When Designers Ask, “What if?”

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Abstract

Combining the conventions of narrative storytelling with design prototyping is an emerging area of study. The practice is known as design fiction, and the resulting stories, create compelling speculations of near and distant futures made more believable, and therefore more provocative, through realistic prototypes. These scenarios can bring cultural legibility to representations of the future and thereby provoke discussion and debate, challenge conventional thinking, and encourage individual foresight and participation into the implications of today's decision-making.

With the expanding definition of design beyond the archetypal products, spaces, or communications into things such as service design and strategic thinking, design fiction presents itself as a promising form of design research, in a construct with different rules and possibilities, to experiment with the impact of technology and design on society, government, culture, and individuals.

The focus of this thesis is explored through historical applications of design and narrative, a survey of current trends in the practice of design fiction, and through a project whereby the author/designer becomes a reflective practitioner to create a story that portrays a speculative future heavily influenced by technological change and enhanced with visual prototypes.

The project portion of the thesis necessitated that the author become immersed in a narrative construct based on research into trending technological advancements and to surround this world with human interaction inside a speculative ethnography. These virtual worlds and their “diegetic prototypes” (Kirby 2010) were subsequently visualized using computer generated models and rendered imagery to impart a sense of realism to depict tangible artifacts, tactile surfaces, and atmospheric detail. The story and visualization were combined using the distinctive meta-language of sequential art as in a graphic novel to enable the reader to linger and examine the unfolding narrative and the subtlety with which design and culture interact.

Using computer graphics (CG) visualization in a graphic novel is only one form of creating a legible future scenario. That which distinguishes design fiction from a conventional science fiction graphic novel, film, or other creative effort is the designer's focus on the prototypes and the subsequent examination of the implications that these prototypes present within the realm of human interaction. Therefore, the narrative emphasis does not revolve around the prototype, but rather how society has folded them into everyday life for better or for worse. It becomes both an exercise for designers and a catalyst to provoke thinking and discussion among readers, participants, or observers. How will future technologies or social changes influence design? How will the resulting design affect human behavior? The practice of design fiction becomes a promising method for designers to become thought leaders, practitioners, and facilitators in envisioning the future. There are applications of design education that better equip designers for combining design and narrative as well as the fields of foresight and futurist

studies as a means to stimulate critical thinking, generating debate and individual participation toward shaping the techno-social future.

“The ability to project ourselves into future worlds is a powerful tool for asking why this world is the way it is and how we can make it better” (Finn).

Dedication

John 20:28

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Field of Study

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Chapter 1: Introduction

1.1 Overview

For many years, design has been broadening its scope. “Thinking like a designer can transform the way you develop products, services, processes—and even strategy. (Brown)” Whether it is *Forbes*, *The Harvard Business Review*, or dozens of book titles on design thinking, business and industry have taken notice of the way that designers approach problems. Designers have found and profess that the method is applicable to a wide variety of problems—even so-called wicked ones—outside the circle of what would normally be considered as conventional design matters. Since the publication of Victor Papanek’s *Design For The Real World: Human Ecology and Social Change* in 1971, a host of books have been written exhorting designers to abandon frivolous, consumerist design and to apply design thinking to more socially conscious challenges. Evidenced by the emergence of movements such as *Design for the Other 90%*, designers are increasingly participating in complex areas such as health, education, energy, and third-world microeconomics in addition to the traditional “things,” spaces, and visual communications. Carl DiSalvo (48) states that there is the need to understand, “...the ways in which the products and processes of design intersect with publics... Since the late 1990s, there has been a proliferation of projects that examine and experiment with the capability and role of design (broadly construed) in increasing societal awareness, and

motivating and enabling political action.” As a result, designers have been encouraged to challenge the status quo. William McDonough and Michael Braungart, in their book *Cradle To Cradle*, call upon designers to radically rethink every assumption and to change paradigms with ideas like “waste equals food.” If, as Albert Einstein is credited with saying, ‘problems cannot be solved with the same kind of thinking that created them,’ then new ideas and methods are essential. It beckons design thinking to not only ask what *might be* but also to analyze *what is* and *why it is the way it is*.

Critical design, popularized by Anthony Dunne and Fiona Raby from the firm Dunne & Raby, “...uses speculative design proposals to challenge narrow assumptions, preconceptions and givens about the role products play in everyday life. It is more of an attitude than anything else, a position rather than a method. There are many people doing this who have never heard of the term critical design and who have their own way of describing what they do. Naming it Critical Design is simply a useful way of making this activity more visible and subject to discussion and debate” (Critical Design FAQ, para.1).” Creating a *critical design* has the intention to provoke. Many of the critical designs from Dunne & Raby have centered on the proliferation of technology and personal electronics and how these artifacts have made an impact on life, from the functional to the psychological and the behavioral. “One of Critical Design's roles is to question the limited range of emotional and psychological experiences offered through designed products. Design is assumed to only make things nice, it's as though all designers have taken an unspoken Hippocratic oath, this limits and prevents us from fully engaging with and designing for the complexities of human nature which of course is not

always nice (Critical Design FAQ, para.11).” Critical design remains a widely used and accepted method of design research.

Though the terms are sometimes used interchangeably, speculative design might be seen as an evolution of critical design. “Speculative design is a dreamlike exercise – manufacturing alternate worlds, ones which feel every bit as real as the ‘real world’ we inhabit day-to-day... It cannot predict the future, but it can shape the present” (Stevenson-Keating).

Throughout these methods of research and exploration is a recurring theme: using an idea of the future to shape current thinking. “...design and design research share with engineering a fundamental interest in focusing on the world as it could be, on the imagination and realization of possible futures, as well as on the disclosure of new worlds. This implies a reflection of the contingencies of the world today, and of the practices for creating, imagining, and materializing new worlds” (Grand, Wiedmer). At a basic level, design is a future-oriented pursuit—to create something that does not currently exist. Thus, as design expands to embrace more complex social issues and wicked problems, the migration toward and application to the future sciences becomes more relevant. High atop these disciplines is the study of *foresight*. Foresight engages *scenario thinking* to generate debate and participation toward shaping the future and gaining strategic perspective. In the practice of *foresight and futures research*, usually, “in the service of national strategic interests many have arrived at the conclusion that the changes imminent in the 21st century are so broad and happening so fast, that current methodologies cannot cope” (Resnick 13). Futurist Ruben Nelson states, “... the

emerging strategic conditions of the 21st century require us for the first time in history to develop the capacity to engage consciously in the evolution of existing human cultures, including their most fundamental frames of reference” (282).

At the intersection of critical and speculative design, foresight and futures research are new tools for participatory design and ever-increasing access to channels for sharing, discussion and debate. These, “...have contributed to a growing sense that design is a serious force for the shaping of collective futures, and a corresponding growth in the desire and ability to participate in that process”(Resnick 15). Though this is still a very new area for the application of design thinking, there is a small but growing group of practitioners. Most will acknowledge that wicked problems of the sort that futures researchers grapple with will require new levels of participation and look for new ways to foster pluralism and engage others to participate in the discussion. “...the more perspectives and voices contributing to social perception of, and responses to, unanticipated challenges, the more likely it will be that alternative paths can be developed and that robust and viable social responses can evolve” (Allenby and Sarewitz 163). Some of these methods include critical design, role-playing, experiential environments, and *design fiction*. The first three ideas will be discussed in further detail but the focus of this thesis revolves around the fourth.

Science fiction author Bruce Sterling (Sterling, “Sci-Fi”) defines design fiction as “...the deliberate use of diegetic prototypes to suspend disbelief about change.” The term diegetic prototypes, refers to the diegesis, the fictional world, primarily, of a film within which “...technologies exist as ‘real’ objects that function properly and which people

actually use” (Kirby 43). Future “artifacts” become tokens for the characters within the speculative future fiction. These objects become infused with meaning and a sense of realism that increases engagement and fosters discussion and debate. If, as McDonough states (McDonough and Braungart 180), “Design is based on the attempt to fulfill human needs in an evolving technical and cultural context“ then design fiction opens the door to a broader exploration and reflection about the interaction of design within the cultural and technical context.

The practice and application of design fiction is a relatively new pursuit gaining momentum in only the last 5 years. It is still something of a *buzzword* with differing approaches and interpretations, but it is gaining legibility in the academic, creative, and research communities. In October of 2010, the 6th Swiss Design Network Conference featured the topic: *Negotiating Futures - Design Fiction*. According to the conference description,

“Designers see the world not simply as it is, but rather as it could be. In this perspective, the world is a laboratory to explore the contingency of the existing and the thinking in options. Imaginations of the contrafactual are a key source for the creation of alternative political, technological, social, or economic constellations of artifacts, interfaces, signs, actors, and spaces. At the same time, strategies of materialization are pivotal to shift the boundary between the fictional and the real and to finally bring possible new realities into being. The conference addresses

the questions of how fictions are designed and how the multiplicity of possible new futures is negotiated and realized” (Swiss Design).

Since then, design fiction has been a topic of discussion at numerous international venues including SXSW, a music, film, interactive and emerging technologies conference, ETech, an emerging technologies conference, LiftAsia09, an exploration of the business and social implications of technological innovation, and Emerge 2013, that explores the techno-human condition, among others. Common to those listed above is the intersection of technology with society, humanity, and culture in which design will continue to play an important role. At these conferences and others like them, design fiction has been presented through lectures, experiential role-playing, workshops, and films. Participants regularly include scholars, designers, writers, and futurists.

There is no textbook or canon for practice. In a 2011 thesis, *The Materialization of the Speculative in Foresight and Design*, Jonathan Resnick provides an in-depth look at the emerging practice of design fiction, its motivations, practitioners, audiences and benefits. As one of the only texts to unwrap the concept, it has become an important resource for this paper and a source for frequent citations.

1.2 The Design Fiction Experiment as a Graphic Novel

The project and this paper are based on a collection of ideas from the aforementioned experiments into critical design, speculative design, design fiction, foresight, design research, and narrative among others. The project is, at a surface level, a science-fiction graphic novel. It depicts a future where technological, political, and

cultural “evolutions” have transpired and what might be thought of as the stuff of technological fantasy, is commonplace. These have become a part of the everyday fabric of a future culture.

The graphic novel is illustrated using computer graphics (CG). Though in some instances design fiction employs the creation of physical (even working) prototypes, this project stops short of material fabrication, leaning heavily on the sense of realism that can be conveyed through CG. In their digital forms, the artifacts have dimension and virtual physicality, but there is more to the examination than whether or not the objects embedded in the fabric of the narrative can be made or not made. There is a deliberate goal of examining how they can go unnoticed as so many present-day artifacts like smartphones and laptops blend into the scheme of everyday. These objects might be ubiquitous in the culture, yet they serve to influence social interaction and individual behavior. If the reader chooses to think about these props and their taken-for-granted transparency, there are deeper issues to ponder. Have these objects created new rituals? Can seemingly “beneficial” technologies be abused? Is there a downside to technological augmentation?

Design fiction becomes a means of sparking discussions and provoking debate about design, ideas, and possible futures, as a way, “...to get more people more deeply engaged in thinking about their futures and the role of their own agency in shaping them” (Resnick 96).

Though at one level the graphic novel can be read and absorbed as an entertainment, it also has the power to engage. Approaching the broader implications of design and designing with some amount of foresight requires a level of anticipation and

thought about how humans will be changed by what is designed. Dystopian visions are a common thread of science fiction and enable society to visualize the sometimes-ignored disadvantages to innovation. Sterling (Shaping Things¹³) sees a role here for design fiction. “Design thinking and design action should be the proper antidotes to fatalistic handwringing when it comes to technology’s grim externalities and potentials for deliberate abuse.” Hence, there is the ability to contemplate not only design, but also humanity’s uncanny ability to foul it up. Writing to the idea of what might be considered as “benign technologies,” McDonough (155) cautions, “The same could be said of our increasing use of cybertechnology, biotechnology, and nanotechnology to replace the functions of chemicals and brute force. The new technologies do not in themselves create industrial revolutions; unless we change their context, they are simply hyper efficient engines driving the steamship of the first Industrial Revolution to new extremes.”

1.3 Distinctions Between Science Fiction and Design Fiction

The question may arise: Is all science fiction design fiction? Indeed, design fiction is a form of science fiction. Speculative or science fiction becomes design fiction when the designer gets involved with one of two objectives: The first is *the intent* to design the diegetic prototypes for the unique circumstances of the future, whatever it may be. The second way is through *the intent* to analyze what the design has done, who it has affected, the ripples it has caused, and the behaviors it has engendered. Intent is primary. The ultimate goal is to observe the effect of design on culture and culture on design.

In many ways, the designer is uniquely qualified to chronicle these changes and what design has wrought. Yet, it is important to remember that the design does not drive the narrative. It is an examination of the design *within* the narrative and the unique way in which people interact with it, adapt to it, and, in some cases, become unaware of it.

Accepting Sterling's (Sci-Fi) definition of design fiction as "...the deliberate use of diegetic prototypes to suspend disbelief about change," then whether or not a narrative uses *deliberate intent* is specific to the author and it would necessitate an examination of science fiction on a case-by-case basis. When the designer becomes science fiction author, the intent of design fiction is more obvious. Bleecker, Candy, Dunagan, Dunne & Raby all fall into this category, (covered in Chapter 2.3) as well as this author's graphic novel.

In conventional science fiction, either as purely prose or as a graphic novel, "props" may be part of the narrative, but they are not always *designed*. They may be described and play an important role in the diegesis but they are not always constructed as *prototypes* physically, virtually, or verbally. Therein lies the distinction that comes only from intent. Design fiction, then, is different because *design became involved*. Whether author, artist or designer, the creation focused on these items, researched, conceived, and built them within the context of the speculative future. These designed artifacts or prototypes are further distinguished by their attempt at realism—to portray a more believable future in which these items exist.

