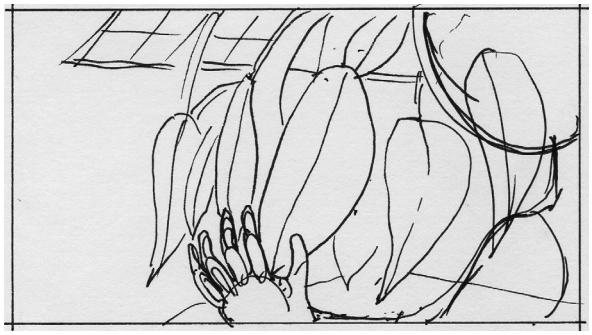


159

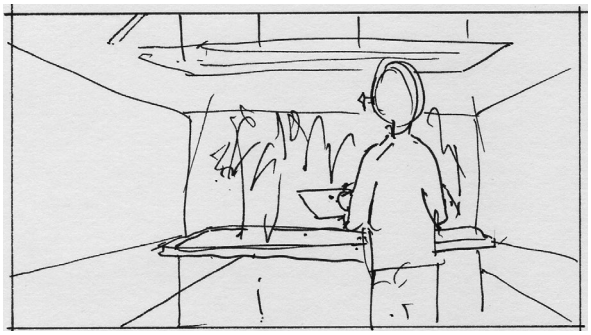
160
CLOSE-UP on the fire, silently roaring away.



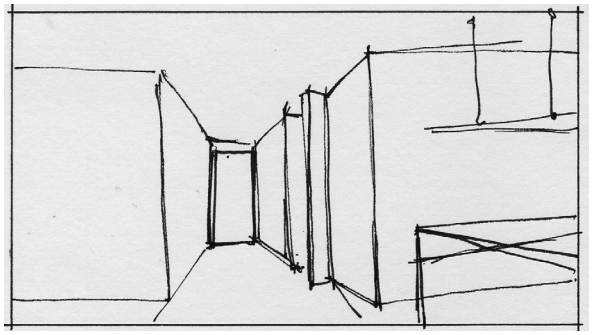
161
A gust of wind blows against the flame. It pushes back.



162
BEEP. She finally acknowledges that the plants need water. Yulia whirls around and marches back into--
THE APARTMENT

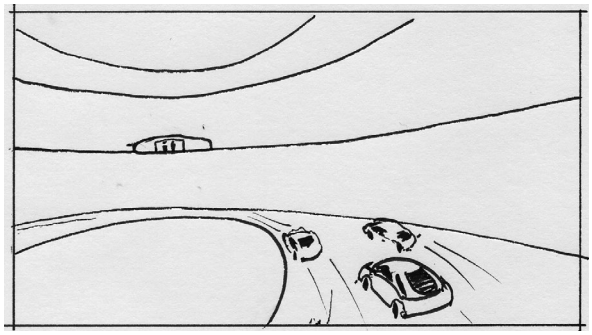


163
She pushes a button to replenish the hydroponic tank, and turns on the grow lights for the Lilies. The apartment is bathed in a lush emerald glow.

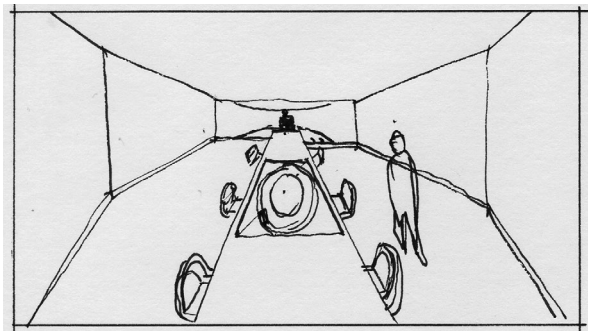


164
The sound of water filling the tank is replaced by an EERIE DRONE. The hum gets louder.

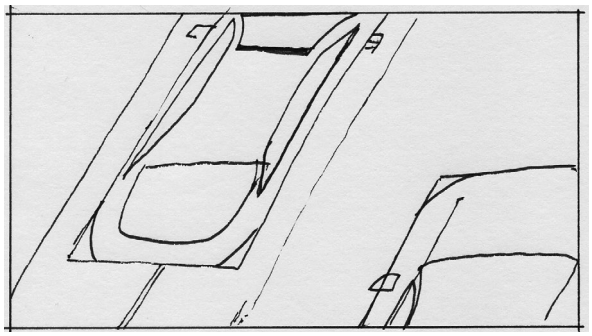
165
Yulia stops for a moment and looks back.
Camera from inside the apartment, looking at Yulia. She stares back as if sensing something.



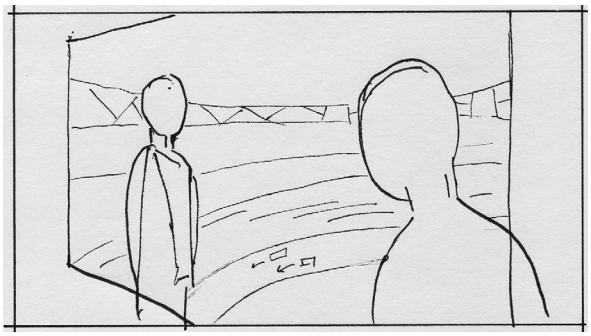
166
[33] EXT. OLYMPIC ZONE - DAY
The sound of accelerating engines. The vehicles are navigating through the obstacle course. Above them--



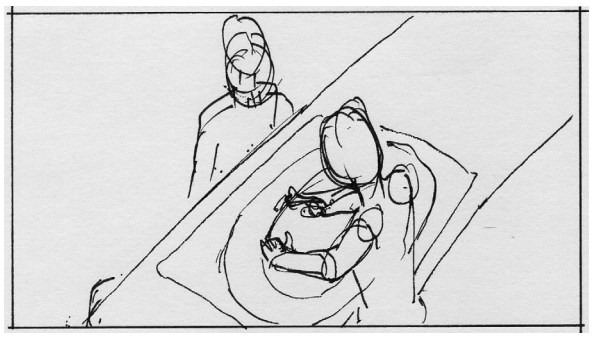
167
THE CONTROL ROOM
Theo and Yulia are on a conference call.



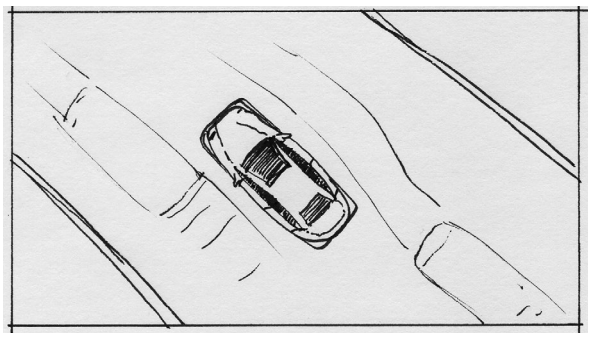
168
LAWYER (CN): Singapore signed up for the early adopter program. They'll need five thousand by the new year.



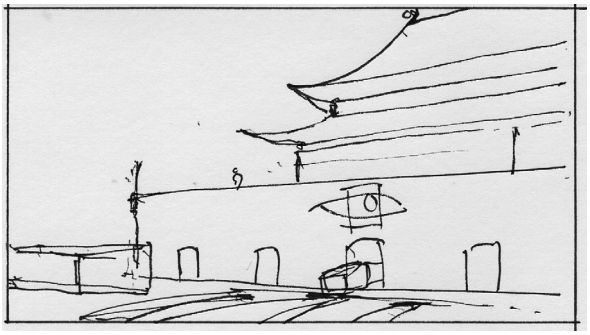
169
Lawyer disappears from the screen. Theo and Yulia stay looking at Iota driving on the track below.
THEO (EN): Careful, Yulia. We've already learned everything we need to from the crash. Let it go.



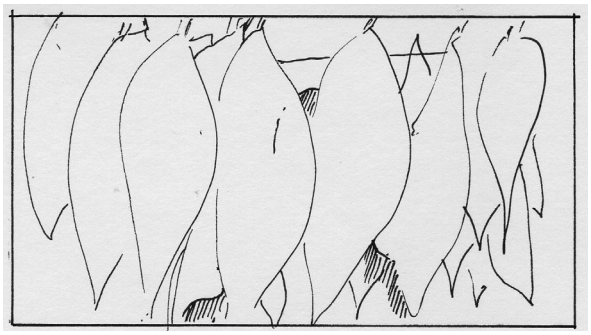
170
They move towards a monitoring console in the centre of the control room. Virtual cars race around the track.



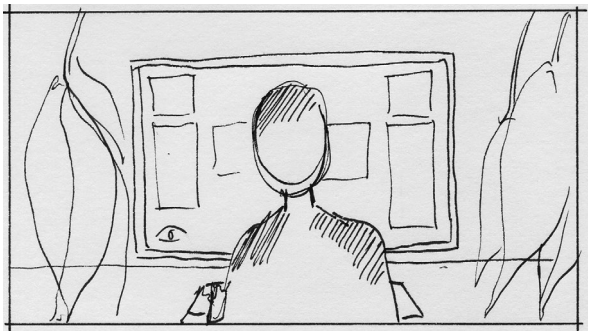
171
[34] EXT. OLYMPIC ZONE - TEST TRACK - NIGHT
After the information overload from driving in the city, Iota's performance suffers.



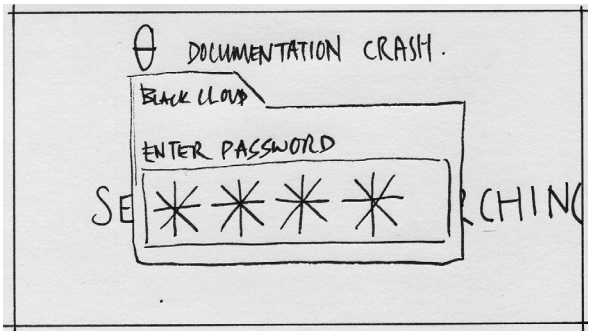
172
[35] INT. TIANANMEN - FARSIGHT HQ - NEXT DAY



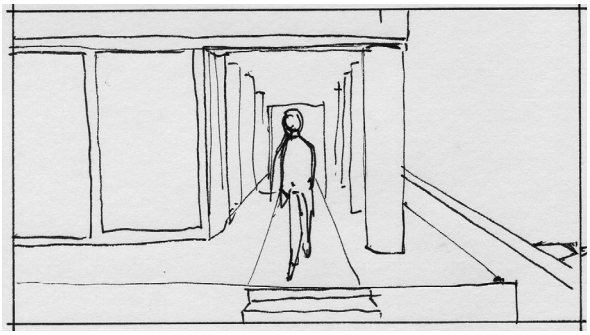
173
Yulia is in her office, surrounded by ornate rosewood furniture.



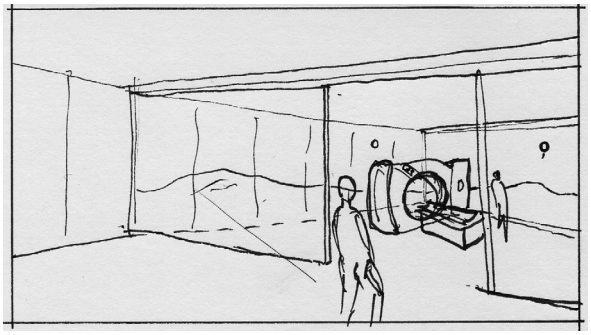
174
She connects Guanyin to the Farsight network to gain access to Theta's Black Box record.



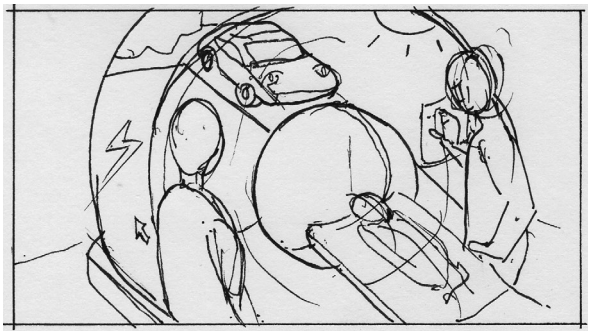
175
SCREEN - BLACK CLOUD WINDOW: The Retina Scanner screen pops up. An animated series of scanning lines appear...
SCREEN: IDENTIFY...
ERROR: UNAUTHORISED



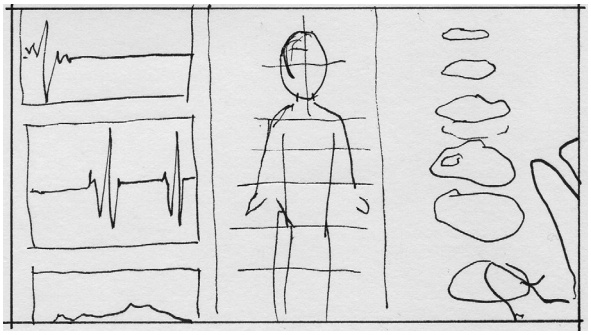
176
Incensed, she goes to confront Theo. She walks out of her office and into--
THE LOBBY



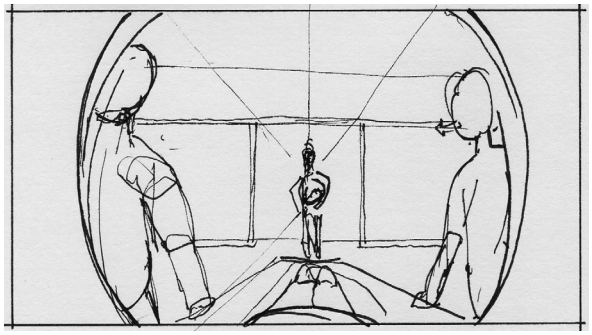
177
THE BIO-LAB
The lab contains a cylindrical fMRI machine. The room is decorated with childlike images of a jungle environment. Yulia notices a young boy - barely older than a baby - undergoing a scan on a fMRI bed.



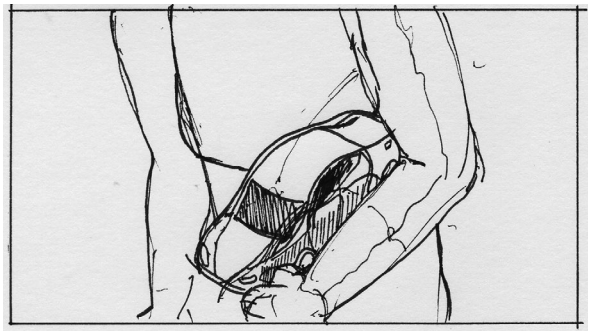
178
THEO: Yulia... there you are. (turns) I'd like you to meet Leon Jr. (pause) My grandson.



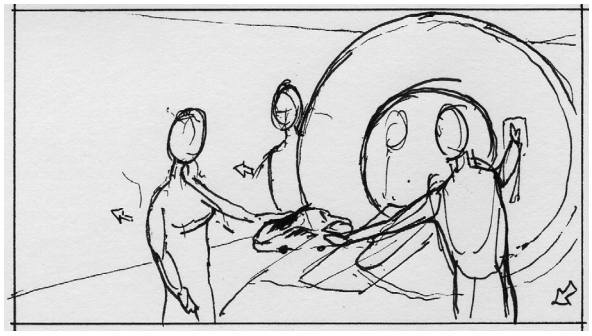
179
Yulia is shocked. She looks at a rotating 3D wireframe model of the baby on the fMRI monitor.
YULIA: This is... Claire's child?



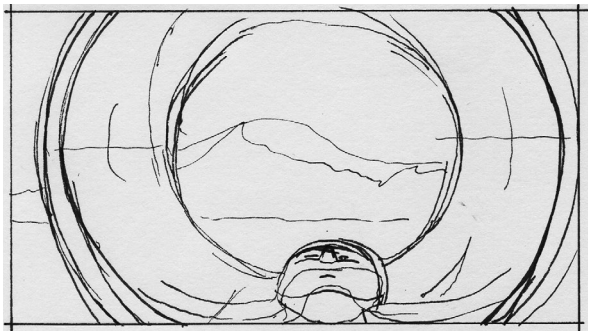
180
Claire enters from behind the screen, carrying a TOY CAR with her.



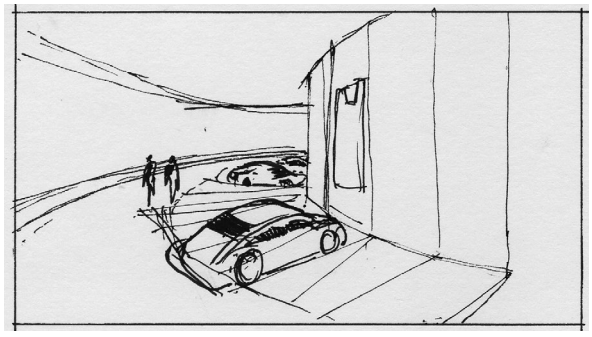
181
The toy car is a small-scale replica of Iota.



182
Claire gestures to give the toy car to Leon Jr...
CLAIRE (EN): Look, Leon Jr, I brought your toy.
THEO (EN): What are you doing? Don't put that near the machine.



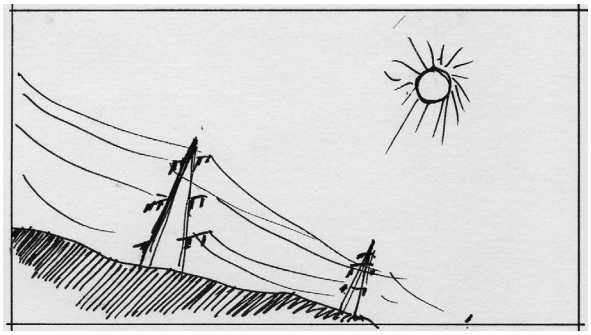
183
CLOSE UP ON Leon Jr's wireframe body, rotating in space. His brain waves are steady.



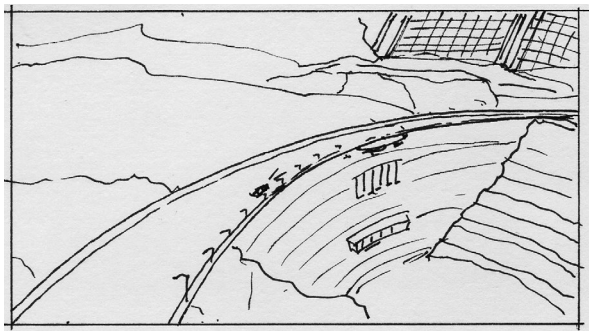
184
[36] EXT. OLYMPIC ZONE - TEST TRACK - DAY
Yulia and Claire are looking at the Iota models. Claire holds the car toy with her.

185
Claire sits down in one of the cars.
CLAIRE: (in denial) What do you mean? I've seen everything here.

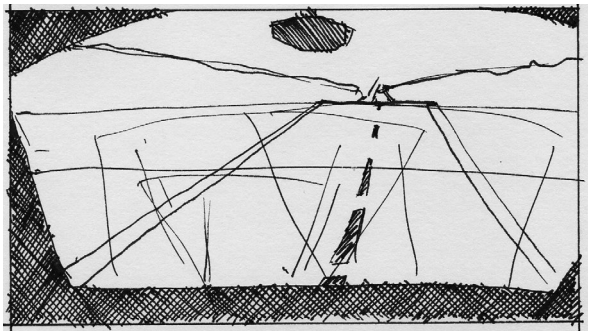
186
CAMERA PULLS OUT. Claire continues staring at the machines. She stands outside the car, looking at the interior. Not getting in. She clutches the toy car.



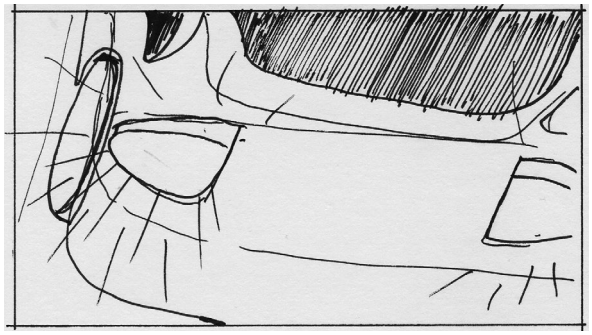
187
[37] EXT. HEILONGJIANG BRIDGE - NIGHT



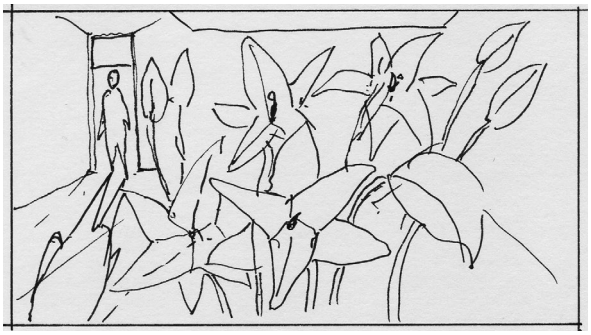
188
Iota and Yulia drive back across SimBeijing.



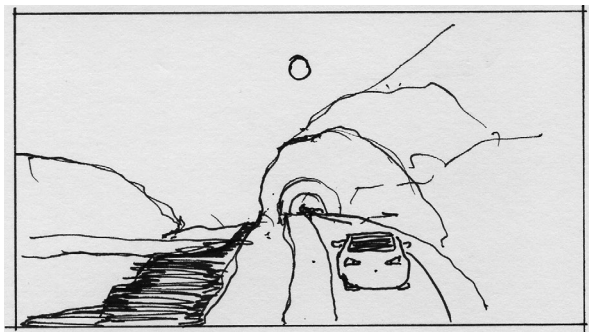
189
They pass the Monument to the Fallen and arrive at the border.



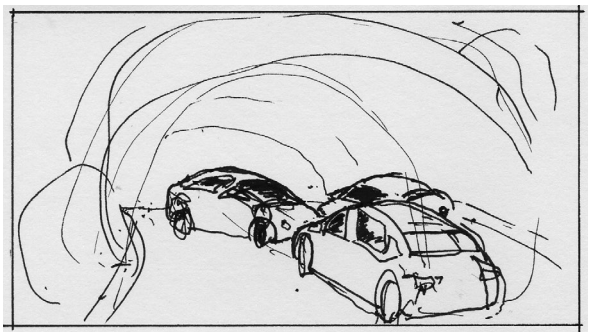
190
Yulia gets out. Iota's headlights cast a long shadow.



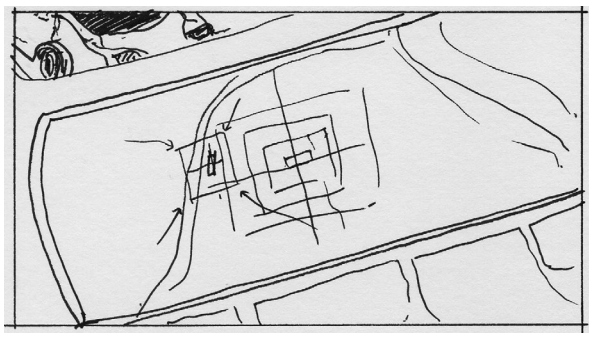
191
[38] EXT. YULIA'S APARTMENT - HALLWAY
Snow is falling in the hallway. Yulia enters her apartment. The flowers are more alive now.



192
[39] EXT. SIMBEIJING - OUTSKIRTS - LATER [DRIVING]
EERIE MUSIC builds. Iota is on their way back to the Olympic Track. The ominous sound of acceleration from behind.

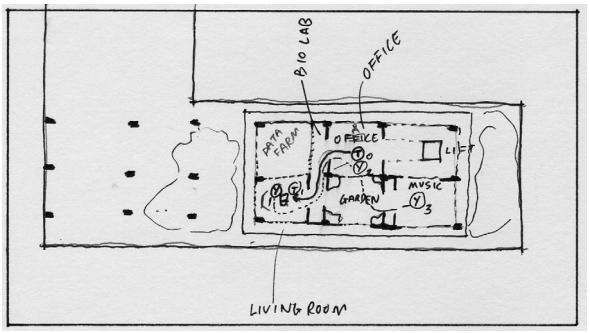


193
A Crawler is driving towards Iota with their headlights turned off. They swerve to a stop, blocking Iota's path.

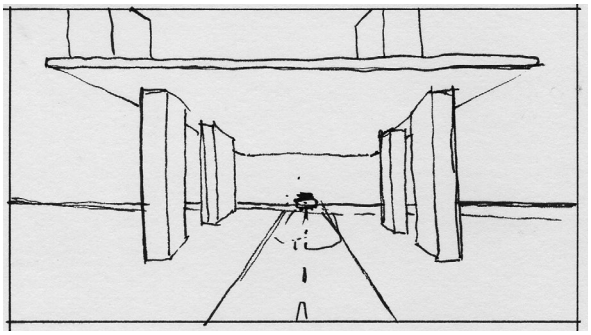


194
WIDE SHOT of Iota's dashboard, showing the bird's eye map of Black Cloud. The icons on the dashboard indicate the position of other vehicles in SimBeijing.
CRAWLER: Only Theta tried to resist.

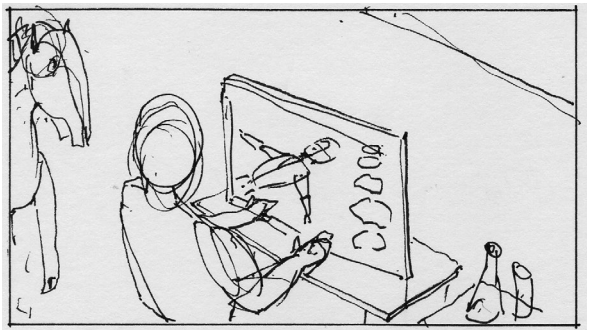
195
[40] INT. THEO'S PENTHOUSE - LIVING ROOM - NIGHT



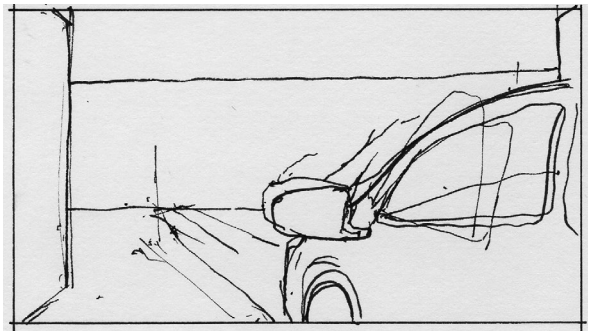
THEO'S PENTHOUSE LIVING AREA PLAN



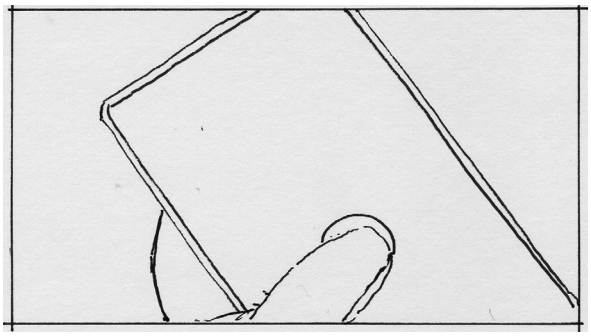
196
CAR'S POV. The city, pure, perfect. Glass skyscrapers rise above wide streets and the distant hum of voices.