Furthermore, design fiction carries the *intent to observe*, provoking thinking and debate for both the audience and the reflective practice of the creator. It might be said

that a work of science fiction becomes design fiction simply because design becomes involved. The creator may contribute to the story, to the prototypes, or both, but the overriding intent and ‘deliberate use’ is a clear distinction. Science fiction does not necessarily of itself strive for this distinction. Though a science fiction author or graphic novelist may create and have the intent to make comment and provoke discussion about the present trends or future directions, science fiction *can* achieve this without diegetic prototypes or the designer’s hand. However, when this intent adopts the elements of design to add realism, texture, and emotional resonance, then design fiction is at work, both to “suspend disbelief,” and as a device for more deliberate reflection.

1.4 Purpose

The project is an opportunity to create and examine speculative futures to gain insight into how people are affected by design and how design, fed by science and technology, changes humanity subtly and sometimes unnoticeably. Sometimes these designs introduce unfathomable complexity. Who could have predicted the enormous systems that have resulted from the seemingly benign introduction of a fuel-powered vehicle to replace the horseless carriage? The cascade of ramifications is stunning: a network of highways, the depletion of fossil fuels, accidents and injuries, deaths, insurance, labor, effects on the supply chain, industry, legislation, leisure, and commerce just to name a few. In constructing a speculative future and its artifacts, the designer must also imagine how innovation becomes absorbed into behavior, culture, and new rituals. How could the ritual of “texting” be explained to a time-traveler from the past? Whether

it is a technology or a behavior, it has become ubiquitous, innocuous, and otherwise invisible. Such acutely innocent “designs” nevertheless create ripples: new language, new social dynamics, new distractions, and new legislations. Imagining a future cause-and-effect can focus the designer’s attention on how future design might affect users before making it. Inside a narrative, as part of life and lives, mixed with interactions and human drama, design gains context and credibility. This is the nature of narrative. There are people going about their daily lives and the design is not front-and-center. It is enveloped into the socio-techno drama.

Creating futures and reflecting upon them can present society with options. In their book, *The Techno-Human Condition*, researchers Braden Allenby and Daniel Sarewitz chronicle how arguments for and against controversial life-altering technologies become polarized, resulting in, “...a world unable (and perhaps increasingly unable) to come to grips with what it does to itself” (160). Part of their recommendation is to have “option spaces,” alternatives to the favored course of action in the event that the favored version disappoints or goes wildly out of control. Playing with scenarios is one way the authors conclude this can be achieved. Examination inside this cultural dynamic might give pause to ask the tough questions about complexity of interrelated systems, the potential for abuse, and how society might deal with these rather than being surprised by them. “Who would have thought?” may cease to be an excuse becoming instead, “We thought of that.”

1.5 Definition of Project Scope

The project portion of this thesis positions the designer as both author and reflective practitioner, a test subject to experience the process of creating a design fiction. Beyond the premise that design fiction is a new methodology to anticipate and mitigate change by visualizing the future, the designer must call upon new faculties and speculation into what might be when and if everything changes. The process will require crafting a *science fiction* future, through a narrative that utilizes elements of science fact and extrapolates into a cascading “if-then” scenario. A science fiction requires speculation and design fiction the subsequent creation of diegetic prototypes. Speculative future scenarios can always take the form of a thesis substantiated by charts and graphs, but within a narrative they become stories. In this context, characters and drama are the central focus, and the interactions of everyday life are paramount. “We can put the designed thing in a story and move it to the background as if it were mundane and quite ordinary—because it is, or would be. The attention is on the people and their dramatic tension, as it should be” (Bleecker 37).

A graphic novel was chosen as the vehicle for the story. Inherent to the graphic novel are discrete characteristics that provide unique opportunities for examination and reflection as well as a demanding list of activities that call upon design thinking and the designer’s process methodology. The project then functions as an experiment on multiple levels: science fiction, design fiction, and graphic novel. It is science fiction to examine the scenarios of a possible future, while it is design fiction to explore the interaction with,

and transparency of design in the techno-social context. It is a graphic novel to enable the reader to linger and study. Within the context of the graphic novel, CG rendering is used to enhance the designer's learning through virtual *making*, "possibility thinking," and also enhancing the reader's experience through at least a sense of material realism. Finally, in a world that is changing at an unprecedented rate, it expands the design experience into the realm of foresight with an experimental methodology to better understand the interconnectedness of technology, design, and society. Each of these will be explored in detail.

Chapter 2 Design, Narrative and the Emergence of Design Fiction

2.1 The Use of Narrative in Design

Design will forever intersect with narrative. Though it is unusual to find reference to it as an overt component of design research, design is nevertheless very much a process of discovering the stories of users and then speculating or demonstrating how the design will change those stories. When used overtly in studies with interior design students, Danko suggests that the "... narrative method was a driving force in promoting a heightened sense of user empathy, enhanced multisensory conceptualization and visualization, and a greater tendency towards holistic thinking" (Danko 26). Narrative can also be fact or fiction. "Narrative is selective, and may be untrue, but it can produce the feeling of events occurring in time; it seems to be rooted in reality"(Fulford 15). Today, whether overt or intuitive, it is ever present in design work full with the stories of users and finding ways to enhance the user's process of living and doing. Narrative should be considered as an intrinsic process of the designer's "art" folded within what Cross refers to as "...the tactics and strategies of designing" (Cross 47).

Indeed, narrative can frame the context and establish a collective understanding of the circumstances surrounding the rationale for arriving at a design solution. Though the designer may introduce a fictional scenario to demonstrate the potential for a design solution, for the most part these narratives are factual and based on the present or very

near future scenarios. A similar analysis could be done historically to deconstruct the origins and context of past designs. According to Dillon and Howe, “The narrative story of a design object offers a series of events, a journey through time, not dissimilar to narrative in literary text” (Dillon, and Howe 292). The ability of narrative to contextualize design remains even when transposing it to a not-so-near future scenario.

2.2 A Lineage for Design Fiction

Since the latter part of the 19th century, perhaps inspired by the advance of the Industrial Age, artists and designers have been visualizing what the future may hold. Though many years before the neologism existed, a form of prototyping with the purpose of suspending disbelief could also be attributed to the work of Norman Bel Geddes and his highly detailed *Futurama* for the 1939 World’s Fair. The 35,000 square foot exhibit was sponsored by General Motors to depict America in 1960. The model, complete with moving vehicles was an immense undertaking of astounding detail. Bel Geddes and his sponsor, however, were less concerned with provocation than they were in designing a legitimate concept that they believed could and should come to fruition. Referring to his *Futurama* scale model, (Figure 1) Bel Geddes states (4),

“Masses of people can never find a solution to a problem until they are shown the way. Each unit of the mass may have knowledge of the problem, and each may have his own solution, but until mass opinion is crystallized, brought into focus and made articulate, it amounts to nothing

but vague grumbling. One of the best ways to make a solution understandable to everybody is to make it visual, to dramatize it.”

Figure 1. *Futurama* exhibit (Futurama)

In the 1960's and '70's firms like Superstudio (Figure 2) and Archigram (Figure 3) frequently produced works of *conceptual architecture* that featured concepts such as pop-up cities and walking cities on legs. Also in the '60's' Ford Motor Company hired

industrial designer Syd Mead to create *advanced visualizations* (Figure 4) of vehicles and cities to demonstrate the company's forward thinking technologies and designs.

Figure 2. Superstudio. *Twelve Ideal Cities*. 1971.

Figure 3. Archigram. *Instant City*. 1969. (*Instant City*)

Figure 4. Syd Mead. (Mead)

Years after the designs of Bel Geddes, Mead and the conceptual architects, evolutionary geneticist and science lecturer David Kirby coined the term “diegetic prototypes.” It is Kirby’s assertion that scientists often use cinema to further their projects and interests. “The presentation of science within the cinematic framework can convince audiences of the validity of ideas and create public excitement about nascent technologies”(Kirby 66). Kirby’s analysis included classic, technology-laden films such

as Stanley Kubrick's *2001: A Space Odyssey* and Stephen Spielberg's *Minority Report*, among others. In his view, scientists and engineers go to elaborate lengths to make these technologies as realistic as possible. "The most successful cinematic technologies are taken for granted by the characters in the diegesis, and thus, communicate to the audience that these are not extraordinary but rather everyday technologies. These technologies not only appear normal while on the screen, but they also fit seamlessly into the entire diegetic world"(Kirby 50). In *2001 Filming the Future*, a book that chronicles the making of the 1968 movie classic, *2001: A Space Odyssey*, Piers Bizony says that Kubrick, working with science fiction author Arthur C. Clarke, hired design, aeronautical, and astronautical engineers Harry Lange and Frederick Ordway to visualize convincing space travel technology (Figure 5). "Kubrick wanted absolute realism: he wanted the hardware

Figure 5. Stanley Kubrick. *2001: A Space Odyssey*. 1968. (2001)

on screen to look as though it really worked” (Bizony 81). Kirby notes that corporations and other special interest groups were more than happy to participate.

“*2001: A Space Odyssey* was a classic example of cinema creating expectations for space travel, as well as other technologies, with more than 65 private companies, government agencies, universities and research institutions providing free advice and material objects for the opportunity of shaping technological visions in a highly anticipated film about the future. They happily shared information on future designs for the chance to have ‘pre-product placements’ which established their brand as ‘futuristic’ in this high profile film”(63).

Visual realism was a motivating factor when Ridley Scott enlisted industrial designer Syd Mead as “Visual Futurist” to help envision his 1982 *Blade Runner*. “If

Figure 6. Ridley Scott. *Blade Runner*. 1982.

you're taking a step forward in terms of reality, which I'm trying to keep it as real as possible even though it's very, let's say, rich, and exotic and colorful... we sort of backed down in the design concepts so that they're quite familiar" (Convention Reel). In the instance of *Blade Runner*, diegetic prototypes were the tools to suspend disbelief in a future where technology was cold and impersonal. Against the dark, noir future, the brightest images were the monumental multi-story illuminated billboards (Figure 3). Instead of sleek, futuristic vehicles, designs were understated to seem more mundane even decayed.

In Steven Spielberg's 2002 *Minority Report*, computer engineer John Underkloffer was brought in to make the, now-famous, four-minute scene where actor Tom Cruise orchestrates a gesture interface of sounds and images appear completely realistic, (Figure 4). According to Kirby (50), Underkloffer "...approaches every consulting opportunity with the explicit goal of creating cinematic technologies that enter into the 'technological imaginative vernacular' of actual scientific discourse. To do this,

Figure 7. Steven Spielberg. *Minority Report*. 2002. (*Minority*)

Underkloffer treats his diegetic prototypes as if he were designing not only physical prototypes but also real objects that become part of ‘everyday life’ in the diegesis.”

Discussing the scene from the movie, designer and technologist Julian Bleecker says,

“It allows the design fiction to tell a story that is broader than the instrument itself. This is what design fiction is about. You don’t fetishize the instrument; rather you emphasize the rituals and the drama—the social elements that stories are always about. The audience wants to know what this thing is in the context of a story in which people—people in the year 2054—routinely (lets assume so) operate machines to do their work using gestures such as this” (Bleecker 37).

It wasn’t until 2005 that the term “design fiction” was first introduced. Science fiction author Bruce Sterling in his book *Shaping Things* posited it. As he originally conceived it, design fiction was a hybrid form of science fiction writing. “Design fiction reads a great deal like science fiction; in fact, it would never occur to a normal reader to separate the two. The core distinction is that design fiction makes more sense on the page than science fiction does... It sacrifices some sense of the miraculous, but it moves much closer to the glowing heat of technosocial conflict” (Sterling, *Shaping Things* 30).

In its current form, design fiction has many interpretations by practitioners and researchers (Chapter 2.3), and the idea has been embraced for commercial purposes. There are commercialized applications of design-meets-fiction featuring a company’s high-tech, near-future products that will make the world a better place (e.g., Microsoft 2011, Corning: 2012, Sony: 2012). (Figures 5, 6,7) The purpose of these

Figure 8. Corning. *A Day Made of Glass*, 2011. (*A Day Made of Glass*)

Figure 9. Microsoft Corporation. *Future Vision*, 2011. (*Productivity*)

Figure 10. Sony Corporation. *FutureScapes I*, 2011. (*Sony*)

enactments is straightforward, promotional, short films designed to engage audiences in a plausible near future where a company's products are ubiquitous helpers in daily living, which enable people to be more productive and ultimately—happier. The Corning and Microsoft videos are essentially a set of choreographed scenes in a near-future scenario in which unnamed and silent characters float through everyday living, where productivity in everything from phone calls to cooking dinner is enhanced courtesy of the corporation and its forward-thinking—presumably soon to be—products. In the Sony version, a series of three films, a single character with voice is introduced. Her life changes through progressively dystopian scenarios of global and social upheaval but is able to weather it and experience a rewarding life—with the help of Sony technology.

2.3 Design Fiction Today: Three Current Interpretations and Practitioners

Designer and engineer, Julian Bleeker has written extensively on the subject. In his design fiction treatise, Bleeker (7) states that “Design fictions help tell stories that provoke and raise questions. Like props that help focus the imagination and speculate about possible near future worlds—whether profound change, or simple, even mundane social practices.” Through design fiction, ideas and objects gain a sense of credibility. But design fiction is more than just constructing a set of plausible constraints through which a design might exist. According to Bleeker, drama is of great importance, and the diegetic prototypes should become part of the background of the characters' everyday lives. Thus, design becomes an invisible collaborator with culture in making life seem as real in the future as it is real in present experience.

In addition to Bleecker and partner Nicholas Nova, for whom the focus is on *making things* in the context of speculative future scenarios, others enlist design fiction with widely varying interpretations. For this reason the realms of design and speculative fictions must still be considered an emerging field. Some of the more prominent players include Stuart Candy & Jake Dunagan who use role-playing and experiential environments, and more conceptual provocations about the future from Anthony Dunne & Fiona Raby.

As a means of illustrating the diverse approaches and divergent purposes in design fiction currently underway, a closer examination will cover three practices: the physical approach of Bleecker & Nova's Near Future Laboratory, Candy & Dunagan using an experiential approach, and Dunne & Raby's conceptual design scenarios.