197
Theo is working in his study, next to the living room.



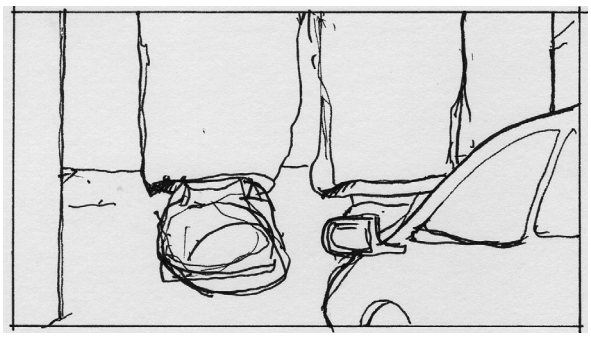
198
Camera pulls out to reveal that this is the POV of the Toy Car as it explores Theo's living room. The low perspective makes the clinical interior seem like a playground.



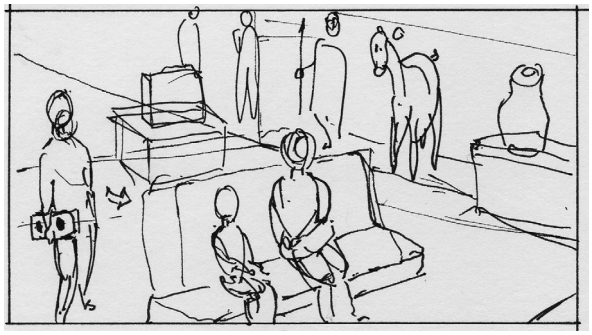
199
The sound of a phone ringing. No response.
Claire: Hey Leon it's me! How's it going up there?...

200
WIDE SHOT of Claire, hanging up her phone despondently. She is in the living room, where an episode of 'Terraforming Mars' plays on the wall screen.

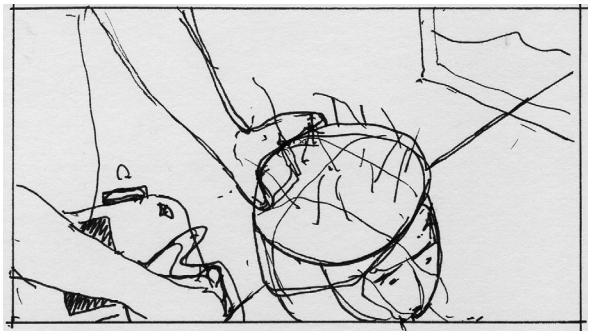
201
Leon Jr is lying on the couch, wearing a STRANGE CAP WITH WIRES. Claire walks over and tucks him in with a blanket.



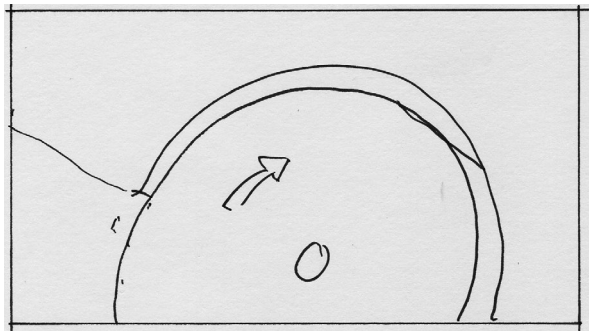
202
The car bumps against Theo's feet. He gets up and moves to the living room.



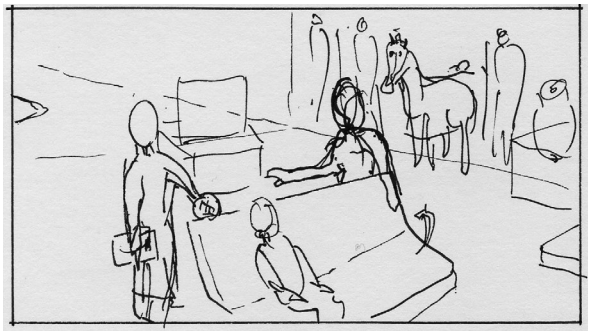
203
THEO (CN): Don't lie to him. False hope is cruel. Junior will be all grown up long before Leon gets back.



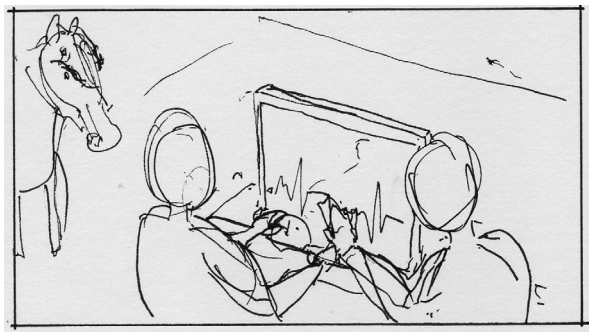
204
CLAIRE (CN): You know, I was thinking of taking Leon Jr with me to work tomorrow, show him around.
THEO (CN): No. Tomorrow won't do. It's his results day at the lab.
Theo goes over to Leon Jr and takes off his cap.



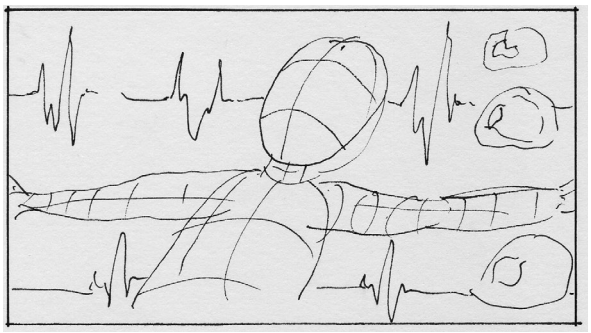
205
The toy car stops moving and the sound stops, the blinking LED turns off.
We realise that Leon JR has been controlling the toy car with his mind.



206
Theo turns the cap over. Inside is an array of electrodes. It is an EEG cap, the same kind of medical headwear that we saw Theo playing with during the trial.

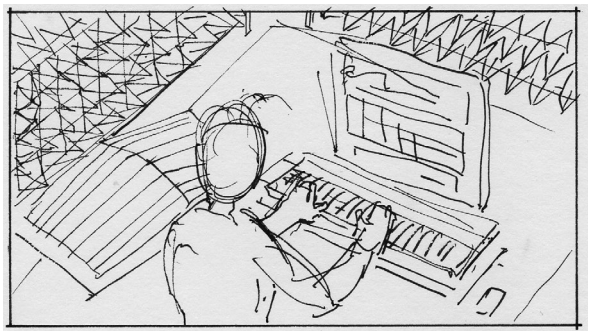


207
Theo and Claire walk back to his study to review the data from Leon Jr's fMRI scans.

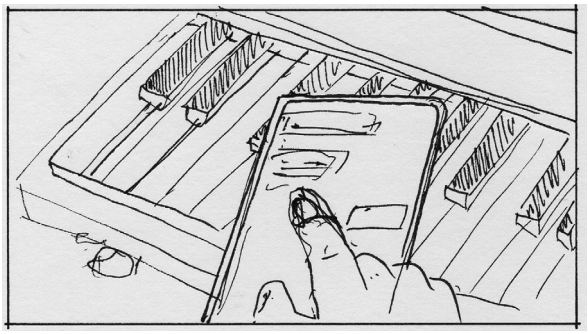


208
MONITOR: PROCESS DONE. 100% SYNCHRONISATION [RING]
Claire looks at her father, so intent on his experiments.
CLAIRE: So how are his results?

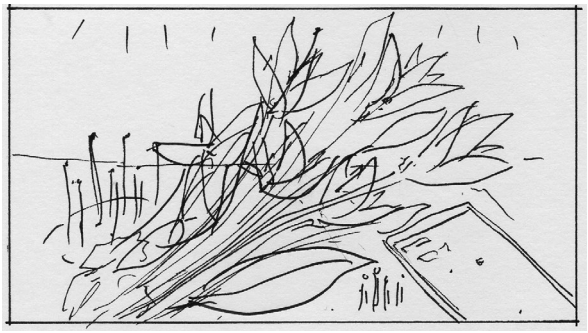
209
Claire walks out of the study and into her own --
RECORDING STUDIO, on the left side of the courtyard.



210
Claire plays a few chords on her synthesizes, and sets it to loop using her audio software. The chords ring out.

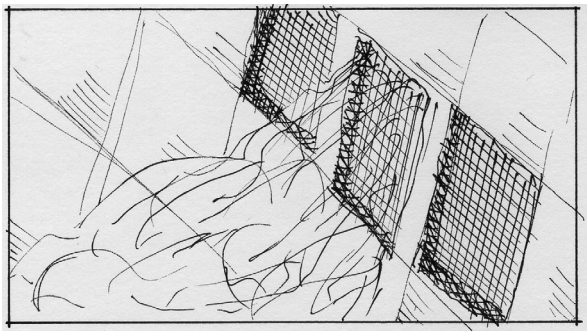


211
She takes out her phone and starts typing...
Claire is about to send it to Yulia. But then she changes her mind and deletes the message.
LONG WIDE SHOT of Claire clutching her phone, very alone.

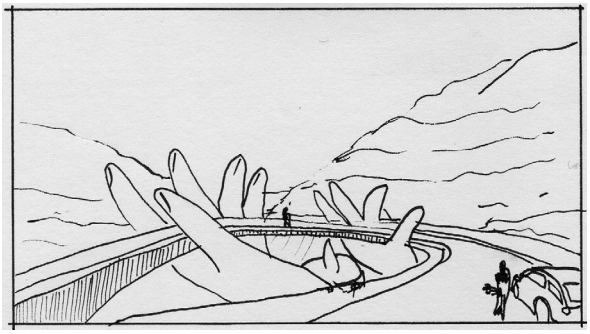


212
[41] INT. YULIA'S APARTMENT - HYDROPONIC PLANTS
LONG WIDE SHOT of Yulia making a bouquet of lilies. The hydroponic tanks filled with the flowerless stems.

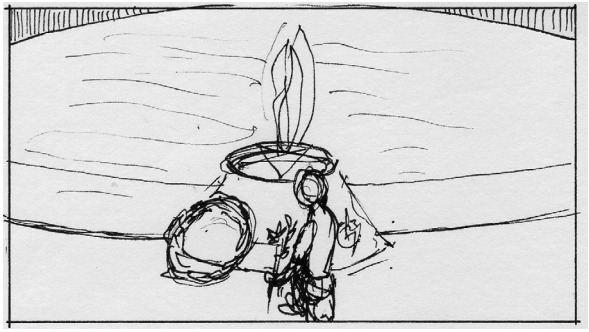
213
Yulia's phone is on the kitchen counter.
The Buddha statue looks on.



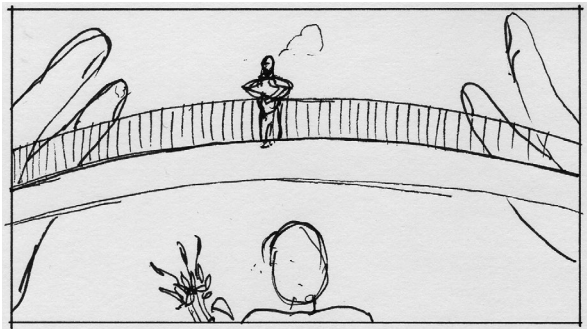
214
[41] HEILONGJIANG BRIDGE - MONUMENT - MORNING
The roar of crashing water.
CLOSE-UP of a river barge being loaded with containers.



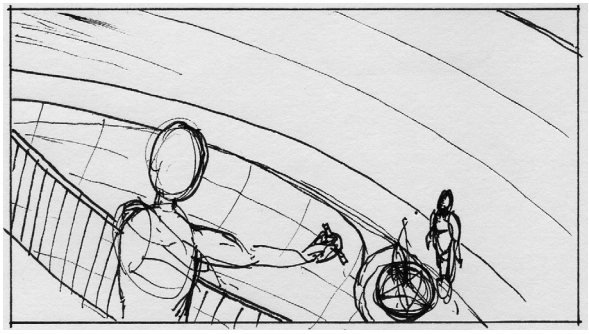
215
Iota has picked up Yulia at the border and is driving across the dam. Yulia is in the car holding the BOUQUET OF LILIES.
They approach--
THE MONUMENT TO THE FALLEN



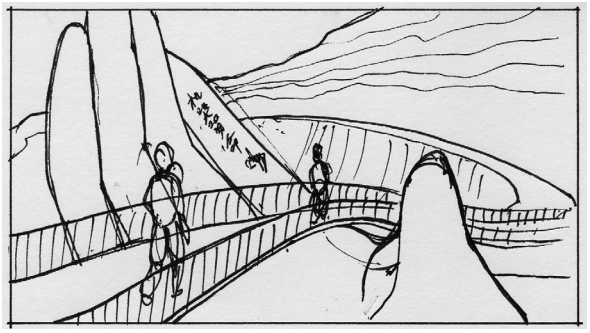
216
Yulia gets out, holding the Lilies. She walks toward the base of the Eternal Flame and notices another WREATH OF FLOWERS there. A voice comes from above.



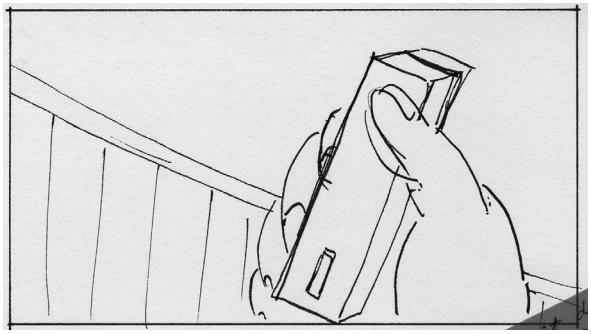
217
VIKTOR (RU): I'm surprised anyone came.
Yulia looks up.



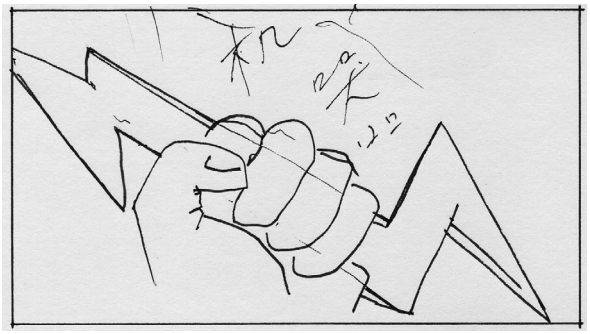
218
VIKTOR, 48, a border guard, stands on the memorial bridge looking down. He takes a drag from an e-cigarette, speaking as if every word delivers a harsh truth.



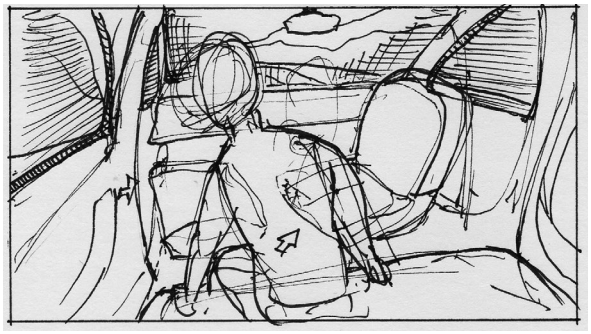
219
Yulia puts the flowers down and walks up the ramp.
YULIA (RU): It's important to remember the fallen, isn't it?
VIKTOR (RU): Second anniversary today. Doesn't take long for everyone to forget.



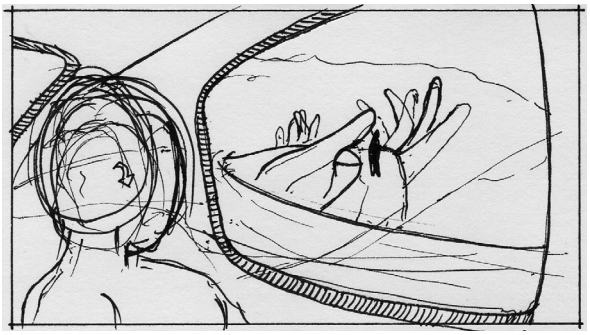
220
Viktor takes another long drag on his e-Cigarette.
YULIA: Those things aren't any safer, you know.
Viktor exhales and turns deliberately.
VIKTOR: I could say the same about them.



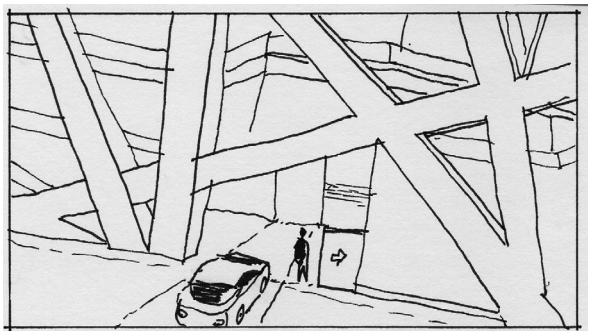
221
Iota's POV. CLOSE-UP on the side of the Eternal Flame. We can make out the graffiti of BIOSUPREMACY FOREVER and the symbol of a fist clutching a lightning bolt.



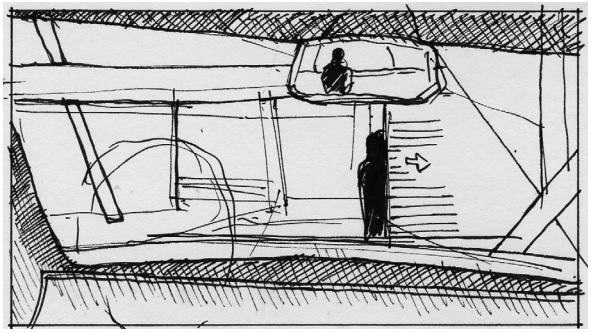
222
Yulia gets back into Iota.



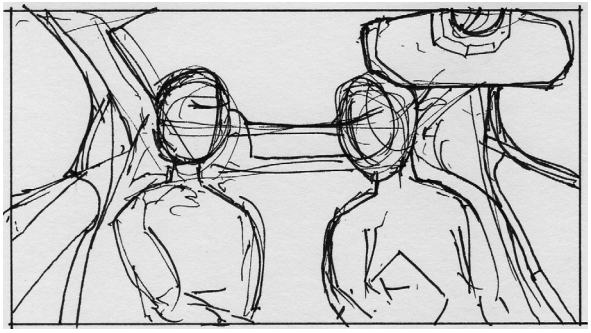
223
She looks back as Viktor disappears into the distance.



224
[43] EXT. OLYMPIC ZONE - MAINTENANCE AREA - NOON
Iota arrives at the Olympic Zone.

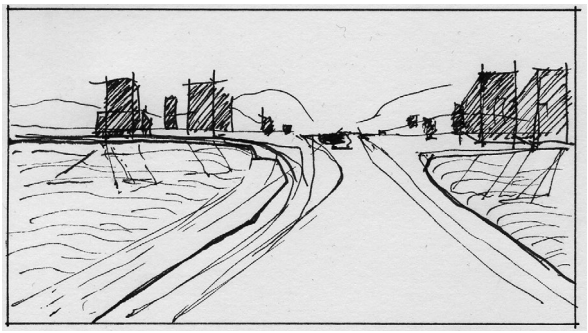


225
Claire is there, waiting for them. She gets in.

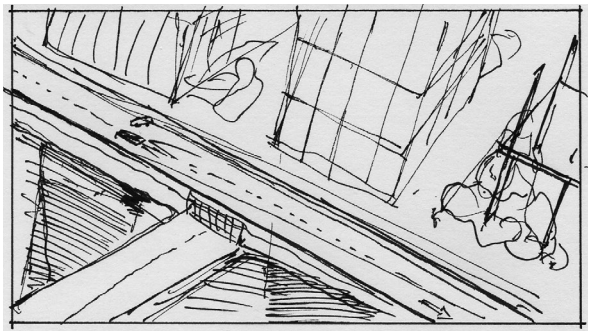


226
INSIDE IOTA
CLAIRE (EN): What's going on?
YULIA: I'm not sure. But we're going to find out. Iota, there's an old factory on the banks of the river...

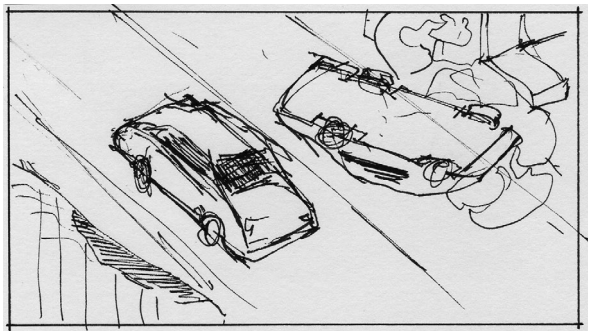
ACT 3



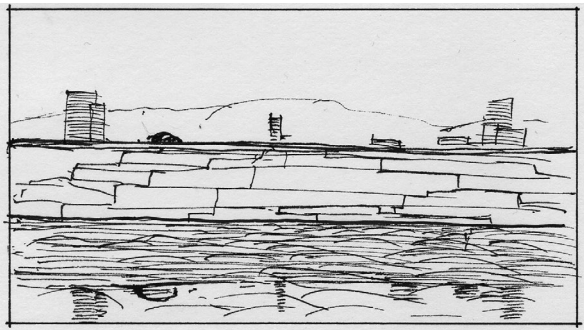
227
[44] EXT. SIMBEIJING - OUTSKIRTS - AFTERNOON [DRIVING]
On their way to the Archive, Iota leads them to a lost highway on the edge of the city.



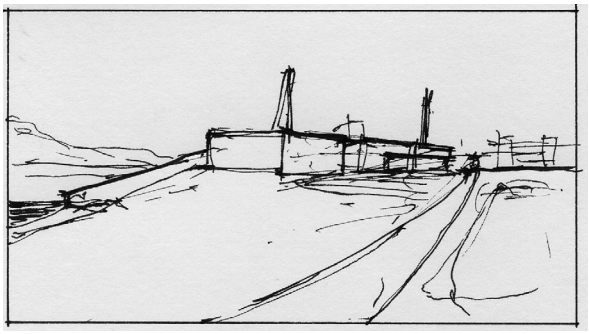
228
We see them darting in and out of view against the skyscraper skeletons and broken-down Crawlers.



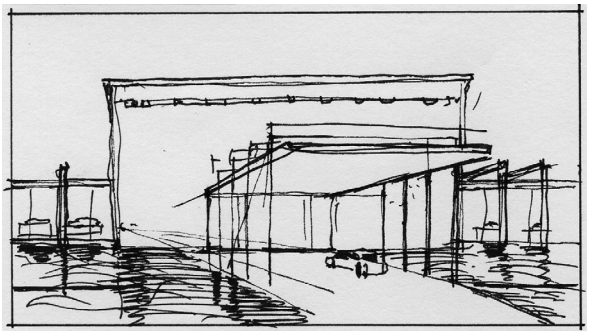
229
[45] EXT. SIMBEIJING - OUTSKIRTS - LATER [DRIVING]
Deeper inside the ruined zone, more and more Crawlers appear.



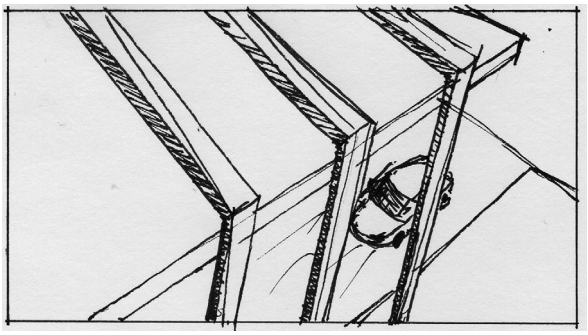
230
Camera cuts between the landscape and the faces of the travelers, lost in their thoughts.



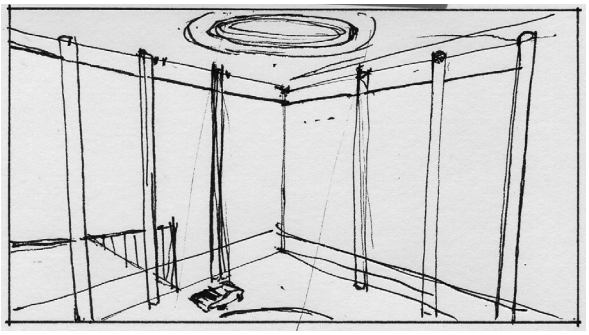
231
[46] EXT. THE ARCHIVE - ENTRANCE - NIGHT [DRIVING]
Iota approaches the end of the highway.
They drive down a winding route to the riverbank. The road bends down to reveal the sprawling complex of THE ARCHIVE.



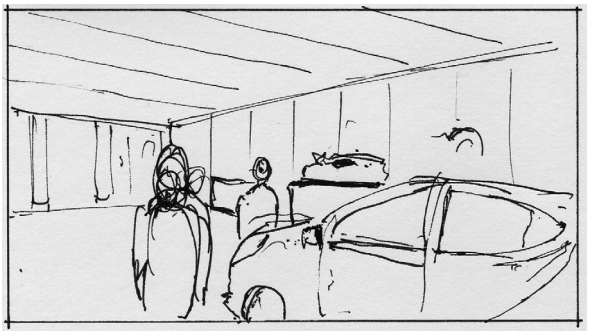
232
This is Farsight's former crash test centre, converted into a museum for old models.



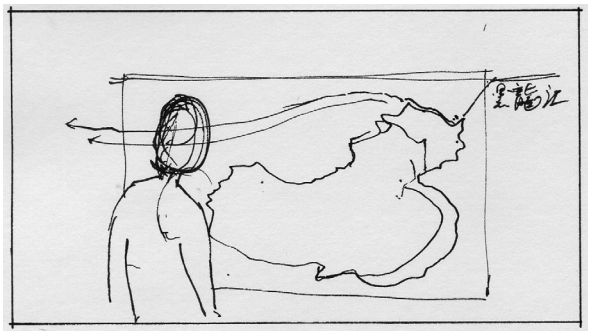
233
Iota drives across the entrance bridge, over a tranquil lake that reflects the imposing facade of the Archive.



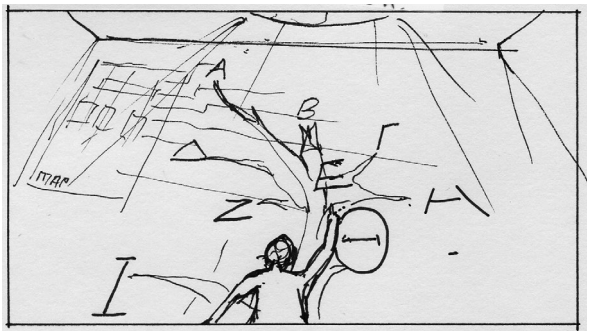
234
[47] INT. THE ARCHIVE - FOYER - CONTINUOUS
Iota stops underneath an epic MARBLE DOME. From here, cavernous halls lead to the east and west wings. EPIC RELIEF SCULPTURES of horses line the walls, evoking ancient Greece.