2.3.1 Julian Bleecker and Nicholas Nova

In the emerging world of design fiction, Julian Bleecker and Nicolas Nova are prolific contributors in both artifacts and writing on the subject. Their company, Near Future Laboratory draws heavily on an inspiration from science fiction and stresses the importance of working prototypes, most often within the realm of electronic devices. Bleecker with a Ph.D. from the University of California, Santa Cruz and Nova with a Ph.D. in Human-Computer Interaction from the Swiss Institute of Technology think intently on the future with a focus on "making things." In an interview with Resnick, Bleecker describes the importance of the tangible object: "...people linger more, they wonder about something that's sitting in front of them, and they pick it up and turn it

around and do something with it, and whatever they're doing continues the discussion" (quoted in Resnick, 32). Because the objects are being built, the designer is confronted with real-world challenges. "The building of it... actually wiring things up and making things... that's as much part of the design work as any other part ...because things happen in that process, decisions get made..."(Bleecker quoted in Resnick, 32). The team also emphasizes the importance of provoking discussions and "disrupting comfortable and conventional ideas about technological change."

In one such, project Bleecker created Slow Messenger (Figure 11):

"... an instant messaging device that delivers messages exceptionally slowly. Once the message is received, it is gradually displayed, one letter at a time based on two factors. The first is the relative amount of time that the device is held; the second is the amount of time the device is carried while walking. These factors—holding-by-hand and walking-with—are interaction rituals key to the conveyance of intimate messages. In "another era" that is not the "digitally networked era," "taking the air" and "perambulating" were crucial interaction rituals for maintaining and knitting together "social network" relations. " (Bleecker, Slow 2007)

Figure 11. Slow Messenger, Bleecker. 2007. (Bleecker, *The Worlds Slowest*)

From Resnick's interviews with the team the idea of a "think tank" emerged. Primarily, they choose projects that interest them and client projects take on other forms (Resnick 33). The team is centered on how future objects can provide insight into everyday life today. Looking for what they call "weak signals," their Near Future Laboratory web site states that they are,

"A design-to-think collaborative studio that combines insight and analysis with design and research with rapid prototyping to create potent provocative sometimes preposterous ideas into material form.

We're a think/make design & research network focusing on digital interaction designs based on "weak signals" from the fringes of digital culture, where the near future already exists. We turn those weak signals into material form by rapidly constructing prototypes of innovative designs for near-future concepts."

The physical approach of Bleecker and Nova seems to yield "conversation pieces" that transcend verbal descriptions (Bleecker, 7). For Bleecker and Nova the physical, materialized prototype is the key to engaging people in discussion and provoking thought. The two believe that holding the prototype in your hand and interacting with it is how it registers and conveys meaning.

2.3.2 Candy and Dunagan

Stuart Candy is an associate of The Long Now Foundation, something of a think-tank "to encourage long-term thinking." His web site is called the *skeptical futurist*. He describes himself as a designer, consultant, writer, educator, and activist. The website for California College of the Arts where he is adjunct professor in the Design Strategy MBA, lists him as a "multimedia futurist" studying "human behavior in contexts that don't yet exist," "... these exercises in ambient foresight and anticipatory democracy are intended to engage the public in creative thinking about possible and preferable futures. He is drawn to collaborative opportunities that combine practical impact, deep creativity, and fun" (CCA, Candy).

While studying for his Ph.D., he completed his initial work on experiential scenarios and an approach to immersive storytelling at the intersection of futures, design, and politics. Candy frequently works together with associate Jake Dunagan, a co-graduate Ph.D. from the University of Hawaii who “explores [how] societies are adapting to the Neurocentric age, a time of unprecedented ability to view and modify the mind”, centering their work around the idea of “experiential futures” (CCA, Dunagan) Both men lament the fact that in the area of foresight (futures) studies, little progress has been made in getting the average citizen to think critically about the future. They believe that experiences, often in the form of role-playing with “future environments,” resonate with the emotions, thereby helping participants to acknowledge that they can contribute to the discussion and perhaps affect change.

Often, their work is geared toward politicians and executive decision-makers. One such example of building these experiences was the team’s FoundFutures postcard campaign. Here, they created “future” artifacts to use as immersive experiences designed to provoke an emotional and therefore more memorable response from participants. The FoundFutures campaign consisted of postcards. “A cross-section of Hawaii’s influential business, political and community leaders received a series of mysterious postcards in the mail -- no return address supplied -- from the year 02036 [*sic*]” (Candy). The 4 postcards were mailed on consecutive days and showed images of speculative futures. One showed casinos and featured the word “Mauihattan.” Another, “brought a plea for help addressed to the United Nations, headquartered in China, on behalf of a beleaguered Hawaii

suffering from mob rule and guerrilla warfare in the wake of Hurricane Cyrus” (Candy).

(Figures 12 & 13)

Figure 12. FoundFutures postcard, Candy. 2007. (Candy, Found Futures)

Figure 13. FoundFutures postcard, (back), Candy. 2007 (Candy, Found Futures)

In one of their most notable “experiences,” Hawaii 2050, the team created four “futures rooms” designed to be, “...a catalyst to further discussion about the possible, probable, and preferable paths that change could take in Hawaii between now and 02050 [*sic*]” (Candy, Found Futures).

In his Ph.D. dissertation, Candy states that, “The upshot is that our apparent binary choice between unthinkable dystopia and unimaginable utopia is a false dilemma, because, in fact, we can and should imagine ‘possibility space’ hyperdimensionally, and seek to flesh out worlds hitherto supposed unimaginable or unthinkable on a daily basis” (Candy, Futures iv). Candy proposes “experiential scenarios, covering a range of interventions and media from immersive performance to stand-alone ‘artifacts of the future’”(sic), as the means of effectively discussing these possible futures.

On the subject of design fiction Candy writes in his dissertation that, “Design brings rigour to sci-fi, sci-fi returns the favor by bringing greater imagination to design” (Candy, Futures 179). In Resnick’s analysis and interviews, the motivation for Candy and Dunagan’s experiential futures is to accomplish what can’t be accomplished through analytical futures presentation. It requires, “deep, gut-level learning; the difference between simply knowing about something and truly feeling it” (46).

2.3.3 Dunne & Raby

The third group of practitioners is the London-based Dunne & Raby studio. According to their website, the team uses, “...design as a medium to stimulate discussion and debate amongst designers, industry and the public about the social, cultural and

ethical implications of existing and emerging technologies (Dunne & Raby). Anthony Dunne, an Industrial Designer with a Ph.D. in Computer Related Design from the Royal College of Art, is partner with Fiona Raby, a professor of Industrial Design at the University of Applied Arts in Vienna and the Royal College of Arts, among other credits. Their work could best be described as more theoretical and conceptual than either Bleecker and Nova, or Candy and Dunagan. An example is their algae digester, an artifact from a future where new food resources must be discovered. (Figure 11).

Figure 14. Algae digester, Dunne & Raby. 2010. (*Dunne & Raby at Saint-Étienne*)

Dunne considers it a form of design research. In an interview with *Core77*, Raby states that design is expanding, “to pick up very broad interests, not just within the world

of design... that design can have a critical role within a bigger policy making process” (Dunne, Core 77). According to Dunne, their work can be thought of as a form of critical design. “When we move into emerging tech areas, it can take on a genuinely useful role in helping to reflect” (ibid). They see design fiction as a related field. Both, it would seem, are, “... a way of looking at design and imagining its possibilities beyond the narrow definitions of what is presented through media and in the shops” (Dunne & Raby). According to Bruce Sterling,

“Dunne and Raby mock-up some of the most provocative, edgy, unsettling gizmos in the world. They do this by modeling social relationships, emotional interactions and the political implications of objects and services, rather than the objects and services per se. So they do indeed create ‘fictions,’ in that Dunne and Raby designs are poetic, objective-correlative expressions of unstable social situations” (Sterling, Wired)

2.4 Common Goals and Characteristics

Despite the wide variety of interpretations, most practitioners would agree that there are at least two commonalities. In each case, there is an underlying objective to make it seem real. Again, Resnick’s study surfaces as an informative source, having in-depth interviews with five design fiction practitioners that included Bleecker & Nova and Candy & Dunagan, “All of these practices try, on some level, to blur the line between the speculative and the real, to take that which might be easily dismissed as impossible and make it seem not only possible but plausible; in other words, to suspend disbelief”

(Resnick 61). He also characterized provocation as an underlying objective (75), “All practices share a desire to create work that disrupts the existing discourse around the topic area of that work and provokes their audiences into a reconsideration of that discourse.”

A key objective is to provoke thought about the future while utilizing a sense of realism. The diegetic prototypes or artifacts from the future serve as the realism-connector to the future. In the examples cited above, all the practitioners also exercised a level of disturbance, some element of discontinuity from the expectations of the audience (or lack of expectations of the audience) to do the work of provoking thought. In Bleecker and Nova’s *Slow Messenger*, there was the discontinuity of disseminating a message in a manner deliberately slow, against the audience’s expectations of almost any digital device. In Candy and Dunagan’s *FoundFutures* guerilla-art postcards, the notion was a dystopian future for Hawaii. For Dunne and Raby, their algae-digester prototype was a response to a future with severe food shortages.

One way to consider design fiction, then, is about context, and culture and an examination of how to look at the world amidst the ubiquitous, innocuous, sometimes invisible design that is a continuous experience. “I just think it’s a... more modern way to engage people, it’s basically a more honest way because it reflects the genuine way in which our society folds innovation... into the texture of daily life” (Sterling, Part 4).

As more thinkers experiment with design fiction as a means of provoking debate, discussion, and research for design, it will continue to evolve with new interpretations

and explorations. However, the idea of provoking thought about the future through a sense of realism is at the heart of all of its current iterations.

2.5 Summary

Before the neologism of design fiction crept into the periphery of design and design research, the use of prototypes to suspend the disbelief about the future was in use through most of the 20th century. In the 1960's, design became a tool for science fiction movies and television to authenticate ideas about the future and make the stories seem more real. As directors strived for more realism industrial designers, and engineers were enlisted to make these prototypes even more plausible by weaving together strands of science fact together with science fiction. With advancements in special effects, these prototypes became still more sophisticated, and through the production of the film, some engineers and designers were subsidized to bring these theoretical visualizations to reality, as in the example of the *Minority Report* gesture interface. In these examples the “props” can be defined as diegetic prototypes, a term that also did not exist prior to Kirby. The prototypes were not themselves the focus of the story, they added context *to the story* and gained their context *from the story*.

It wasn't until the 21st century that design practitioners began to see the power of design artifacts to serve not only as contextual support for more believable future stories, but also to provide a subtle (or sometimes not so subtle) commentary on the artifacts in use today, the way in which design is folded into culture, and how artifacts from the future can portend the results of political, environmental, philosophical, and moral

decisions that are currently being debated. Design fiction and future artifacts, in this sense, become a kind of *evidence from the future* of the ramifications from today's decisions.

Some practitioners are using this to engage decision-makers to think about the results of political or environmental decisions. Others use the technique to increase awareness of individual agency and personal empowerment or as a means of getting designers and design influencers to think outside of the box.

Practitioners utilize a wide variety of methods including the experiential realm in the form of workshops, role-playing, and 'artifacts of the future,' the conceptual realm in the form of mock-ups of provocative, 'un-real' objects, and physical realm, in the form of tangible, working, hand-held devices, but they do share common characteristics. All three of the practitioners researched operate in the conceptual realm. None of their artifacts—physical, experiential or conceptual—have present-day applications. Yet, each uses an element of fictional experience in the present day, striving for realism to suspend disbelief in a future scenario with a disruptive and thought-provoking intent to motivate audiences to new discourse. The scope of this project, through its science fiction narrative, use of diegetic prototypes, and visual medium, carries these same common features.

The resulting graphic novel serves as an example for the designer and his audience. To create the design fiction, this author envisioned not only the functional but also the potential behavioral, societal, and cultural ramifications of design decisions. The author/designer was required to anticipate unintended use and gone-wrong applications of

otherwise, good design. For the audience, story fictions can carry provocations about the future. The use of diegetic prototypes can suspend disbelief about the future scenarios, and, through an examination of culture and context, individuals can contemplate present-day decisions that will affect the future on an individual basis.

Chapter 3: The Graphic Novel

3.1 Definitions and History

Graphic narrative can be defined as any story that employs image to transmit an idea. Film and comics both engage in graphic narrative. Comic artist Scott McCloud defines comics as, “Juxtaposed pictorial and other images in deliberate sequence” (McCloud 9). There is, however, some debate on a proper definition of “graphic novel.” Some consider it a wholly other literary form. Others define it simply as nothing more than a long-form comic. Today, the term may be used to suggest that the material that is slightly more adult, or more literary, though most comic scholars would not necessarily advocate either implication. It can be a finite work or a collection of stories using “...story arcs...multi-issue stories that are designed in advance to be collected into a single book” (Kannenberg 7).

The comic, in some form has been around for more than 100 years. Visual narrative can be traced back even farther to the illustrated story dating back to the 15th century or as far back as prehistoric cave paintings. There are a variety of opinions on the origin of the long-form comic in the U.S., from early “Picture Novels” and “Picto-Fiction” in the 1950’s to long-form graphic novel formats in the 1970’s. The most famous (probably due to its critical acclaim and commercial success) is Will Eisner’s *Contract with God* from 1978. The art form began to gain traction with the publication of

Art Spiegelman's *Maus* in 1986, and his subsequent award of a Pulitzer Prize for the two-volume story in 1992. Additional attention was focused on epic productions such as Alan Moore and Dave Gibbons' *Watchmen* and Frank Miller's *The Dark Knight*, in 1986-7. Since then, many more titles have garnered critical acclaim and the marketplace witnesses a steady flow of new titles and adaptations in every genre from superhero to biographies and self-help books. The New York Times has a graphic books list, the U.S. Armed Forces uses graphic novels for recruitment, and there are a number of college textbooks that have adopted the graphic novel format. There has been a proliferation of graphic books and comic anthologies sections in both K-12 libraries and universities. Despite a lingering stigma that sometimes typecasts the form as "subculture literature," the language of sequential art has managed to establish legitimacy as a hybrid literary form.

Beyond its enduring history, comics are garnering an increasing focus in academia, and scholarly study. For educators, "Comic books provide readers with a dense and multimodal reading experience and challenge readers by demanding both textual and visual literacy and an ability to decode the meta-language of the comic book format" (Ziolkowski and Howard 159).

As a unique form of communication, the comic employs a rich complexity. "In text alone the process of reading involves word-to-image conversion. Comics accelerate that by providing the image. When properly executed, it goes beyond conversion and speed and becomes a seamless whole... In every sense, this misnamed form of reading is

entitled to be regarded as literature because the images are employed as a language”
(Eisner xvii).

3.2 Distinctions, and Conventions of Graphic Novels

Graphic literature operates on three levels:

1. Storytelling
2. Sequential art with an abbreviated, or sometimes non-existent verbal narrative
3. Employment a particular visual language (a meta-language) of panels, balloons, and bubbles that tie the story together for the reader.

The idea of sequential art that links story pictures (panels) in sequence to move the action forward shares some obvious similarities to film (such as the storyboard and the idea of individual “frames” in rapid succession), but for the most part, it stops there. The key distinctive difference most frequently cited is what is referred to as the “gutter,” the space between the panels that requires the reader to “fill in.” Most film marches forward in linear fashion. Unless the viewer takes the remote control to step-frame through, the film is designed to flow over us. When the reader turns the page of a graphic novel the left and right pages lay in front. Most often, the author intends that each page be read in sequence: left-to-right and top-to-bottom. In actuality, however, the author has no control over the way in which the text or graphic novel is read. If the reader decides to risk a “spoiler” and first look at the bottom of the right-hand page then backtrack, it is her prerogative. Only a comic book or graphic novel provides this distinctive type of reading opportunity. While a prose novel (referring to a non-visual, non-graphic narrative) can be

read in “disorder,” it is a different form of cognitive processing. Film can be stopped, stepped back or stepped forward but it is always in the present. Images of the past and future are never displayed simultaneously and even while single framing, the action is continuous. There is no conceptual gutter between frames. Dan Hassoun (3) contends that, “... non-sequentiality and spoilers are central to comic narration ...they facilitate, rather than impede, the pleasure we receive when engaging with such texts.” Hassoun relates an example of how this “scanning” of the page could be used by an author to intentionally provide a spoiler, a bottom-right image that cannot be resisted that changes the tenor and reorients the reader when the proper order is resumed. This nuance allows the reader to engage with the story in a way that a movie audience cannot (Hassoun 14).

Charles Hatfield refers to comics as having an “otherness” (33) “Comics, in recent criticism, are not mere visual displays that encourage inert spectatorship but rather texts that require a reader’s active engagement and collaboration in making meaning...These are images that stay, unlike the successive moments in a film or video as it is being viewed.” Comic scholar R. C. Harvey (178) affirms, “... [for] the cartoonist...in composing each panel for maximum narrative impact, the piece of action he’s selected to draw has already stressed that action dramatically. Simply by being chosen, it is captured and thus destined for longer contemplation than is possible for an equivalent action in a film.”

3.3 The Graphic Novel as Vehicle for Design Fiction

These characteristics of the graphic novel present an advantage for design fiction. As the story unfolds on the printed page, the reader is engaged not only to acknowledge the designed environment as part of the story but also to “fill-in” between panels and make a conscious and cognitive effort to interpret the story. Detailed diegetic prototypes serve a dual purpose. First, if they are sufficiently detailed, they too add realism. Second, this detail can be inspected. Finally, and perhaps most interesting, the artifact or environment can become innocuous texture, which is not studied but rather is absorbed as perfectly natural or acceptable within the context of the story. In this way, the reader reacts to the design as the characters do, moving in and around the design of the culture with little acknowledgement of the functioning design. As Bleecker says, “...you emphasize the rituals and the drama—the social elements that stories are always about” (37). Each of these options is uniquely enhanced through the reader’s ability to control the pace. Once again, acknowledging that one can single-frame through a film, it often lacks both the resolution and the detail to satisfy a deep dive.

Another distinctive feature that further enhances the reader’s ability to engage is designed into this project. A high resolution, digital format is the predecessor to what will eventually be a printed book. From standard “page-size-view” using an high-definition tablet, laptop, or desktop display, the viewer can zoom into images up to 5-times to further scrutinize or examine the imagery.

The story can be viewed on multiple levels: It can be absorbed as a purely entertaining science fiction drama, it may be analyzed for the broader implications of the

characters, their motivations, and struggles or examined for the elements of design fiction. The enhancement to the visual content, and the nature of sequential art, both serve to further the purpose of the engaging the reader in a more in-depth examination of not only the visuals but also to elicit an emotional response to the depicted future.

Chapter 4: Synthesis

4.1 Writing the story

4.1.1 Formation of themes

At the earliest stages of the project, before there was a cohesive alignment with design fiction, the story was bits and pieces, fragments and ideas. There were numerous influences collected over the years including a host of movies and books. More recently, themes were influenced by the forecasts and speculations of a number of futurist writers including Michio Kaku, Thomas Frey, Ray Kurzweil, Aubrey de Grey, and Vernor Vinge, and from an extensive survey of emerging technologies in the areas of energy, medicine, computing, artificial intelligence, transportation, and nanotechnology. With a discerning eye, even a cursory survey of these writers, along with the advances of technological innovation, and the rate at which these innovations are introduced—and summarily trumped—yields astonishment, if not alarm. These observations help to underscore an earlier observation ‘that the changes imminent in the 21st century are so broad and happening so fast, that current methodologies cannot cope.’

From this research, some thematic elements emerged. First was the idea of trans-humanism and the manufacture of synthetic human beings. Among futurists, *trans-humanism* is a continuing hotbed of controversy. According to Humanity+, an organization that embraces the idea of merging humans with technology, the definition of

transhumanism is: “The intellectual and cultural movement that affirms the possibility and desirability of fundamentally improving the human condition through applied reason, especially by developing and making widely available technologies to eliminate aging and to greatly enhance human intellectual, physical, and psychological capacities” (HumanityPlus, ans. 19, para.1). Oxford philosopher, Nick Bostrom (10), writes

“Virtual reality; preimplantation genetic diagnosis; genetic engineering; pharmaceuticals that improve memory, concentration, wakefulness, and mood; performance-enhancing drugs; these technologies are already here or can be expected within the next few decades. The combination of these technological capabilities, as they mature, could profoundly transform the human condition. The transhumanist agenda, which is to make such enhancement options safely available to all persons, will become increasingly relevant and practical in the coming years as these and other anticipated technologies come online.”

The idea is fraught with debate on political, scientific, moral, ethical, religious, and philosophical levels. Speculating on potential outcomes, if some form of the transhumanist ideology were to come to fruition, is rich with potential in dramatic narrative. The topic is also bound to create some of the disruption and provocation that is obligatory toward achieving the kind of discussion and debate that design fiction can foster.

A more technologically advanced idea is that of a truly sentient, artificial intelligence capable of “living” within a self-aware, cogent, and emotive synthetic human

body. It too is within the realm of technological feasibility. Therefore, an early thematic element was the interaction of these two design technologies, a techno-human and a completely synthetic version of a human being. To consider such ideas and their requisite levels of technological advancement becomes a determining factor for the timeframe in which a story could occur. Consequently, based on current scientific forecasts, the period between the late 21st and mid-22nd century was chosen to allow for scientific plausibility. A far future of 150 years also helps to pre-empt the inherent nature of *near-future* fiction to become obsolete before the story can be published. (A view widely held by many science fiction authors, and futurists).

Gleaning from the debate and ambiguity that surrounds topics such as “the human condition” and the lack of any definition for limits of what can or should be “enhanced,” the author began to create characters and situations. Establishing a date and the theme of human/synthetic interface not only becomes a sufficient stake in the ground to begin drafting a story, but also creates a set of social, cultural, political, and scientific gaps that the author needs to fill in order to fully understand the universe in which the story unfolds. As writer Alan Moore states in his book, *Writing For Comics*, “What is important is that the writer should have a clear picture of the imagined world in all its detail inside his or her head at all times...The point is that once you have worked out the world in all its minute detail you are able to talk about it with complete confidence in a casual manner without hitting your reader over the head with a lot of exposition. (22)”

Nevertheless, 150 years is a considerable amount of time to have elapsed between the present day and the setting of the story. The process of writing became a balance

between decisions that drive plot and the geopolitical and socio-technological prerequisites to make it so. For matters primarily of utility, a crime drama was chosen as a device to fulfill the necessity of moving the narrative forward. Then, in typical narrative form, the story incorporates characters and drama, conflict and resolution with the objective of crafting a final embodiment as a graphic novel.

4.1.2 The Screenplay

The project began with a screenplay, a particularly unique form of writing that is conceived to “show not tell.” Designed for film or television, the screenplay uses language—within the rules of a highly structured format—to present action, dialog and setting. The conventions of the form constrain the writing toward what is seen and heard with some small amounts of essential direction in terms of props or transition. Standing in direct contrast to prose narrative, screenwriting is intended to allow for ample creative direction and interpretation from a film director. Because it focuses on what is seen (visual) and heard (dialog and sound effects), it also lends itself to a logical conversion to a comic book script.

The requirements and conventions of screenwriting, along with coaching on style, form, and the necessities for a successful narrative, were part of a screenwriting class through the Theater Department at OSU. Within the 10-week context of this class, the cast of characters, their names, histories, motivations, personalities, written visual characterizations, plot, conflict, and resolution were fully drafted, refined, and finalized

in an 87-page script (the approximate length of a feature film). The story went through many working titles and finalized with *The Lightstream Chronicles*.

For this project, the writer and the “director,” or in this case, the artist, are the same as the author of this thesis. Therefore, much of the visualization occurred during the writing. The screenwriting process, as it would in a movie or television screenplay, also required that the author make detailed determinations of setting and props, clothing and appearance, as well as time of day, temperature, and location. Interior details or elements of technology such as how doors appear to open or the visual result of some functional technology must also be described in advance of their physical or virtual design. They are not yet diegetic prototypes. There are additional considerations of choreography and how characters interact with each other, their surroundings, and the props.

The result was a fully developed and coherent storyline with requisite amounts of tension, drama, and action to sufficiently advance the narrative. While the author was writing in full awareness of the objectives of a design fiction, most of the story writing advanced the objectives of the narrative rather than to establish opportunities for creating diegetic prototypes. It is possible that this was purely a matter of working style rather than a deliberate attempt to separate the writing from the design, but as a result, the author carried the primary task of setting the stage of thematic provocation. Then, as the author shifts to the role of designer, it is both in support of the context as well as providing subtext. This can be in the form of the deliberate diegetic prototypes essential to moving the narrative forward i.e., “He carried the gun to the table,” and the resulting design of the gun, and also the texture and form of the environment which, at the point of

writing, are not fully developed i.e., what is rusty, what elements appear in the background, or what else can be added for continuity of setting and mood. The designer must now determine what additional prototypes are required to make these futures believable or to add textural realism to the narrative world and to visualize what the author has described verbally. This contribution can serve to emphasize, support, or contradict the themes through the execution of the visual and virtual design.

4.2 Science Fact to Science Fiction: Context and Support

Once there was a complete story with the required beginning, middle and end, there was a considerable effort undertaken to “fact check” and establish a plausible undergirding for the story to support Moore’s “imagined world.” A timeline was developed to establish the sequence of events that enabled the future of *The Lightstream Chronicles* to exist and to fill the 150-year gap between current day and the setting of the story. Part of this was purely creative maneuvering of political, social, and economic changes along with wild cards such as war and natural disaster. A second part required research and speculation of technological developments in medicine, communication, transportation, and energy. In some cases, it required a change to content or revision to a section of the script to conform to the correct chronology of past events. In some cases, the past was retrofitted to accommodate the future.

Since the foundational themes for the narrative were formed from ideas that were gleaned from futurist writings and general surveys of imminent scientific developments, it was possible to collect a short-list of 40 technologies (many of which have already seen

prototypes). The list in Table 1 graphically demonstrates that technology and design are central to a host of global human issues with major social implications. In a real future, only some of the technologies listed may come to pass, but all could be influenced, enhanced, or negated by others.

Collectively, these technological advancements have some bearing or serve an enabling function to the world that is depicted in *The Lightstream Chronicles*. These enabling technologies may seem foreign to a 21st century audience—just as the smart phone might seem to an early or mid-20th century audience to be fantastic and marvelous—but completely commonplace to those who use them everyday, despite the new behaviors they may have created.

Internet glasses and contact lenses (Parviz)
Driverless cars (Overview, DARPA) (Kaku)
Video wallpaper (The Flexible Display)
Virtual reality-Haptic Technology (Ruvinsky) (Cha)
Ubiquitous computing (Bell)
Expert systems + virtual human experts (Carroll) (Foltin)
Gene therapies (Kelland) (Kaku)
Holistic scanning and detection (Blümich) (Kaku)
Stem cell therapies (Bowling) (Kaku)
Nano-machines in body / blood (Nanotech) (Cuitan and Sasu)
DNA chips (DNA) (Amato)
Carbon nanotubes (Center) (Mirror) (Keller)
Atomic transistors on the quantum level (Poeter)
DNA computers (Collins)
Efficient solar, wind hydrogen power and fission (Kaku)
Electronic skin (Wogan)
End of Moore's Law (Hansell)
Augmented reality (Arthur)
Holograms - (Hockenson)
Bio-Suits - (Derra) (Extravehicular)
Robotic surgeons, cooks, musicians (non-human form) / emotional characteristics (Kaku, 2011)
Merging with robots (Brooks) (Simmons)
Robotic pets (Kaku, 2011)
Advanced genetic therapies, designer children and enhancements (Simmons) (Gene Therapy)
Material shape shifting-Programmable matter (Smith) (Yeo)
Recording dreams and memories - (Biever) (Nishimoto)
MRI mouse-tricorder (Blümich)
Mind reading (Mind) (New Directions)
Mental machine control (Hammock)
Mental phone calls and internet queries (Simonite, 2008)
Social robotics - Roboethics (Social Robots) (Moon)
Robotic limbs - surrogates and avatars (Salton) (Kaku)
Reversing aging - Preserving youth (Dye) (Kaku)
Cloning (Kilner) (Human Cloning)
Resurrecting ancient life forms (Alleyne) (Kaku)
Designing new life forms or blending (Johnson)
Replication - Molecular Assemblers (Kurzweil) (Kaplan)
Room Temperature Superconductors - (Nanotech)
Chinese Megacities- Pearl River Delta - (The Urban Portal)
Synthetic humans (Connor) (Knight)

Table 1. Plausible technologies within the next 50 years.