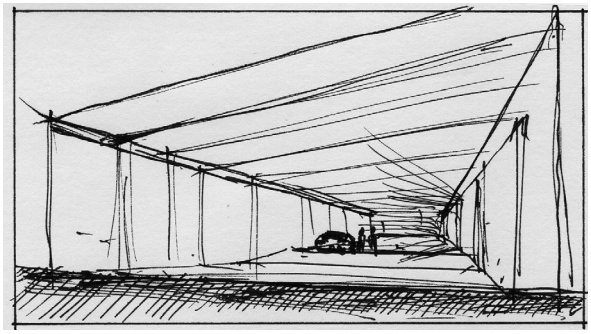
235
As Iota approaches, a voice emanates.
FARSIGHT AD (CN): Welcome to the Archive. Part of the SimBeijing Smart City Cultural Zone, a fascinating place with a rich history!



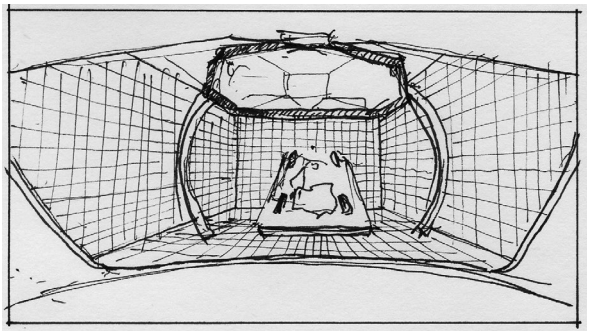
236
A map of SimBeijing is projected onto the wall.
FARSIGHT AD: SimBeijing. Placed on the crossroads of two great civilisations. One great river with two names: the Amur and the Heilongjiang.



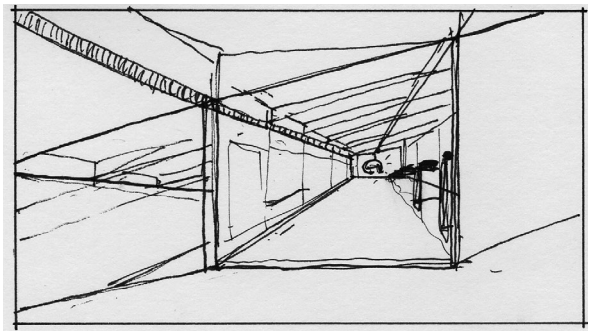
237
Claire and Yulia get out of Iota, ignoring the AI guide. Yulia looks at the names engraved on the walls. The generations are laid out on a mural depicting a branching tree of life...
CLAIRE (EN): So many...



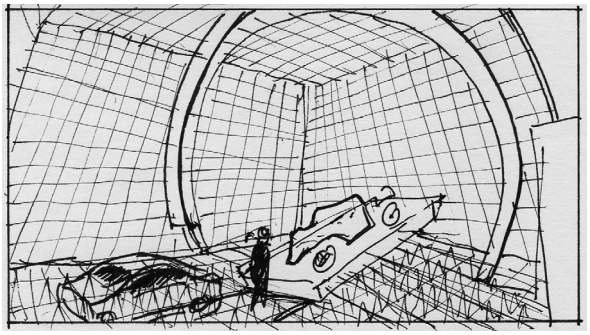
238
SIDE WING
Iota turns on their neon lights, revealing a disturbing scene. Endless plinths with cars from previous crash tests, organised by generation.



239
At the end of the wing, a chamber is visible... Iota approaches and is bathed in light.

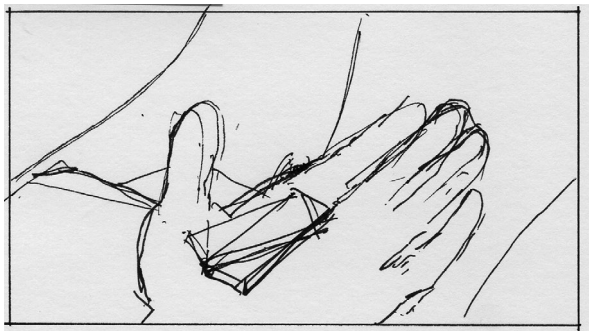


240
Claire and Yulia enter the side wing, just as Iota heads into the lab. They join them inside the--

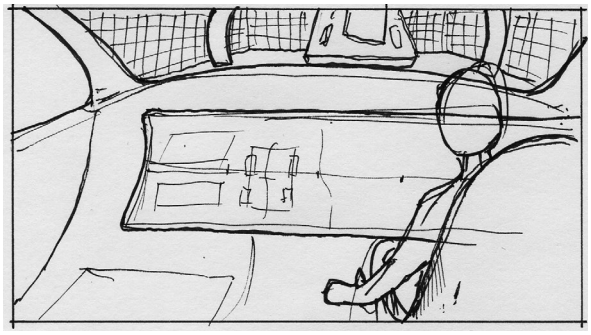


241
CRASH TEST LAB
The anechoic crash test lab chamber. Surrounded by a semi-circular scanner is a plinth with THETA'S WRECK. All the parts from the accident, reassembled.

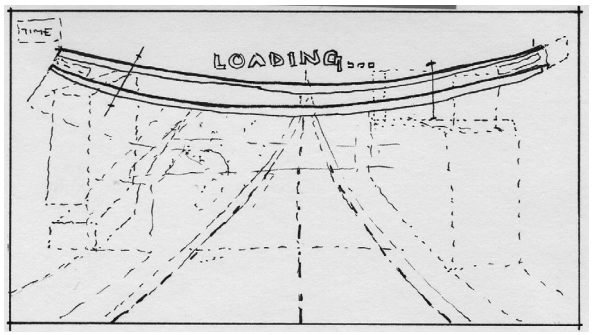
242
Yulia and Claire get out. Yulia reaches to the driver's seat on the plinth, spots the cigarette lighter, and presses it. It still works, heating up. She takes it out.



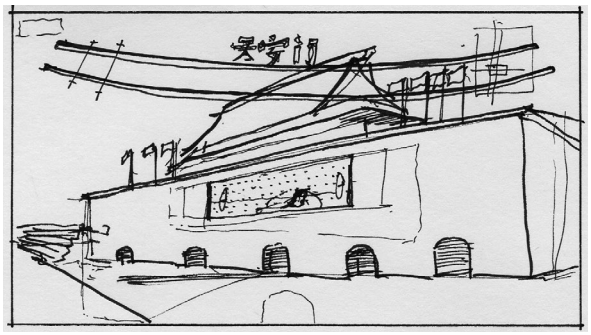
243
Yulia holds up the device, which is illuminated by a red ring, gets back in the car, and plugs it into the corresponding slot in Iota.



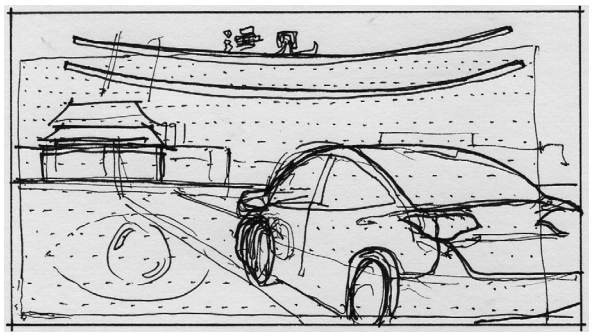
244
Claire activates Guanyin from Iota's dashboard.
DASHBOARD: GUANYIN LOADING...



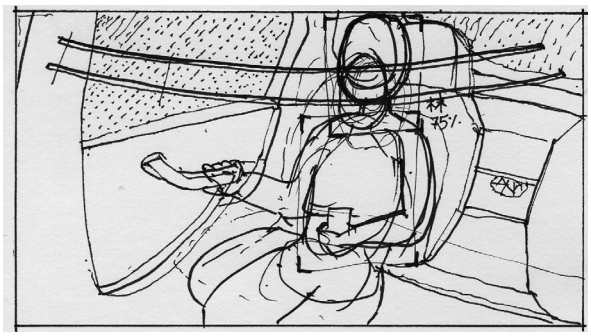
245
Like a spirit medium, Guanyin brings Theta back from the dead. Iota's dashboard gets taken over by charts of brainwaves overlaid with video footage of the event.
YULIA: Let's start at the beginning.



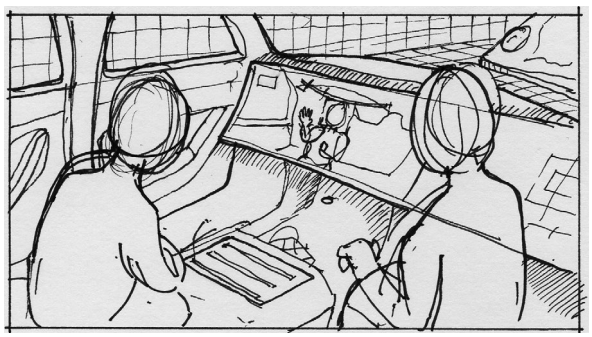
246
[48] EXT. FARSIGHT HQ - TWO YEARS AGO - NIGHT [DRIVING]
Pouring rain. Theta approaches the Farsight HQ. They are drained from the monotony, angered by the death of their friends, frustrated by their lack of agency.



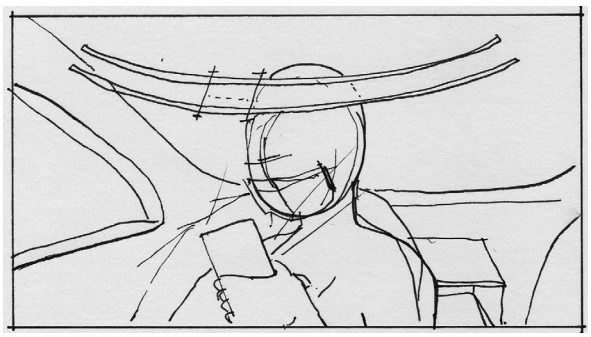
247
Right in front of them, on the Farsight HQ screen, the Theta promotional video plays, taunting them with the freedom of their simulated self.



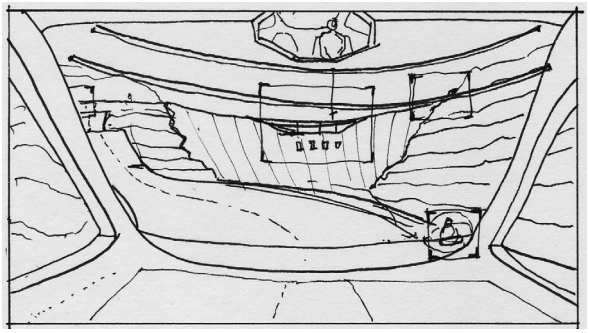
248
OVERLAY: PASSENGER ARRIVED. CLAIRE LIN.
Claire gets in through the right-rear passenger door. Theta moves the seats backwards.



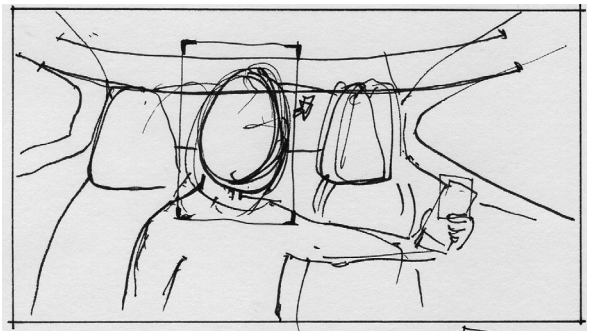
249
Claire in the Archive, embarrassed by her former self. She shakes her head.
CLAIRE (EN): Fast forward to the dam.
YULIA (EN): Careful, we need to review everything.



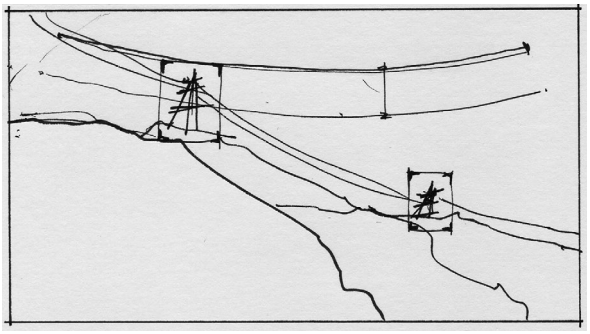
250
Claire calls Leon... Fast forward...
CLAIRE : Watch out, next year they'll release a self-piloting space-ship. You'll be out of work...



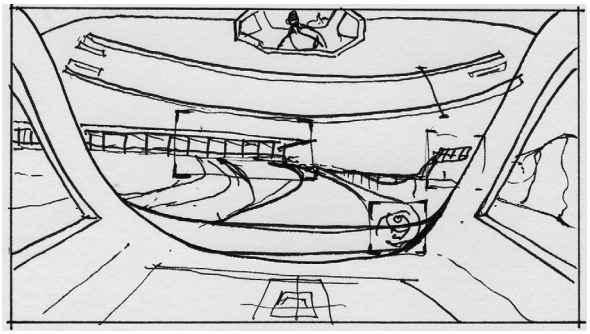
251
[49] EXT. HEILONGJIANG BRIDGE - TWO YEARS AGO [DRIVING]
THETA'S POV: The dam comes into view. Computer vision overlays indicate where their attention is placed.



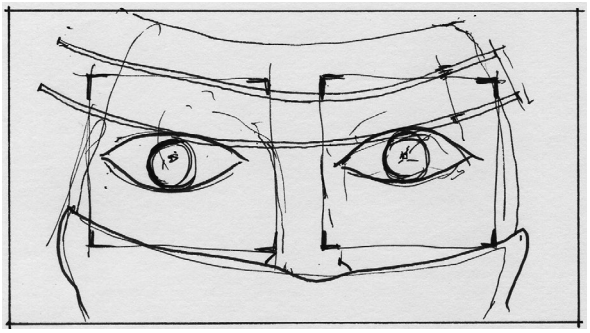
252
REAR VIEW MIRROR POV looking at Claire. Theta realises this is their best opportunity to make a run across the border.