4.3 Questions for the Future

4.3.1 Design and Narrative as Provocation

In some form, most of the technologies and advancements in Table 1 are imminent. Here and now, decisions are being made. For the author/designer, it becomes an experiment in speculating as to the impact of these decisions on societies, governments, culture, and individuals. It also becomes a form of design research in a construct with different rules and possibilities. If these issues are expected, common fare, or stereotypical, they risk losing significance. Thus, in order for the story to have the potential of moving beyond merely an entertainment, the ideas must be disruptive enough for the reader to take pause and—with the designer—ask, “What if?”

In the context of this project, the examination is multi-fold. The designer, as author, must create a purely hypothetical drama and then speculate on how it might be made real, how design can contribute to authenticity, and what new things and ideas might be woven into the texture of human lives. Pulling threads of science fact into science fiction, the designer creates the visuals and style to serve as both prototype and narrative guide, utilizing the conventions of the art form and the tools of the graphic designer. However, the objective to provoke discussion remains.

According to Bleecker,

“Science fiction can be understood as a kind of writing that, in its stories, creates prototypes of other worlds, other experiences, other contexts for life based on the creative insights of the author...[The practice of design

fiction] “...creates... conversation pieces, with the conversations being stories about the kinds of experiences and social rituals that might surround the designed object. Design fiction objects are totems through which a larger story can be told, or imagined or expressed. They are like artifacts from someplace else, telling stories about other worlds... Design fiction is about creative provocation, raising questions, innovation, and exploration. (7)”

From Resnick’s interviews with Bleecker and partner Nicolas Nova, “...They characterize the success of their work mostly around the extent and quality of discussion and debate that a project inspires among the practitioners and others exposed to the work. ‘ ... If everybody’s happy about [the outcome], it means that perhaps we failed, because it doesn’t raise any questions or ... help to discuss potential futures in a disruptive way”” (Quoted from Resnick, 34).

On one level, if the design and narrative are successful, the reader can observe how design becomes an accelerant for culture and society. If the surrounding design in messages, products, tools, and in lifestyles is inextricably woven into culture, then it bears examination of what gets made and how it will affect culture—rather than to simply wait and see. The result is provocations—not only philosophical but also design provocations arising from an exponentially revised technological future. These, of course, would have to include human questions, not just technological ones.

Allenby and Sarewitz describe three types of technologies that coincide with complexity. Using the illustration of modern jet airplane travel, the authors illustrate Level I technology as “cause and effect”, namely an effective way of getting from point A to point B. If we only look at Level I, it is easy to agree that the technology is automatically “good,” but to do so ignores Level II, which deals with the complex systems behind it such as “...airline corporations, the government security apparatus...and market capitalism (38).” In fact, Level II technologies can have infrastructures that inhibit better technologies by affecting where new technologies expand and how fast they are adopted. “Technologies do not act in isolation; they are connected to other technologies, and to social and cultural patterns, institutions, activities, and phenomena that may interact in ways that no one is able to predict or control (39).” At Level III, the authors describe an “...earth system—that is, a complex, constantly changing and adapting system in which human, built and natural elements interact in ways that produce emergent behaviors which may be difficult to perceive, much less understand and manage” (63).

The technologies of Table 1 will spawn changes just as technologies of the past have dramatically affected societies and behaviors; from the discovery of fire to the printing press, to steam power, to the internal combustion engine, to air travel, to nuclear power. Technology and all the subsequent design that it proliferates have played a role in creating social change.

Take a simple question such as, “What if humanity could live forever?” In the eyes of a trans-humanist, the idea has only an upside; musicians, artists, statesmen,

thinkers, saints, and lovers continue their contributions indefinitely. In the eyes of the more skeptical science fiction author, so too do the demagogues, dictators, serial killers, and rapists.

These questions rest at the tip of the iceberg, a short list of not only philosophical questions but also design questions that arise from an exponentially revised technological future. While these creative choices can be tracked to plausible technologies, in the final analysis, speculation is both artistic and experimental. Though based on artistic/design research, the decisions are creative. Depending upon which pathways are chosen and which switches are connected, the future can vary dramatically.

Ultimately, the story becomes one of people. Design and technology interact with culture and behavior. While much of design really is innocuous, ubiquitous, and simply part of the texture of daily living, some of it does change behavior and society.

4.3.2 Author as Auteur

In all these applications, the author/designer is presenting ideas and concepts that are selective and therefore potentially personal and introspective. In a 2011 *Brooklyn Rail* review of Daniel Clowes' graphic novel *Death Ray*, the author is lauded for his insightful story of a self-rationalizing teenage superhero who can vaporize, without a trace, anyone he chooses. According to the reviewer, "In crafting a serious superhero story, Clowes exposes the self-rationalizing culture of the powerful state" (Kartalopoulos). Clowes, who has functioned as both artist and writer of several acclaimed graphic novels including *Ghost World* and *Art School Confidential*, also becomes social, political, and

philosophical commentator in the process. Clowes asks readers to ponder a uniquely human tendency to self-rationalize—especially when the power is in their hands.

In *The Lightstream Chronicles*, the author creates a science fiction graphic novel and asks that the reader ponder the same self-rationalizing tendency as it applies to slick new enhancing technologies and the “design” decisions that fostered them. It looks at not only the option to make the decision, but the ethics of whether the decision should be made, as well as society’s competency to choose wisely. It becomes as much a philosophical question, or an exercise in design research, as it is a fiction. When a science-fiction author constructs a narrative around these ideas, a philosophy is, to some extent, inseparable. The ultimate purpose and consequence may be self-examination that can inform the decisions and behaviors of today. An assessment inside this cultural dynamic might give individuals pause to ask the tough questions about the complexity of interrelated systems, the potential for abuse, and how to deal with these as a society.

4.4 Story Synopsis with Spoilers

Exposition

The story is a crime drama set in 2159. The key characteristics of this culture are: A single global government structure, New Asia, a trans-human/post human society resulting from human enhancement through technology and genetic engineering. There is widespread use of synthetic humans. Acts of terrorism combined with the gradual replacement of global political systems by a science-based, intellectual coalition known as the “Lights” led to nearly a 60 year prohibition on public religious gatherings. As the

ruling intelligentsia is debating a relaxation of religious restrictions, there is an underlying social commentary about the rapid proliferation of human enhancements (transhumanism), concurrent with a decline of the moral framework that religion used to provide. The result is a society of dramatic contrasts. Freedom from disease, aging, and other human defects is readily available for the affluent (living in TopCity) though more difficult to obtain for the impoverished (living hundreds of floors below in DownTown).

In characteristic fashion, there are abuses of technology. Thus, synthetic humans have been used for illegal purposes, genetic enhancements have taken a bizarre turn, and the most perverse fantasies can be indulged inside the “V,” virtual reality programs. While humankind has used technology to enhance its capacities, there has been no cure for the capacity of evil within the human heart.

Plot

The story is set in the global capital Hong Kong 2 (HK2) and follows the team of human and synthetic detectives who are given 24 hours to investigate the brutal, sexual assault of a young prodigy-scientist, Sean Colbert. Earlier in the day of the assault, Sean, the pioneering designer for many synthetic humans, commissioned the newest and most advanced synthetic, Keiji-T, a police detective. While synthetics that are virtually indistinguishable from humans are relatively commonplace, Keiji is the first synthetic to have fully organic biological functions, organs, and tissues around a super alloy frame. He is also enhanced with the ability to determine a suspect's guilt within 1 percent accuracy and authorized to carry out the punishment; in capital crimes, this is death.

Sexual assault is a capital crime. Hence, Keiji becomes the controversial first synthetic authorized to harm a human. Convinced that his new creation will need to make moral judgments, Sean embedded Keiji with a liquid circuit that contained a compendium of religious texts. The circuit was intended to lie dormant until, or in the event of a relaxation of religious prohibitions. Though not widely known, Sean is the stepson of HK2 Prefectural Governor, Takeshi Nakamura. Upon discovering this, Chief of Enforcement, Colonel Lee Chen escalates the investigation to Priority 24: find the guilty and administer justice within a 24-hour period. Chief Science Officer, Kristin Broulliard, her right-hand “synthetic” Toei-N, and human detective Jack Guren are assigned to the case. Despite strong reservations about Keiji’s license to kill, the team is left with few options; they must enlist the services of Sean’s ultra-sophisticated creation, Keiji-T.

While Keiji is investigating the case, a programming glitch releases the religious texts into Keiji’s system and he undergoes a transformation of conscience and humanity. Over the next 24 hours, Keiji quickly deduces that Lee Chen, Chief of Enforcement and one of the highest-ranking officers on the police force is the perpetrator. For the crime, Lee enlisted his special force of technologically manipulated police synths. The technique, known as *twisting*, or reprogramming a synthetic for criminal purposes, is also a serious crime.

In a flashback, sequence Lee’s past is revealed. Exploited by his father as a boy in various human/synthetic prostitution rings, Lee is then rescued and sent to a rehab shelter where select memories are erased and he is able to return to society free from the scourge of his past. Lee joins the police force and rises through the ranks. Then, in a fateful raid

of the same shelter that rehabilitated him, Lee gains access to archives of his old memories. Unable to reign in his curiosity, he re-seats them. This produces radical behavioral changes, vindictive and murderous behavior directed toward the memory of his father, that he is unable to control. Lee has become a key figure in a syndicate that sells *black market experiences*. Lee's use his force of twisted synthetic Enforcers to abduct, sexually abuse victims, and capture the direct visceral memories. These are packaged as virtual experiences and illegally sold on the street, often to "experience junkies."

In an earlier scene where Sean was commissioning Keiji, Lee Chen confronted Sean demanding access to the unique technologies that differentiate Keiji. Sean refused. Later when Lee Chen discovered that Sean was visiting in a dangerous section of DownTown, he took a small team of Enforcer synths to "rough him up." In a darkened alley confrontation, Sean's appearance triggers the memory of Lee's father and Lee Chen loses control. He orders his Enforcer synths to beat and rape Sean. There, Sean is left for dead to make it look like a random DownTown attack.

Keiji confronts Lee with his crime, a chase ensues, and there is climactic fight between Keiji, Lee, and a host of Enforcer synths. When the heavily damaged Keiji is about to be extinguished by Lee Chen, Detective Guren steps in at the last moment and Lee is killed. As Guren and Keiji return to the hospital where Sean is recovering, Keiji shares his "new conscience and moral framework" with Guren as a remedy for New Asia's social decline. The story ends with Keiji heading off for repairs, Sean recuperated, and the crime solved.

4.5 Visual Planning and Panel Layout

Upon completion of the script as a screenplay, it was translated to a graphic novel script. It was then necessary to gain a rough estimate of the amount of work and resources required, time for analysis and examination, and completion. Quickly, it was determined that a road map, or visual outline was essential. The first task was to develop a page grid and overall panel layout. To allow maximum opportunity to approximate the anamorphic, widescreen format ratio (roughly 2.40:1), and exploit the cinematic aesthetic, a page size of 8.5" x 9.5" was chosen which resulted in a spread size of 8.5" x 19". Subtracting margins, these dimensions become roughly 7.5 x 17.625" to provide a double-page spread image that is 2.35:1. (Figure 14) The single page layout was divided into 12 panels per page. This format allows ample opportunity for variety and pacing in horizontal and vertical formats as well as exaggerated widescreen panels. In Dave Gibbons', examination of his contribution to *Watchmen*, in the book *Watching the Watchmen*, the artist delineates his own thumbnail process, which became his working guide to completing each issue. His methodology was based on drawing the angle of the camera, actors, scenes, lighting and locations.

Initially, this approach seemed logical for the purposes of *The Lightstream Chronicles*, and several pages were attempted using this technique. (Figure 15). Quickly, however, it became apparent that Gibbons' sketching process was, in part, intended to communicate with the author, Alan Moore, as a means of verifying intent, as well as visualizing the script. There was no need to have this level of communication when the

author and the artist were the same person. More appropriate to the task was a “shot list” with a tentative flow that took into consideration page turns, character movements and the requisite placement of dialog in advance of rendering. All of these considerations

Figure 15. Early page layout sketches.

were important before creating images. The screenplay was then modified to a *shooting script*. “The shooting script is [a] more elaborate, precise, overwritten version of the screenplay. The shooting script is normally broken into shots featuring precise cinematography terminology such as close-ups, dolly in, overexposed. The idea here is to inform the crew what is going on” (Moura). The “suggested” camera angle, and ultimate shape of the film plane (panel size) informs the production process. Since there was to be no “crew” or director, and the artist and writer are the same person, this version of the script provided highly detailed descriptions of camera angle, size of panel, and what was to be included within the camera frame (Figure 16).

Page 93

Panel 1 Very tall. Kristin, 3/4 length from front, back lit, crosses her arms facing Keiji. [Still holding the tablet in her right hand.]

KRISTIN
(OK.)
(Stand up. Let's see what's
under that suit.)

Panel 2 Very tall and vertical of Keiji's finger parting the front of his body suit. Possible a zipper, but more like an invisible seam that is self healing but opens easily

KRISTIN (O.S.)
(To the waist is fine.)

Panel 3 Profile view from mid thigh to head. Window as backdrop. Keiji and Kristin stand inches apart. His suit hangs around around his hips. Kristin looks down. Her finger is about to touch his chest. It is millimeters away.

Page 94

Panel 1 Very tall. Camera moves around slightly to focus close up on Kristin's finger tip depressing Keiji's skin on his pectoral muscle.

KRISTIN (O.S.)
(Warm. Why the muscles, the
sexy bod?)

Figure 16. Excerpt from shooting script.

A nomenclature (Figure 17) was developed for each type of panel based upon the 12-panel grid established for the pages. For example, direction in the shooting script such as “very tall” corresponded with a rendering size of 627 pixels x 2308 pixels. This

Figure 17. Page grid, panel variables and nomenclature.

made it possible to plan very detailed shots and render only what the “camera” would see, thus saving time required to build unnecessary background, environment or props that would be “out of the frame.” The panel sizes specified in the script were mapped out for each of 224 pages, (Figure 18) and served as a guideline providing ample opportunity to adjust. As production began, the shooting script provided an important road map for production. It also yielded a tentative list of how many renderings would be required to complete the project.

Figure 18. An example of panel layouts assigned to each page of the script.

Chapter 5: Design and Development

5.1 Computer Graphics Definition and Description

Computer Graphics, (CG) is a potentially broad term that could include any type of computer-generated imagery. The term can be applied to computer-aided design (CAD) for engineering, architecture or product design, to scientific visualization and, in the case of special effects, to movies. The resulting product can take the form of a single 2-dimensional image, generally referred to as CG illustration, or the form of CG animation. CG illustration, when it is applied within the context of entertainment or game development, is most often referred to as *concept art* or *visual development*. Concept art has a stronger pop-culture reference and therefore a rigid definition is difficult to find. For the purposes of this paper, concept art/visual development is a form of illustration often associated with science fiction and fantasy and is widely used in the film and game industries. It is used, in the early story process, as a means of visualizing concepts that contribute to the design of environments (Figure 19), characters (Figure 20), props, vehicles and other components that inform the final product. The *concept* description derives from its use “in the early story process.”

In the last 25 years, the tools of concept art have changed significantly. Concept artists throughout most of the 20th century worked in analog methods such as paints,

Figure 19. Environmental concept art, Daniel Dociu. (Dociu)

Figure 20. Character design concept art, Hanjianhao, DeviantArt.com (Hanjianhao)

markers, and pencils, and while these techniques are still in use today, a large percentage of concept artists generate images using illustrative digital software, such as Photoshop®, or Corel Painter®, along with hardware such as digital drawing tablets or screens.

Concept artists are most frequently called upon to generate multiple ideas quickly. Therefore, visualizations may take the form of analog or digital sketches. One method for rapidly generating visual ideas is called *speed painting*, where sophisticated concepts, environments, characters or a combination thereof are generated in an hour or less. In another technique called 3D overpainting, basic structural or character forms, or elaborate perspectives are created using 3D software and then painted over using two-dimensional painting software such as Photoshop. Matte painting is another form of variation on concept art. It is conceptual in nature and subject matter but can be extremely detailed and realistic scenes of cities or landscapes that serve as a visual backdrop for foreground action, usually for a final production in a film or game sequence. (Figure 21).

Figure 21. Matte painting. Andre Wallin.

5.2 The Rationale for CG

There are three motivations for selecting CG as the method of visualizing the future. First is reader engagement. CG can provide the reader with richness in the visual experience and enable a level of detail that encourages the reader to linger and study scenes and panels for their informational detail. Subsequently, these details can also inspire speculation from the reader. This is a stylistic approach, which serves to enhance the storytelling. In Will Eisner's *Graphic Storytelling and Visual Narrative*, (44) the comic legend cautions against "powerhouse layouts, and excessive rendering technique, which can overwhelm and distract the reader and dominate the story." However, regardless of whether Eisner would or would not approve of the use of CG, his position on the importance of artistic style on storytelling is clear. "The reality is that artistic style tells story. ... the reader absorbs mood and other abstracts through the artwork. Style of art not only connects the reader with the artist but it sets ambiance and has language value" (149). He continues that, "Certain graphic stories are best told with a style appropriate to the content" (149). The appropriateness of CG rendering to the speculative, fictive future also provides a multi-layered experience offering the reader the ability to move quickly through panels connecting graphics and text, to move slowly and linger over the imagery, or to return later for further inspection. The deeper inspection yields detail that may or may not be explained in the narrative. This, in turn, can generate speculation by the reader and stimulate thinking about the future.

Secondly, a sense of realistic detail serves another purpose. The process of building, surfacing, lighting and rendering through a virtual camera has obvious

analogies to film production that, in the end, provide a level of control that serves to enrich the story visually, provide cultural legibility, and afford more experiential and emotional resonance. This cinematic realism becomes a mechanism to, however briefly, suspend disbelief. Author and literary commentator Ted Gioia, states that, “The meticulous creation of a vivid and inspired context is usually essential to the overall effect in any extended work of conceptual fiction” (Gioia). Realness in the scope of this project does not take on the form of actual working prototypes or immersive environments that have been used by other practitioners, but it does strive for an emotional connection and aims toward the objectives embodied in all of these practices. Since a sense of realness is imperative, the digital fabrication of prototypes presented through a rendered image addresses this. Each scene is created in CG, so everything must be built with sufficient detail that it can be studied. Therefore, not only the size, shape and ergonomics of the design, but the finer details of its materials and functions may also be required. All this adds to the realism, and realism adds a dimension to the visualization and prototyping that allows the item or idea to seem perfectly at home within the future culture. Even though audiences largely acknowledge it as “artificial,” CG has become a required technique in science fiction filmmaking to suspend disbelief and visualize worlds that have no tangible counterpart in contemporary reality.

Finally, through the process of “manufacturing” and virtual “making,” the designer is called upon to include speculation into the design process and ask a myriad of questions that might include not only how the designed object or environment might look but how the user might interact with it, what it would be made of, or how it might affect

culture and behavior. In a prose-only novel, the author is afforded the luxury of describing a device or interaction with fine detail or loose reference. In the CG visualization process, the object must be designed, and the interaction must be choreographed. The prose-only author might say, “The device fit snugly in his hand.” For the graphic novel, more is required. The resulting speculation calls on the designer to experiment or iterate ideas and interactions. How might something be held, or touched? Is it soft and sculpted? Is it small and round? What movements of the body or limbs might it require? How do the resulting behaviors play in a social or personal context? The virtual physicality of the CG process forces the designer to explore these issues and ask these questions, requiring a dimension to the designer’s exploration and learning.

5.3 Character Design

The characters of *The Lightstream Chronicles*, both male and female, are consistently portrayed with idealized physical forms. While this opens the door to criticism on several levels, there is strong rationale for this approach. The typical complaint in comics usually concerns the depiction of women as overly voluptuous with images that pander to the stereotypical adolescent male reader and one that overtly contrasts men as fully clad and women as half-naked. In the case of *The Lightstream Chronicles*, however, there is no discrimination between males and females. All the men are just as muscularly perfected, and their body suits just as tight fitting as their female counter-parts. There are several reasons for the choice of body style. First and most important is that it is story appropriate. The design fiction future of *The Lightstream*

Chronicles has been built in equal parts on what exists today, what is projected for tomorrow and then some creative speculation about what the behaviors and fashion that might result when everybody has "the perfect body." According to Barbara Cohen, PhD., "We are a culture nearly addicted to individual control and the notion seems to exist in our society that fatness means a loss of self-control - which is considered the ultimate moral failure in our culture, and perhaps the most frightening of all fears" (par.1). In the story narrative, the citizens of 2159, through a combination of genetic engineering, and continuous monitoring and augmentation of body chemistry, are enabled the gradual sculpting of any body shape, musculature, and proportion. Hence, the story contains a visual proliferation of ideal bodies as a direct result of technological advancements in medicine and body design. The plot then serves to drive body exaggerations in this context and provides the opportunity to examine the perfect body phenomenon in the cultural context of the narrative. The fixation with the human body is a centuries old phenomenon and when the ideal is no longer elusive, it gives pause to ask how this element of design and technology will influence behavior and culture.

Andrew Curry examines this idea in *The 1910 Time Traveler*, asking what a 1910 Edwardian might think of 21st century London. He thinks many of the technologies may well be conceivable. The bigger changes may be in the quality and realism of content, the disappearance of industry and cleaner air. "The bigger changes, though, would almost certainly be about values." The society is more international, more politically civil, the role of women has changed dramatically, and then there is:

“Casualness of dress and social etiquette generally: both Edwardian men and women tended to travel well covered up, even at the beach. In contrast, our informality of clothing, and the casualness of our language – even rudeness – along with the end of most visible signs of etiquette, would be a profound change... But there’s perhaps an underlying story here. When we think about long-term change with the benefit of hindsight, the things we think are unfathomable are usually the technology – planes, cars, computers. But it is at least as likely that the things that time travelers would most struggle with are the shifts in social values, which are almost invisible to us because we swim in them constantly and adapt ourselves to them as they change”(Curry).

If an Edwardian would be shocked at a 21st century bikini, it is completely within the realm of plausibility that a present day time-traveler would be equally aghast at thinly fitted, body suits that show off every detail of the ideal physique.

There is also another, more subtle rationale as homage to the superhero genre.

There are two aspects to this objective:

- 1.Dramatic effect.

Comics historian R.C. Harvey (35) calls to mind the name of Burne Hogarth who drew Tarzan for a period in the 1940s. Remarking on Hogarth's unique and, "minute attention to musculature," Harvey says, "This treatment gave dramatic emphasis to the actions being depicted: Hogarth's character, their muscles shown in bold relief, appeared

to strain with the effort of their endeavors. The effect was to add a visual intensity to the drama of the narrative."

2. Heightened realism.

Detail in anatomy adds visual excitement. In discussing the artwork of comic artist Jack Kirby, Harvey, refers to his realistic style. "Realistic rendering helps make it all seem possible, and Kirby's skillful deployment of the medium's resources makes the action so exciting that we overlook the impossibilities. We can't help concluding that super heroics are possible—but we must add, only in the comics" (Harvey 40). To aficionados of the classic comic genre, as well as to game enthusiasts (who are certainly targeted consumers of the graphic novel) superhero depictions with exaggerated anatomy and operatic movement are an expected part of the presentation.

5.4 Decisions on Style

To select the CG process as the only means of developing content for this project inevitably leaves a distinguishing and characteristically CG mark on the resulting visual product. CG lends itself to construction, scale, and believability in color and texture. It is also capable of ultra-realism, where distinguishing it from photography or film becomes exceedingly difficult. However, this ultra-realism is neither required nor desired for this project. The criteria for establishing a visual style balanced between a method that was both achievable and satisfied a set of creative objectives:

- a. Cinematic feel
- b. Richly detailed, visual imagery

c. Stylized realism

By its nature, the CG process and its “tools” mimic the framework of cinema. 3D software makes use of “cameras,” “lights,” “lenses,” “aspect ratios,” “props,” and “atmospheric effects” which provide the opportunity to leverage a cinematic feel. By enlisting basic effects such as the Rule of Thirds, dynamic camera angles, wide formatting, motion blur, and depth of field, it is possible to provide a sense of camera and suggest a cinematic visual style.

The tools of sophisticated CG software provided the means for satisfying the objective of richly detailed imagery. The richest, most visual imagery in comic books is usually reserved for the cover. This can be something of a let down for the reader when the artwork that comprises the interior panels is not as dynamic and exciting, nor from the same artist as is often the case. Strategic detail can provide a rich supplement and texture to the narrative and enable the reader to study, linger, or return to images to find additional information or bits of backstory, thereby enhancing the overall experience. From the perspective of design fiction, this strategic detail may cause the reader to pause and question why some unexplained object exists in the background, how something is constructed, or the material from which it is made 150 years from now.

The third CG influenced stylistic decision can be called stylized realism. It is an effort to take advantage of the intrinsic style of CG character design, such as the ability to create a single character that can be posed and photographed in unlimited ways while still imposing a style that deliberately separates the visual from any attempt at ultra-realism. In Figure 22, the CG artist has made a deliberate and successful attempt in approximating

realism. However, it is arguable whether a single artist could sustain this level of detail through 200 pages of scenes, poses, actions, and settings.

Figure 22. Intentional Realism. (Mokaram, 2007). (Wysocki, 2007).

Figure 23. Stylized Realism. Sim, 2013. Dämmrich, 2012. (Sim) (Dämmrich)

The illustrations in Figure 23 are equally well executed but convey a style—along with content—that the viewer acknowledges to be non-real though realistic. In the first two examples there is legitimate questioning on the part of the viewer as to whether these images are, indeed, photographs or renderings. In the latter two examples, the viewer, by style and subject matter, knows that the images are not real, but that does not diminish the experience or storytelling power.

5.5 CG Processes and Techniques

There are a variety of stylistic techniques, both analog and digital, for generating concept art. The technique chosen for this project enlists both 3D and 2D digital graphics software to arrive at a final image. The art process begins with digital wireframe

constructions of all the “physical” objects that appear in a scene, from props to characters and environments. Structural elements, models, are derived from three sources: base characters from Poser® 3D software, 3D stock models, and custom fabricated models.

5.5.1 Poser 3D software

Poser Pro 2012® was chosen primarily as a timesaving tool to avoid constructing, from scratch, a separate and unique character for the dozens of characters and extras that appear in the story. Poser models (Figure 24) are pre-constructed base characters, in various male and female body types that can be customized with unlimited variation to

Figure 24. Poser interface and base male character.

attain a specific personality. This customization process includes body and facial sculpting through “morphs” and “parameter dials” that allow for infinite and unique variation.

Through third party suppliers, a large selection of props, texture maps, hair and clothing are also available that have been pre-programmed to fit the base characters and conform to the morphs and changes made by the artist. Hundreds of hours went into this customization process for both the base characters and any conforming props to create unique “personalities” and to attempt to separate otherwise “stock” models from appearing as stereotypical CG people. (Figure 25)

Figure 25. Evolution from base character to custom "personality."

Additionally, Poser characters are “pre-rigged.” Rigging refers to virtual (and invisible) skeletal structure that enables joints to bend and characters to be posed within the program to the way that must appear in a given panel/scene in the graphic novel. Furthermore, Poser allows export of the final figure to Autodesk Maya®, the software used for final scene composition and rendering using MentalRay®. Each character is configured and positioned in Poser and then imported into Maya. The import process is not seamless however, and additional time-consuming adjustments must be made after importing the figures so that they will integrate smoothly with the Maya software.