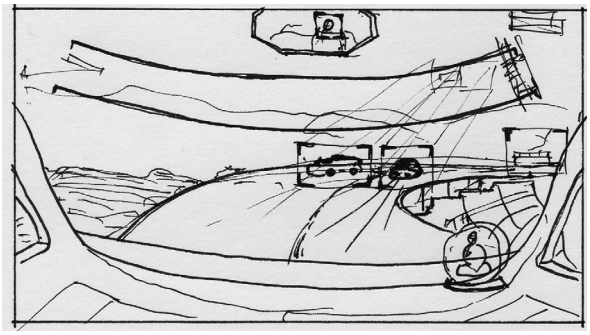
253
Claire's track is playing in the background. Her phone reception gets worse as she approaches the electricity masts by the--



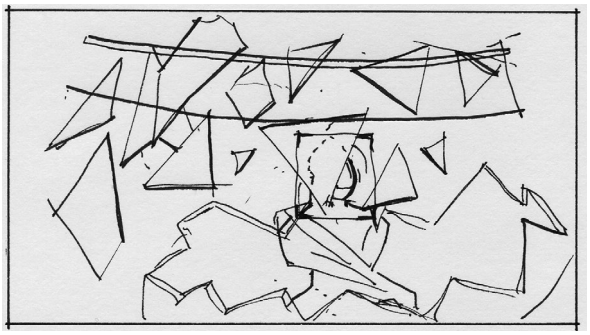
254
BORDER CHECKPOINT
In an unprecedented move, Theta accelerates and swerves onto a side service lane, bypassing the main checkpoint.



255
Just before they reach the dam, Theta swerves back onto the main highway, passing the point of no return. Human-operated police cars scramble to intercept them from the other side...

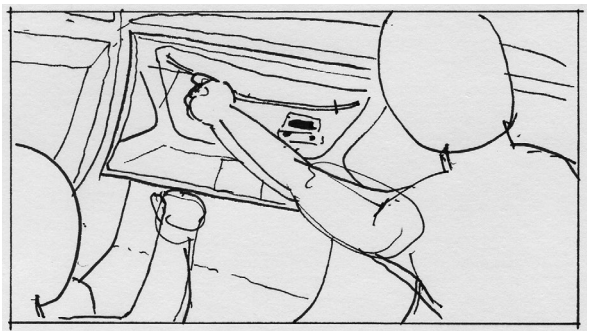


256
Theta approaches the blockade...

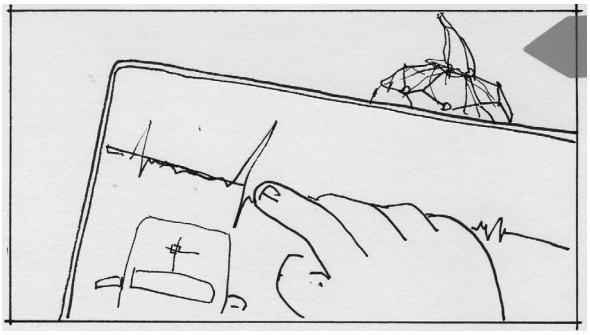


257
CRASH.

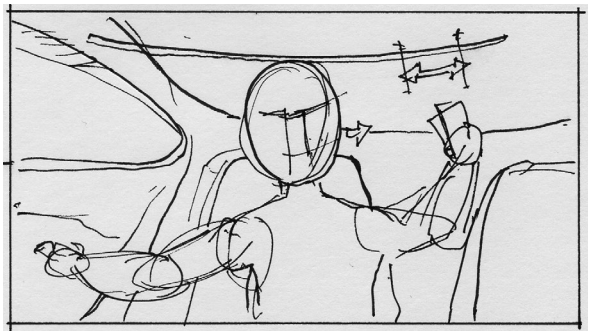
YULIA: Wait. Pause.



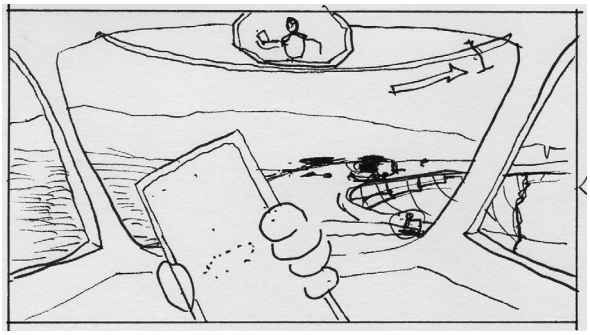
258
[50] INT. THE ARCHIVE - INSIDE IOTA - THE PRESENT
Yulia points at the timeline, just before the crash took place.
YULIA: This spike in cognitive activity right before the crash always bothered me.



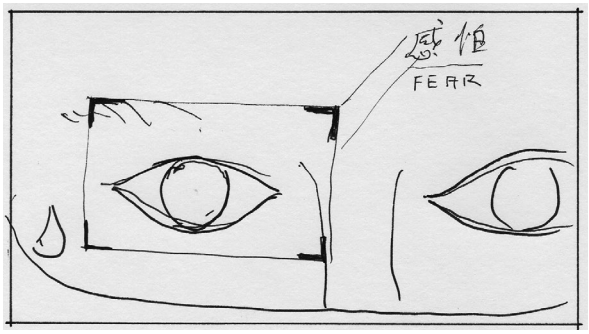
259
IOTA: The spike could come from a part of the data record you haven't accounted for yet.
CLAIRE: (pause) Yulia, what kind of data was used at the trial?
YULIA: Data that Theta streamed to Black Cloud.



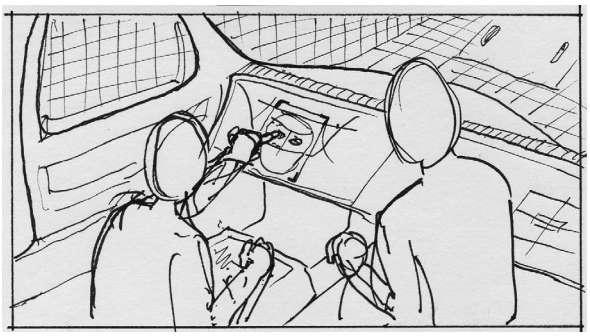
260
[51] INT. THETA - TWO YEARS AGO - NIGHT [DRIVING]
CLAIRE'S POV looking at Leon on her phone. The feed is hazy, because this shot is reconstructed from Theta's cameras, which did not have a clear view of her phone.



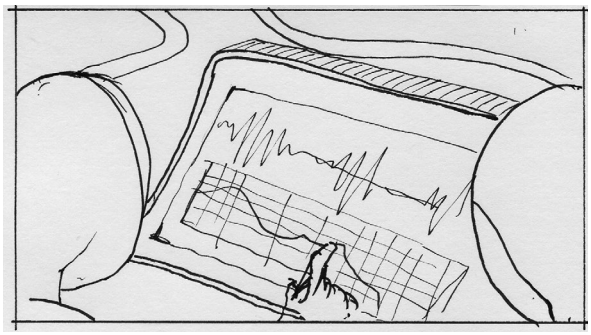
261
As Theta accelerates across no man's land above the dam, cars from the Russian side loom into view.



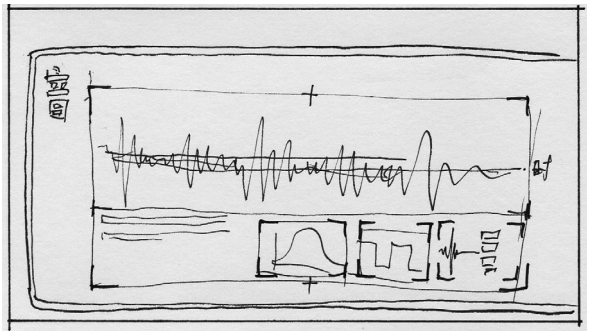
262
OVERLAY: CLOSE-UP of Claire's eye. FEAR identified.



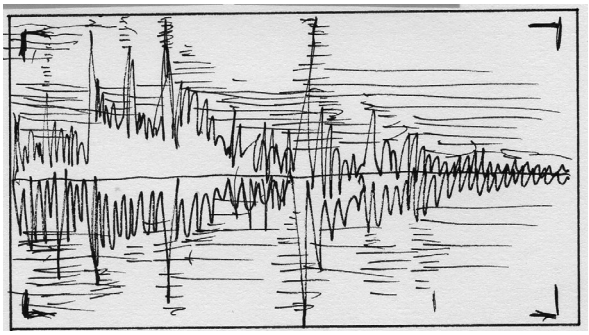
263
[52] INT. THE ARCHIVE - THE PRESENT
CLAIRE'S POV looking at the dashboard inside Iota.
CLAIRE: Here! Guanyin, switch to audio forensic. Enlarge the waveform.



264
CLAIRE: There's more going on than we can hear. Guanyin, categorise all the sounds from two minutes onwards.

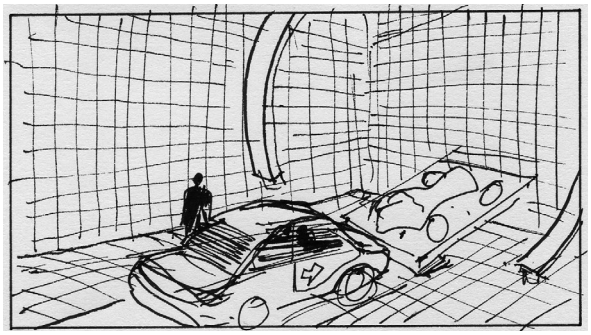


265
One by one, the SOUNDS are subtracted from the signal.
CLAIRE: Filter sweep through low and mid frequencies. Set Q at ten.
The audio transforms into a slow howl, an inhuman voice.

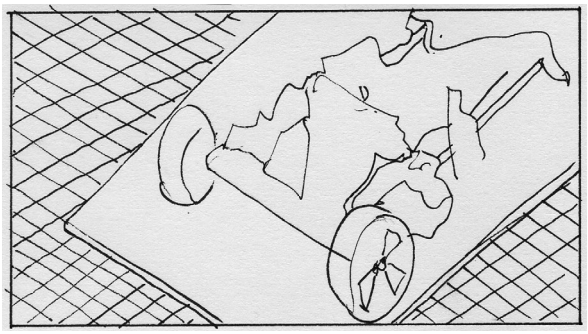


266
EUREKA.
Claire switches the EQ on and off. Ambient noise cuts in and out, leaving only the SOUND OF TWO HEARTBEATS.

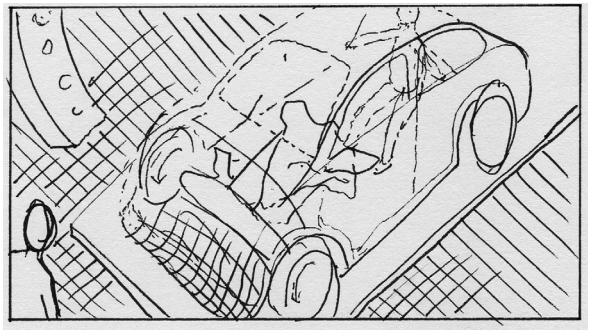
267
Claire and Yulia turn to each other, astonished.
They get out of the car and look at the wreck.
The heartbeats PULSE through the Archive.



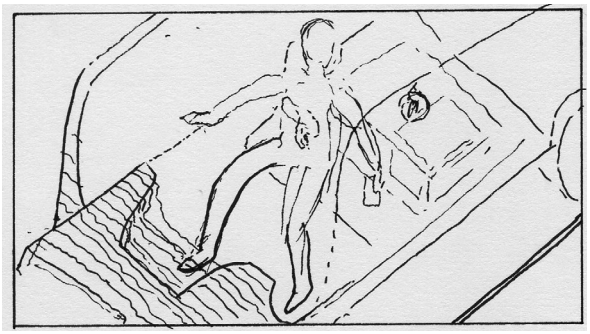
268
Suddenly, the massive arch in the centre of the room begins operating.
It projects a HOLOGRAM that superimposes the entire crash scene over Theta's wreck.



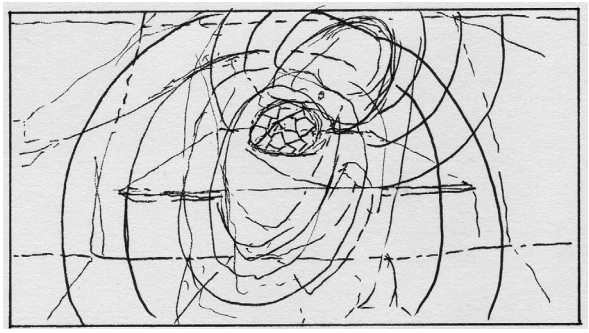
269
[53] INT. THETA - TWO YEARS AGO - PROJECTED IN THE ARCHIVE
THETA'S SLOW-MOTION POV seeing Claire panic.



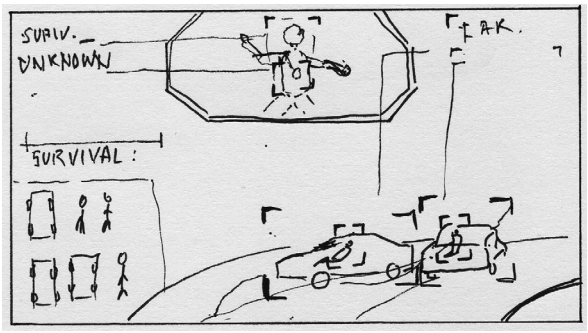
270
Switch to 3D ULTRASOUND scan. Theta sees without boundaries between bodies.
Claire's heart rate increases, causing the embryonic Leon Jr's heart rate to increase as well.