5.5.2 3D Stock Models

There are a number of online outlets for pre-made CG stock models. 3D stock is available in a variety of formats that are compatible with a wide range of 3D software platforms. Models vary from simple shapes and forms such as a banana or apple which can often be downloaded free of charge, to sophisticated, highly detailed, scale models of entire cities for hundreds, even thousands of dollars. It is common for film industry special effects and animation studios to enlist the use of these highly realistic models to save time in production. In this project, specific period building styles such as Chinese tenement buildings, background interior props such as a 20th century computer or television, lamp post or cargo door were purchased and downloaded to provide ambient believability to scenes and locales. The objects were imported into Maya, where the basic shapes were customized with structural changes or modifications. Surface maps, included with the model, might also be customized. (Figure 26).

Figure 26. Example of barrels imported as stock, and then modified using custom modeling to form a type of cryogenic storage device.

5.5.3 Custom Fabricated Models

The third method for creating structural elements for scenes was to construct them from scratch. Some of the self-constructed elements used in the final project were models built and collected over years of working with CG, but most were created specifically for the project. The software chosen for this was Maya, the logical choice due to the fact that all of the final scenes of the story are composed and rendered on this platform. Using a combination of either polygonal or NURBS modeling techniques a spectrum of objects, from small hand-held props to the scale model of a future Hong Kong, were all

constructed in Maya. For interpretation of physically accurate models, the process required research into real-world standards and measurements. This included details such as the average width of a city block, the height of the floor of a building, and the dimensions of a host of common objects such as lighting fixtures, tables or chairs. For vehicles and controls, ergonomic dimensions were gathered from Dreyfuss', *The Measure of Man*. Products like a kitchen food and beverage replicator, a virtual bed, and air tunnels that wrap around the spires of TopCity were designed with a mixture of imagination and design logic. Other designed elements include dinner and glassware, desks and tables, magnetic levitation chairs, display screens, weapons, interface design and a plethora of signage. Interior scenes that had no precedent required a conceptual design for elements such as interior signage, hardware to open doors and operate devices, floor coverings, structural elements, lighting, and other furnishings.

The story takes place in Hong Kong in the distant future, requiring additional research to collect hundreds of photos of Asian street scenes, signage, and general ambiance. Chinese signage was vetted through a translator. Chinese language characters were a combination of traditional and modern Chinese along with some Japanese with the speculation that Asia will become a homogenous blend of Chinese, Japanese and English.

5.6 Overview of Diegetic Prototypes in *The Lightstream Chronicles*

5.6.1 Evolving and Non-Evolving Technologies

The future of *The Lightstream Chronicles* is built with diegetic prototypes that, by virtue of the narrative, become infused with meaning. At the same time, they provide a

sense of realism and increase engagement, as well as foster discussion and debate.

Because design permeates culture and is an inextricable part of daily life, as it has been for centuries and will likely be in the future, design also blends in, and the people living in, and with it, don't particularly take notice of it. As Kirby suggests, this is the purpose of diegetic prototypes: characters take them for granted, which tells the audience that these are, in context, not magical but rather everyday technologies.

To illustrate this, it is helpful to consider how current day "artifacts" have evolved. To a mid-20th century audience, the idea of a smart phone or an iPad may seem extreme or fantastic, but in the context of today's culture, these tools are commonplace and have become significantly less remarkable to the users. The smart phone, as an example, is a designed technology that brings with it new efficiencies and at the same time engenders new behaviors. To imagine by what means humanity will communicate in 150 years, this author was required to speculate on what new behaviors that technology might engender. The first step is to research trending technology. In the example of the smart phone, there will likely be the convergence of many technologies. Miniaturization is one aspect. With the relentless pursuit of faster and more robust computing, physicists have calculated that although silicon chips continually get thinner, there is a molecular limit to how thin something can get. Unless molecular computing can pick up the slack, things will come to a grinding halt. As a result, the end of Moore's law (the idea computing power doubles every 12 months, or so, which is predicated on the use of silicon chips) is predicted to occur in the next 20-25 years. For the purposes of the story, it was assumed that this level of nano-engineering was successful. It serves, however as

an example of the level of research-begets-speculation that was part of path to arrive at each diegetic prototype.

Not everything in the story was designed to be "new." Many future technologies were imagined as a blend of today and tomorrow. For centuries, society has had a fascination with furniture and seating that will probably continue, only the materials will change. Just as "antiques" from a previous century find their way into current lifestyles, fashions, and personal artifacts, it is likely that these elements of 20th and 21st century culture will be carried forward into the 22nd century. It is plausible, therefore, that a LeCorbusier sofa winds up in the living space of a character from *The Lightstream Chronicles*. This mixture of old and new could also be expected in architecture. Though it may be surrounded by radical new designs, classic and even ancient architecture will be continually restored and renewed. Other artifacts like books and art, or artifacts from the past, will likely continue to be collected as they provide meaning and hold relevance in the culture.

5.6.2 Building the Visible World

An advantage of fabricating a virtual world in three dimensions is that everything can be built to scale with as much realism as desired. Objects that the "camera" sees therefore, must be created or found, given texture and color, and it has to be built with sufficient detail to hold up "under the magnifying glass."

Hong Kong was constructed using GPS data, satellite photography and Google® Maps. This data was also applied to story elements. When characters go from Center City to Mong Kok (a district in Hong Kong), the story and models required calculations to enable characters to get to their destination with consideration as to how long it would take. An architectural marvel of the future named the TopCity Spanner is a structure that covers most of old Hong Kong and became a highly detailed and complex model that had to integrate with the scale of the actual city. All of these were constructed in Maya and textured from source photos, image maps generated in Photoshop, or downloaded as stock textures and then customized. (Figure 27).

Figure 27. A page from *The Lightstream Chronicles* showing an aerial view of Hong Kong 2 with the TopCity Spanner. The Hong Kong waterfront and bay are to scale.

For architecture, almost all of the high-rise structures in TopCity, the newest and most modern part of the city, had no precedent so their models had to be created from scratch. These were designed as taller versions of cutting edge 21st century buildings, some of which are 300 stories. Some of these were built to include detailed atriums, aircraft landing pads, restaurants, and bars, even though they may not actually have a part in the final story. Other parts of the world were combinations of stock models, and customized 3D modifications. For scenes that take place in DownTown, a decaying version of the low-rise sprawl of 20th century Hong Kong, the distinctive look of Asian city-architecture has a needed to be recreated. A few existing stock models were found that captured the basic essence of lower-middle class Asian city dwellings. These were purchased then modified and customized to achieve the city look of DownTown. Additional elements were added such as signage, a 22nd century version of street vending as well as the effects of decades of decay and neglect in the shadow of the TopCity Spanner.

In the story, the TopCity Spanner covers most of old Hong, and provides a clean break between TopCity and DownTown. The spanner is conceived to use high strength, lightweight, “programmable” materials that provide the ability to shift shape, organically to accommodate new growth. The Spanner became the new, affluent “street level,” towering 50 stories above the original streets of Hong Kong.

Thus far, all of the interiors are original creations built from scratch and populated with stock and custom props, furniture, or general props that a stylist might select for a photo shoot or movie. Stock props were particularly useful in some interior scenes. There

is little sense in rebuilding a Barcelona chair if a nicely built model already exists. A scene in chapter 2, however, calls for a food and beverage replicator, so it must be designed. Other props, including dining and glassware, desks and tables, levitating chairs, screens, weapons, interfaces, and a plethora of signage were also custom creations.

5.6.3 Examples of Diegetic Prototypes

5.6.3.1 A “Virtual” Interior

At the beginning of the story, there is a shot (Figure 28) of an office in an unknown location. There are three levels of story-based design here. First are the props.

Figure 28. A "virtual" office and props.

A cantilever desk is imagined as sort of a giant, glass, viewing surface. Throughout the narrative, it is assumed that though everything can be experienced in the virtual realm, some characters will prefer a more traditional method, or a mixture of what is experienced in the mind and the tangible versions. Technology in 2159 will plausibly allow retinal projection such that control of the temperature, traditionally requiring a human machine interface, can be “called to mind”, visualized as though floating in the users field of vision, and then adjusted, telepathically, through eye movements or other internalized technology. Hence, a glass viewing surface would be unnecessary unless the user preferred an interface that was more analog in appearance. The same rationale extends to an overhead light, a futuristic-looking, albeit 21st century light fixture, and other props such as a whisky glass, some rare books, and a plank floor. The next level is the environment. Here, a user has selected to populate a virtual environment with an eclectic mix of props that they desire to have in an office. To illustrate this, the setting is an old, Mediterranean street scene that was customized from realistic, period stock models. Finally, upon further inspection is an example of a retinal interface overlaying the scene. This “UI” might be the “environment set-up” where a user picks and chooses props, and environment down to temperature and even an ambient scent. With closer inspection, these details become more pronounced.

All of this is important to the narrative because it relays visual information, sometimes incongruous, sometimes logical, that suggests a different reality than the reader is accustomed to and entices them to zoom in more closely to achieve clarification or to aid them in formulating assumptions about both future technologies and human

behaviors. Most of these are not dealt with in verbal narrative, rather these diegetic prototypes provide layers of information, much the way Underkloffer, Kirby, and Bleecker describe demonstrating the, “rituals and the drama—the social elements that stories are always about.”

5.6.3.2 Luminous Implants

Integral to the story line of *The Lightstream Chronicles* is a future where technology has become internalized and built-in to most humans. The visual narrative alludes to enhancements to body chemistry, diagnostics, awareness, and communication as another way of demonstrating the subtle connection between design/technology, human behavior, and social ritual. An implanted visual/tactile interface was conceived as a means for characters in the story to have a command center literally at their fingertips. The diegetic prototype assumes the implantation of devices like these into the human body. This is already a common technology in cochlear implants, pacemakers and medical information chips as well as security and tracking devices. Combined with advancements in retinal displays through contact lenses and eventually built-in devices, everything that comprises the present day smartphone—and more—could quite plausibly be implanted into the human body. In the story, relaying and transmitting messages or images is achieved through the nano “chipset” implanted at childhood. These react with luminous implants just under the skin of the fingertips.

The system of luminous implants is professionally installed just below the skin of the fingertips and configured through nanotechnology with a predefined number of

receptors on each finger. The fingertip control center provides characters with manual control and can serve multiple functions from a tactile “keyboard,” to sensory receptors—touch transmitters capable of transferring visual and emotional data, releasing chemical agents into the body, and amplifying haptic reception directly to the brain. Users learn a sequential language of “taps,” fed via the body’s own electrical impulses to the brain, to access different content and transmit or receive information. “Keystrokes” are learned through infused tutorials that go directly to the brain, resulting in instantaneous knowledge of the keyboard language. Additional commands are programmable and customizable to the individual. Tapping the correct sequence makes a “call,” and the user can see the person on the other end through a retinal projection and talk, or simply “think” their conversation. In this instance, design has become internalized. *Behavior is the only telltale sign that design is in use.* The implants can be adjusted to glow in any color and adjusted for brightness or made to disappear. In the future, this feature is a fashion statement. Figure 29 depicts a user diagram of basic, “factory installed” keystrokes that are learned. Once installed, manufacturers can upgrade the software, and sensory capabilities through the same receptors.

This rather elaborate interface serves as an illustration of a technology on which the body and therefore the user come to rely. It is evidence of not only learned behavior but also social convention and cultural expression. Not unlike a present-day train full of commuters avidly typing into handheld devices, the fingertip interface of luminous implants introduces the design/culture influence of a distant generation.

Figure 29. Programmable “keystrokes” of the luminous implant system.

These implants become a recurring visual theme in the book. Graphic representations of these dots appear on surfaces and other user interfaces, indicating a means of authentication or transmission. Ironically, they occupy the same real estate and have come to replace natural human fingerprint.

5.6.3.3 A Lightpod

Diegetic prototypes become physical attestations of larger systems and serve to convey a variety of subthemes within the story, and the designer/author is obliged to construct these systems that surround the characters and with which the characters interact. Fingertip access to a world of data, virtual experiences, and communications requires a sophisticated version of present-day Wi-Fi and an evolution of embedded Smart Phone technology on the nano level. The term Lightstream became the name for

Figure 30. A public lightpod and close up of fingertip light transmission pad.

the system designed to encompass this interconnected world of data and transmission. It is the “public access” portion of a larger electronic “mesh,” omnipresent and all-encompassing, that connects the totality of data.

Public lightpods were designed as stations where pedestrians can press their finger on a light transmission pad and have direct access to the Lightstream. (Figure 30) As a diegetic prototype, it is another instance of a larger system and theme.

5.6.3.4 Interface Design

In the book *Physics of the Future*, Physicist/Futurist/Professor Michio Kaku, comments on why certain future predictions, such as how society would become paperless or that the Internet would wipe out television, failed to materialize. Kaku says that the desire to have a printed “hard copy” proof or face-to-face communication is both instinctive and emotional and is a feature that has distinguished man for thousands of years. (13). This idea, that the human condition is the human condition, clings to things like comfort and relationship and what can be seen and touched. According to Kaku, “The lesson is that one medium never annihilates a previous one but coexists with it. It is the mix and relationship among these media that constantly change (14).” Based on this premise, although the story projects a future in which humans will be able to visualize and experience everything in the confines of their mind, there is the likelihood that the tactile realm and the ability to touch even virtual buttons will provide a level of visceral assurance to engage and deploy whatever the software is intended to carry out. Fingers will continue to need to touch something.

It is presumed that, even in a day when access to anything (whether mathematical or experiential) is instantaneous and internalized, the human mind will still have the need to prioritize, file, sort, organize, and visualize that hierarchy. Because the restricted

access Mesh and public access Lightstream provide an unprecedented level of information, learning, and data within one complex system, a common visual interface was designed. It uses a visual system inspired by analog icons of folders with truncated corners, which, when engaged, ratchet open. Their contents may be verbal, visual, audio, or immersive based upon the preferences of the user. An example of a cascading interface is shown in Figure 31.

Figure 31. Cascading interface.

With elements of a unified visual vernacular in place, additional, more complicated data can be visualized. In Figure 32, one of the characters is, while sleeping,

downloading a vast array of data—everything from job-related news briefings, to learning a language, the names of staff members, and a personal calendar. There is also a stream of ongoing biodata including respiration, heartbeat, body temperature, and internal chemistry levels.