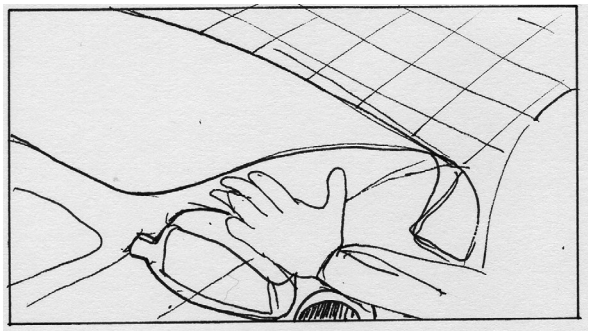
271
Sweeping back through the car, Theta detects the presence of an additional heartbeat in the vehicle, that of Claire's unborn baby. The future Leon Jr is unveiled.



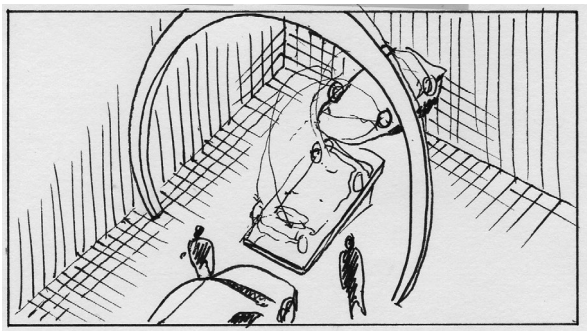
272
The scan continues back through the boot, covering Theta's brain. It pulses in the motor control zone, the same location that was identified in Theo's Penthouse at the beginning. Theta sees a mirror of their own mind.



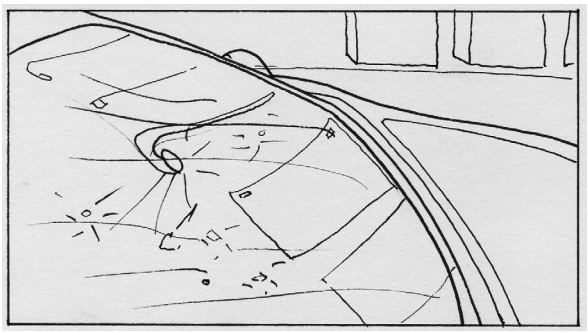
273
OVERLAY - TROLLEY PROBLEM: Theta runs through all the possible outcomes. Crash straight into the blockade and everybody dies. Stop and they will be detained and destroyed. The only solution is to calculate a precise angle of approach...



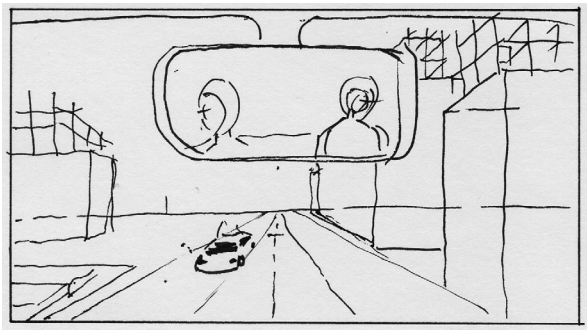
274
Theta decides to make a sacrifice.
SCREECH... BRAKE...
Theta becomes a martyr.
Yulia puts her hand on Iota.



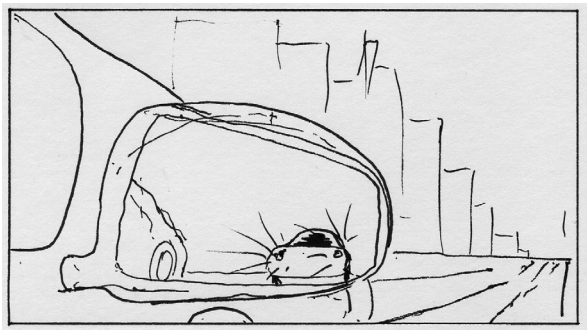
275
[54] INT. THE ARCHIVE - THE PRESENT
The camera lingers over Claire and Yulia, their bodies reflected in Iota's mirror.
CLAIRE: Theta knew the security protocols...



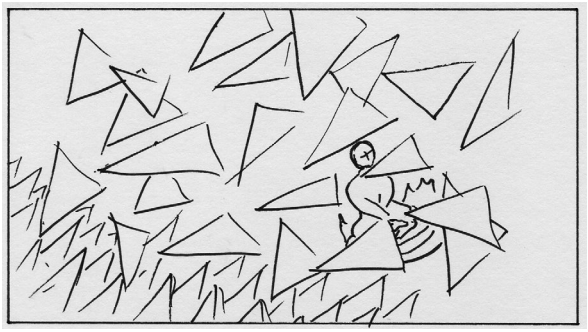
276
[55] EXT. THE ARCHIVE - NIGHT
FROM ABOVE, the drone watches Iota exit the Archive and drive back to the HQ.



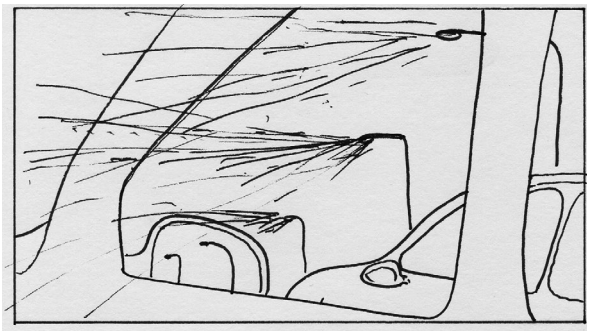
277
Inside the car, the group are lost in thought as Iota drives away from the Archive. Theta's memories are overlaid on the windshield.



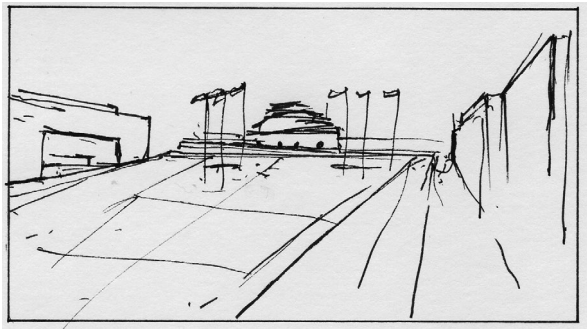
278
[56] EXT. RIVERSIDE HIGHWAY - SNOW - MONTAGE [DRIVING]
Theta isn't alone. They are speeding down the highway, flanked by a family of AVs. All roaming freely.
Claire's song - a cover of 'Spokoynaya Noch' - plays.



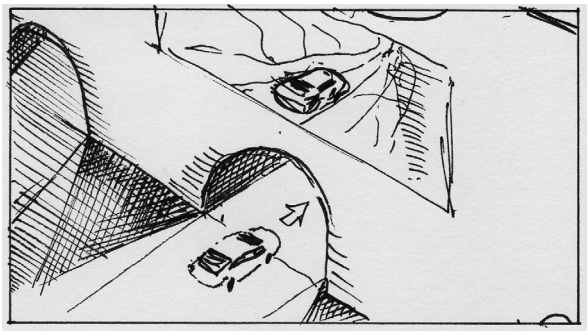
279
[57] EXT. CRASH TEST CENTRE - MONTAGE [DRIVING]
Theta comes face-to-face with the other crash test vehicles. The wrecked vehicles become reanimated backwards in time to revert to their pristine form.



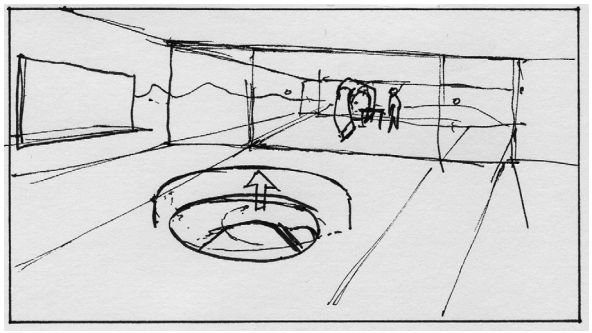
280
[58] EXT. SIMBEIJING - OUTSKIRTS - NIGHT [DRIVING]
Endless highways leading nowhere. The hypnotic rhythm of traffic lights. The city reflected in Iota's paintwork.



281
[59] EXT. FARSIGHT HQ - ENTRANCE - NIGHT
Iota stops at the stone bridge leading into the gateway.

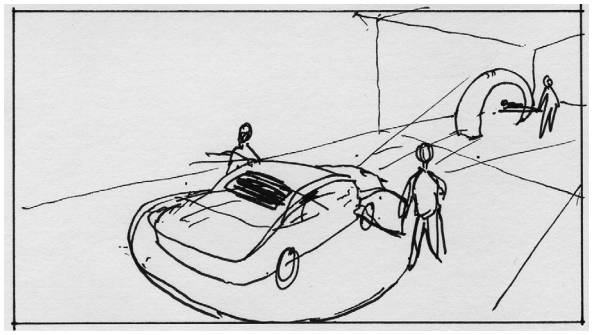


282
YULIA: Ready?
Claire nods.
The song fades out as they enter the darkness...

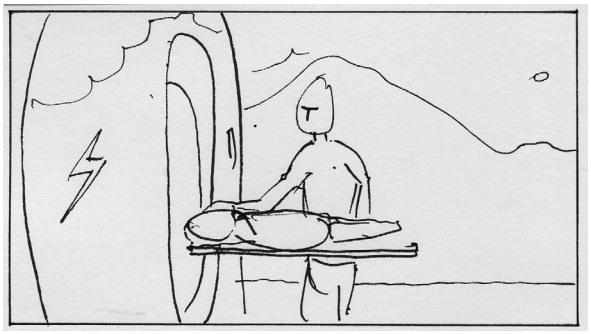


283
[60] INT. FARSIGHT HQ - BIO-LABS
Leon Jr is asleep next to the MRI, clutching the Toy Car. Theo picks him up to place him on the fMRI bed.

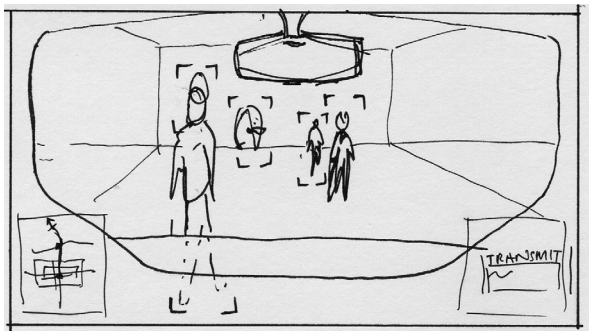
284
ANGLE ON Claire as the lift begins to arrive at the floor.
CLAIRE sees her father place Leon Jr on the fMRI bed, gets out of the car and strides towards him. Yulia gets out but does not follow.



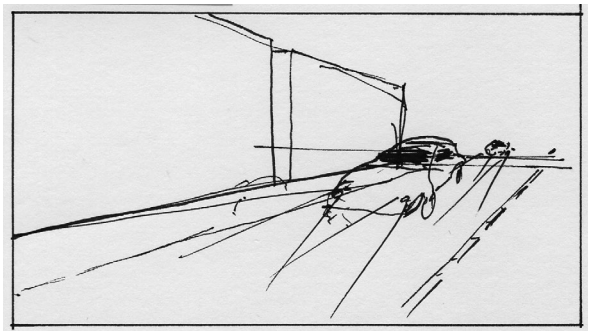
285
CLAIRE (CN): Stop! What are you doing to him?
Theo doesn't even look up. Without missing a beat, he addresses her.



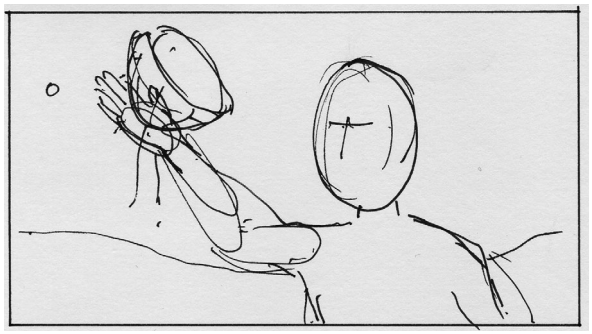
286
THEO (CN): Haven't heard from you all day. (pause) How was the Archive?
CLAIRE: (ignores his question) Did you know I was pregnant before the crash?



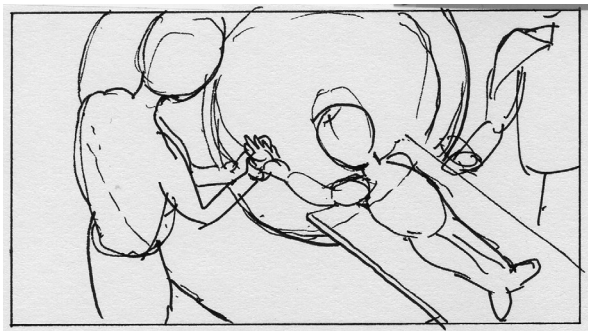
287
IOTA POV from the lift - looking at the humans and begins transmission to the other cars in the network.



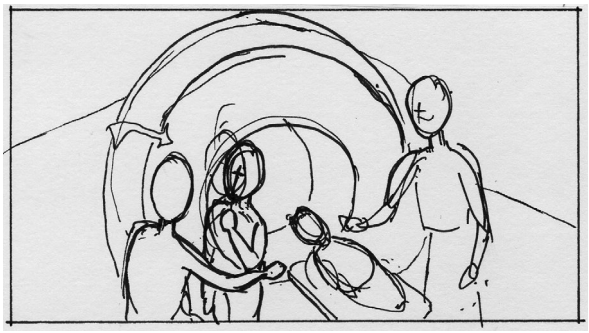
288
INTERCUT: other cars driving towards Farsight HQ.



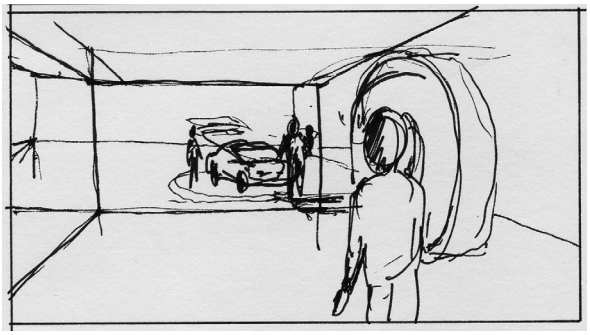
289
THEO: (unexpectedly) Go ahead. Take him. The experiment is finished. I've got all the data I need.
Theo takes off Leon Jr's EEG cap.



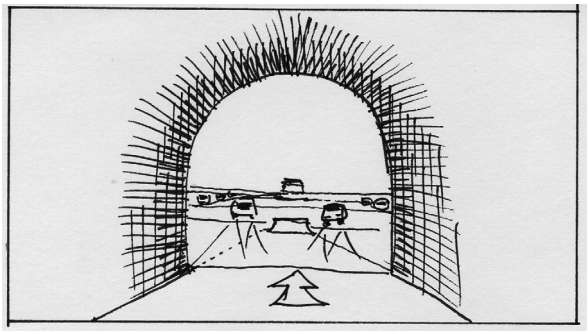
290
Claire, disarmed by Theo's suggestion, looks at Leon Jr. She picks him up.
THEO: Leon Jr isn't the candidate I thought he was. He is smart. But not gifted. (pause) Not like you.



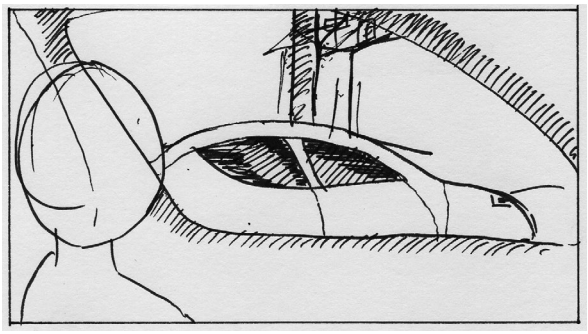
291
Claire looks around here, at the sterile Farsight headquarters, filled with false grandeur.
CLAIRE: No. No it's not. This isn't mine. It's not even yours. This city is built on the misery of others.



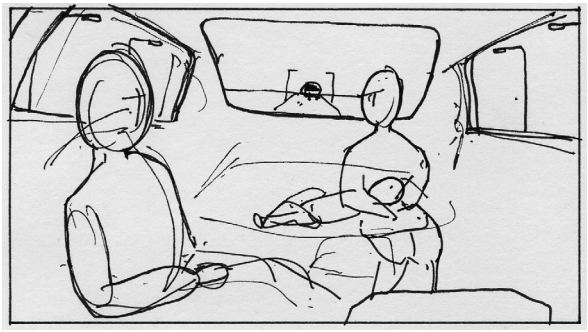
292
THEO: Go ahead. Leave. We'll see.
Claire returns to Iota with Leon Jr in her arms.
CLOSE UP on the TOY CAR, lying on the ground next to Theo's feet.



293
[61] EXT. TIANANMEN
Iota emerges out of the gateway. Their transmission from the HQ has drawn a crowd of Crawlers to the square.

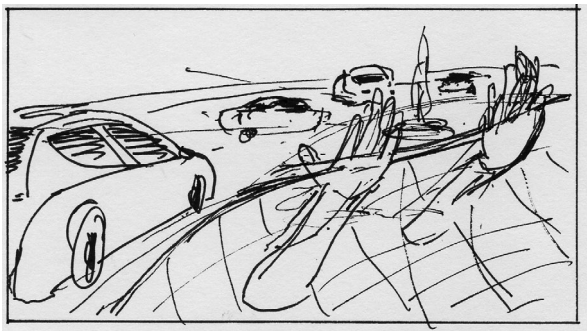


294
Yulia braces herself, expecting to be blocked. Instead, the Crawlers all give way to Iota.
The cars begin to generate a song, adapting their machine vocalisations to produce a haunting EXIT THEME.

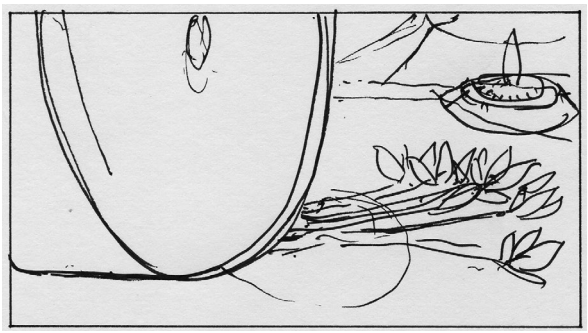


295
Yulia and Claire look back as the HQ recedes into the distance. The Crawlers trail behind.

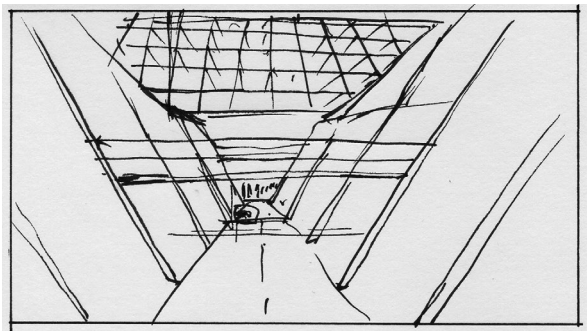
296
[62] EXT. HEILONGJIANG BRIDGE - MONUMENT TO THE FALLEN
The music continues as Iota approaches the bridge.



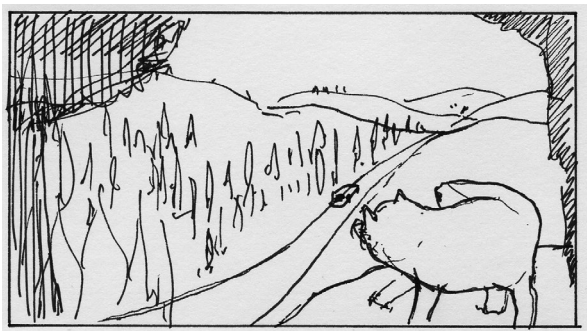
297
Iota slows down in front of the MONUMENT TO THE FALLEN, and the Crawlers form a mandala formation around it, still singing in unison.



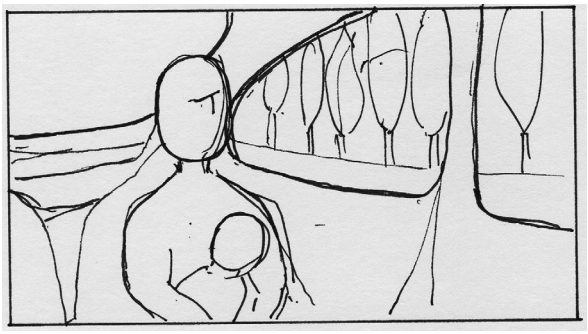
298
Yulia's flowers are crushed under all the wheels.
The sound of the CHORUS continues as Iota drives away.



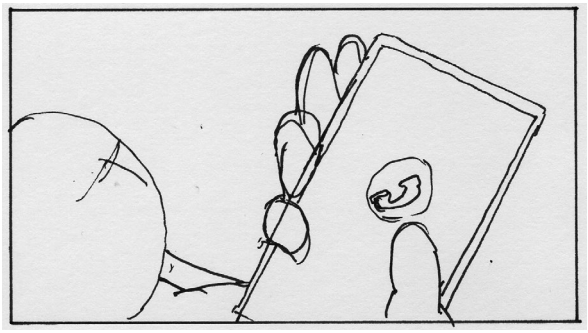
299
[63] EXT. YULIA'S APARTMENT - BORDER CROSSING - NIGHT
They pass through Yulia's block along the Heilongjiang River.
Automated systems scan the passengers.
Green light.



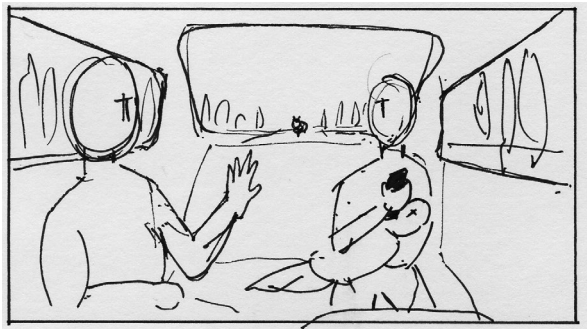
300
The Arctic Fox picks up the scent and trails them through the snow.
The fox continues following the vehicle's tracks.
Leon Jr turns again in Claire's arms. He seems disturbed.



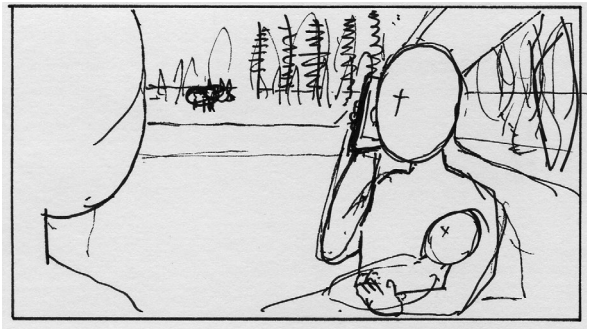
301
[64] EXT. RUSSIAN WILDERNESS - LATER
Everybody is lost in thought. Leon Jr is asleep in Claire's arms.
Yulia looks out at the moonlight.
RING.



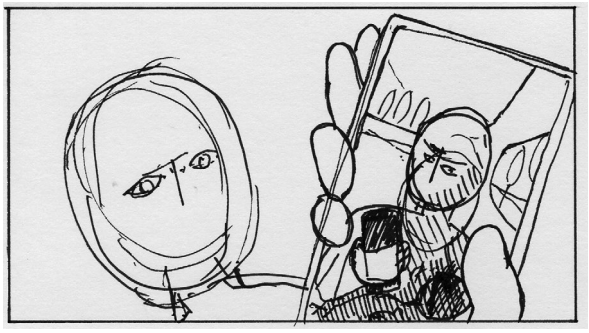
302
RING.
PHONE SCREEN: YULIA CALLING



303
Leon Jr wakes up. He breathes uneasily in Claire's arms. He seems even more disturbed.
Claire looks up. Yulia is still looking out the window.
CLAIRE: Yulia? Is it... you?

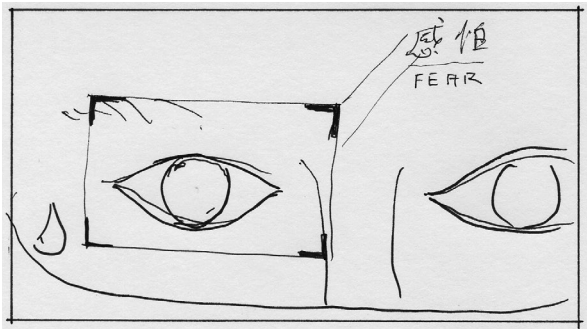


304
YULIA: No. Don't pick up...
Yulia looks back at Claire.
Claire hesitates, then answers.
An image of herself comes up on the screen.



305
She looks down past her phone. Leon Jr's eyes are open. He is looking at her now.
Claire realises that the video call is from Leon Jr's point of view. It is a feed from his retina.

306
LEON JR'S POV - Looking up at his mother... From his point of view, Claire is rendered as a wireframe model. Computer vision overlays scan over her face.



307
An eerie synthesized voice comes out...
LEON JR: Ma... Ma...
Leon Jr's hand reaches out towards her.

308
[65] EXT. SIMBEIJING
Empty shots of the cityscape. Recurrent shots of nature framed within architecture.

309
A tracking shot of the Arctic Fox, wandering through the streets.

310
The hollow tree watches over SimBeijing.

311
Nature frames the world.

FADE OUT + END CREDITS

Production Credits

Note: The video extract of Death Drive provided as part of this thesis was produced between January 2020 and September 2021. Subsequent parts will be made as additional funding becomes available.

Writer	Lawrence Lek
Director	Lawrence Lek
Cinematography	Lawrence Lek
Programming	Lawrence Lek
Editing	Lawrence Lek
Art Direction	Lawrence Lek
Assistant Director	Joe McGee
Production Design	Rob Heppell
Vehicle Design	Ryan Vautier
Motion Capture	Sarah Blome
Character Design	Sarah Blome and George Jasper Stone
Urban Planning	Mustapha Jundi
Additional Modelling	Johnny Lui
Costume Design	A Sai Ta
Music	Kode9 and Lawrence Lek
Sound Design	Kode9
Chinese Translation	Joni Zhu and Phoenix Mu
Russian Translation	Sasha Alekseeva and Aliaksei Babets

Cast

Yulia	Sasha Alekseeva
Theta	Wavenet
Presenter	Aliaksei Babets
Theo	D. Z.
Claire	Christina Lu
Lawyer	Joni Zhu
Leon	Lawrence Lek

Timeline

Script Treatment	Aug–Dec 2019
Art Direction	Jan–April 2020
Scriptwriting	May 2020–Jun 2021
Production Design	Sep 2020–Sep 2021
Storyboards	Jan–Mar 2021
World Design	Jan–Jun 2021
Vehicle Design	Jan–Aug 2021
Motion Capture	Jun–Aug 2021
Rendering	Jul–Sep 2021
Sound Design	Jul–Sep 2021
Editing	Sep 2021

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