Figure 32. User interface with data streamed via light to someone while sleeping

The story's user interfaces can be contained in the mind, transferred via touch to appear on virtually any surface, or projected as holographs. A design has also been included for a variety of "smart surfaces." These are "connected" and capable of receiving and displaying directly from the Lightstream.

5.6.3.5 Vehicles

There are perhaps no present day artifacts in the Western world that are more ubiquitous or taken for granted than personal vehicles. Though flying vehicles have

become something of an obligatory trope in science fiction stories, there is science to justify such concepts. Numerous designs for small aircraft have been successfully tested that use hydrogen fuel cells. Other transport using magnetic levitation technology is also being actively researched. The future that is conveyed in *The Lightstream Chronicles* uses both options. The image in Figure 33 shows a police enforcement cruiser, together with a companion drone (hovering above) that is monitoring pedestrians for unauthorized activity. It is intended to convey a surveillance society, where privacy is always in question. Their visual design was informed through equal parts aerodynamic function and ominous presence.

Figure 33. A police enforcement cruiser and surveillance drone.

Figure 34. The MagShuttle public transport (left) and an air taxi (right).

The MagShuttle, (Figure 34 left) was designed as a small magnetic levitation public transit pod that moves vertically or horizontally to destinations around the city. To convey a society with multiple modes of transportation, air taxis (Figure 34 right) were included to provide service to areas beyond the reach of the MagShuttle, or in many cases to direct access to an address.

As with all of the diegetic prototypes in the story, part of the design process is motivated by the narrative. In the case of vehicles, characters need to get from one location to another. For the designer the next step is to identify or fabricate the constraints of the problem. It is insufficient, for example, to simply assume that there is some method by which vehicles fly without calling upon a plausible technology that is already in existence or under serious research. The resulting design, then, is a combination of the imposed constraints, objectives, and the less obvious cultural motivations. In the example of the MagShuttle, imposed constraints included a magnetic levitation system that used

rails, both vertical and horizontal, and that accommodated passengers similar to that of an elevator. Internal displays were included to give passengers magnetically resonant images of their surroundings, destination, and point of origin despite the prevalence of fog in the Hong Kong area. One design parameter was that the design shape would appear “friendly,” an attribute that is also mimicked in the MagShuttle logo.

5.6.3.6 Visual Communications

A social subtheme of the story concerns a society that can live for hundreds of years. Questions of motivation, ennui, and the meaning of life are woven through the narrative. Verbal exposition early in the story describes a culture that is preoccupied with *virtual* diversions ranging from innocent to decadent. Again, the designer/author must consider culture and the social climate that such a society might produce. Though the story conveys a future in which the government owns most of the business, advertising serves to emphasize the importance of commerce as a motivation to maintain a workforce with aspirations and goals as well as “opiates” for diversion. The visual narrative reveals that certain advertising throughout the city is “aware.” These signs, via transmission sensitivity to a subject’s implanted chipset, can present information based on assessments of an individual’s prior purchases and preferences. All of this is intended to convey a society with unlimited choices. Visual communications for the story fall in three primary categories: advertisements, signage, and logos/emojis. Each is designed to provide subtle cues that serve as background for story elements. This author assumed that the future would still hold a mixture of “good” design (aesthetic and tasteful) as well as

Figure 35. DownTown signs and diversions.

Figure 36. TopCity signs and advertisements.

“bad” design, and these differences are intended to be distinguishable in advertisements designed for Downtown and TopCity. Downtown advertisements and signs (Figure 35) include high-tech, programmable tattoos, “clinics” where skin can be replaced, “pawn shops” where experiences can be sold from stored memories, and oxygen bars that serve a variety of inhalable gases. These intentionally reflect what the 21st century may see as an uncomfortable level of moral decline as well as diegetic prototypes designed to demonstrate a cultural “realness.” The signs and advertisements help to further immerse readers in the picture of a possible future as well as provoke thought, discussion and debate. In TopCity, examples (Figure 36) may be just as provocative but these are targeted to a different class of people. Most signs need only to name the product or service and then supply the requisite alphanumeric *tap* sequence.

Logos and emblems are another means of diegetic prototype intended to suspend disbelief about a 22nd century society. Figure 37 shows the logo for Hong Kong 2 New Asia, with its focus on science and genetic engineering: a police department badge emblazoned on leather, a MagShuttle logo that mimics the distinctive *friendly* shape of the shuttle pod, and the logo for Almost Human Corporation, the world leader in synthetic human production.

Figure 37. A selection of emblems and logos from *The Lightstream Chronicles*.

5.6.3.7 Body Suits

Body suits also carry a technological story justification. These thin, second skins are imagined to contain a web of sensors that can react to and modify skin temperature, address inflammation, transmit bio-data and light-based impulses, and stimulate glandular responses as well as morph into accessory shapes and configurations.

Current technology has already enabled biometric bodysuits. According to a 2004 press release from Arizona State University, "...ASU researchers call their outfits the Sensory Chameleon Bodysuit, which act as a "smart second skin" through the integration of printed organic opto-electronics and integrated flexible nano-genetic devices on textiles. They enable real-time remote personal health and medical monitoring into multimedia and sensorial clothing" (Derra). As this technology becomes more advanced and miniaturized and bodies become more idealized through genetic engineering and internal chemistry modification, a tight fitting second skin is a plausible mainstay of future fashion. Additional advancements in synthetic fibers and fabrics will enable programmable color and pattern changes, self-healing, and morphing features. Retracting sleeves, unfurling a hood, expanding a pocket, or storing objects is all within the realm of

Figure 38. Character engaging a programmable fabric bodysuit

Figure 39. Programmable fabric bodysuit with hood formed from the base material.

advanced fabric design. This is depicted in a scene from chapter 1, Figures 38 and 39, where a character produces a hood, from the basic structure of his body suit before stepping into a rainstorm.

5.6.4 Summary of Diegetic Prototypes

The previous examples are only a small sampling of elements that would constitute a future ethnography. The project required that the author/designer, as part of the broader experiment of creating a design fiction, become immersed in a future where the rules of society, technology, and behavior have changed. This occurs with virtually every page and serves to underscore, at least for this designer, the sheer volume of artifacts that surround and support daily existence. Each instance may require elements of

research to establish plausibility, elements of the practical to drive/support the narrative, or simple contemplation on the trappings of individuals and society. In all cases, it is the objective of design fiction that none should *command* our attention but rather fold into the everyday of the story as they do in everyday life. In no instance was the designer able to ignore or disregard these elements that fade into the background. Each prototype necessitates deliberation for context, meaning, as well as visual appearance and functionality. They also pose new ideas to ponder such as when *invisible* or embedded design becomes standard issue for the enhanced human and the only outward manifestation that design is in use is through behavior. How might that effect society?

5.7 Continuing to Book Completion

5.7.1 Initial Feedback

Chapter 1, a total of 99 renderings and 38 pages, was completed in autumn of 2012. An initial draft was submitted to a dozen colleagues and friends for feedback. Since it remains a work in progress, the sample size was small and feedback was anecdotal and not quantitative. Comments ranged from proofreading suggestions to comments on action and flow. A strong majority was very encouraging and asked for more. Final changes were made to address problematic dialog and the accommodation of a few overlooked comic conventions such as only capitalizing the letter “I” when it is used in the first person, as in, “I am,” or “I will.” A few other personal style decisions were standardized, and the first chapter was loaded to a server for download. The link could be accessed through *The Lightstream Chronicles* website (<http://thelightstreamchronicles.com>).

An additional campaign with a video (Denison, Vimeo) was launched through the popular crowd-funding site *Kickstarter* (Denison, Kickstarter) in an attempt to raise money to print all six chapters when they are completed. The 40-day campaign was unsuccessful but nearly 270 copies of chapter 1 were downloaded from the server.

Technical resources enabled a count of downloads but no additional analytics. In hindsight, accommodating the extra time, financial resources, and server capacity that would enable at least rough demographics of location and at best a means of capturing visitor contact information would have been a valuable feature for later analysis. Unfortunately, while it was considered, it was dismissed as prohibitively complex and costly. Therefore, assessing why, out of 270 downloads, only 20 people contributed, had to be gleaned from blog testimonials and case histories of other failed *Kickstarter* campaigns. From this, three areas were isolated: awareness, quality, and target audience.

Those who had an awareness of the project could be divided into two groups: those with genuine interest (fans), and those with tacit knowledge. The first group tended to be close supporters of the project, or associates with a penchant for graphic novels and/or science fiction. The latter group was comprised primarily from a 300-person mailing to colleagues, past associates, and acquaintances. This list also included approximately 30 comic, sci-fi, or gamer site bloggers or e-journalists. It became evident that fans—those with a genuine interest in the story or the project—were those most likely to support the effort, and the comic, having just been launched, had no time to develop this type of fan base.

There were no discernable issues with quality and continuing assessments place the visual quality of this book within its genre as very high.

Finally, the core audience for a futuristic science fiction graphic novel is probably males, 15-34, and the CG visual style has probably a direct appeal to “gamers,” a similar but distinctive demographic. Since the chapter 1 download was housed on a 3rd party site, it was not possible to directly track the actual demographics or analytics of those who downloaded. However, using Google Analytics data for *The Lightstream Chronicles* web site, 387 people visited during the *Kickstarter* campaign, of which nearly half came to the page that linked to the download. This points to two key objectives moving forward.

1.Reach.

The main objective is to reach a broad audience that extends beyond the core group that is those most receptive to the genre. This process must begin with a more concerted effort to the core group from where the numbers can expand.

2. Followers.

This point is related to the first, but building followers appears to be the most successful way of promoting additional traffic and building anticipation for more chapters and eventually the supporters that will enable the story to be printed in book form. To begin building a long-term fan base, the author has reconstituted the first chapter into pages that are being released as a weekly web comic. Releasing a page per week and promoting the site via social media, comic blogs, and specifically sites that cater to web-comic readers over time could produce the desired following.

5.7.2 Completion Timeline

CHAPTER 2	Page 39-88	48 pages	June 2013
Scene 8	Police Headquarters		
Scene 9	Lobby and waiting room Prefectural Medical Center		
Scene 10	Sean's Hospital Room		
Scene 11	Kristin and Toei return to shuttle		
Scene 12	Kristin's Apartment		
CHAPTER 3	Page 89-116	28 pages	August- September 2013
Scene 13	Hallway at Police Headquarters		
Scene 14	Kristin's Office		
Scene 15	Sean's Hospital Room		
CHAPTER 4	Page 117- 147	30 pages	December 2013
Scene 16	Technman's hangout		
Scene 17	The alley		
Scene 18	The firing range		
CHAPTER 5	Page 148 - 179	31 pages	April 2014
Scene 19	Kristin's office		

Scene 20 Elite Corps Terminal

Scene 21 Kristin's apartment

CHAPTER 6 Page 180- 226 46 pages September 2014

Scene 22 Hanger deck Police Headquarters

Scene 23 Chase scene

Scene 24 The warehouse

Scene 25 Shuttle back to the hospital

Scene 26 Sean's hospital room

Scene 27 Hospital rooftop

Chapter 6: Conclusion

6.1 Experiencing The Story

Experiencing *The Lightstream Chronicles* has two foci, one for the reader-observer and one for the designer.

6.1.1 The designer's experience.

For the designer, the experience of creating the story, the research, scriptwriting, planning, design, and production become processes of continuous challenge. Each embodies design in different ways from the not so familiar means of writing fiction and dialog, to the more familiar methods of visual thinking, planning, prototyping, rendering, retouching, selection and layout. These, however, could all be grouped into the category of *doing* and are valuable exercises in polishing the craft of a visual designer. A less visible benefit of the design fiction process is accessible only if the designer embraces the intentional act of questioning and reflection. The fabrication or visualization of realistic diegetic prototypes can play a major role in suspending disbelief about change and the plausibility of near and distant futures, but at this level, they are little more than contextual support for more believable stories. In order for diegetic prototypes and artifacts from the future to provide the subtle (or sometimes not so subtle) commentary on the artifacts in use today and the interconnectedness of design and culture, the designer must ask, "What if?" And the question does not concern the, "if" of whether the

artifact *could* be made; it asks what would happen *if it actually was made* and subsequently was used. This inquiry yields stories of human interaction and the resulting behavioral and or social changes that occur. The experience of the designer, then, can be twofold: as hypothesizing visualizer of future artifacts—adjunct to a believable tale—or thought leader who welds artifacts with human behavior in the form of narrative to provoke discussion and debate. The latter was the intention of this thesis and project, and the result for this designer supported the value of the, “What if?” proposition. It yielded and continues to yield an experience that drives reflection into the design practice at several levels.

6.1.1.1 The interdependency of things

In the exercise of imagining a future scenario, the designer cannot rely on the typical sources of information gathering. There are no users to observe, no field studies to conduct, interviews, or marketing data to access. The designer must *construct* the world while at the same time identifying at least the large-scale forces that helped to shape it. In the process, this author/designer gained a solid respect for the complexity that surrounds the society and culture, how everything is connected in some way to everything else, that nothing is as simple as it seems, and that no design is benign. Design creates ripples. There are consequences, and too often design is seen in isolation as an end unto itself. It is never that easy. Design lives on, and often in ways the designer does not see or consider. If design stops with the “solution,” it misses far broader implications of an expanding network of potentialities. As it ages, design continues to contribute in positive or negative ways. In the same way, the social forces that incite design have their own

sometimes-frail dependencies that may not last, or could last too long.

6.1.1.2 Respect for constraints

It is common for designers to complain about the limitations imposed by rigid constraints, possibly financial, market driven, shortsighted demands or possibly uninformed preferences from project leaders or clients. At the same time, design practice can draw too much comfort from the wall of constraints that forms around the project, limiting, possibly unnecessarily, the option of thinking outside the box. Creating this speculative design *began with a narrative*—people and their interaction—from which a design process evolved. The author discovered that it addressed both extremes of *constraint perception*, first by forcing the designer to impose the dreaded constraint. Yet, a new perspective emerged when viewing the narrative as a disengaged 3rd party. Here it was possible to view what those constraints, good and bad, have wrought on the design, the human interaction, and the behaviors. It becomes a means of examining the *evidence from the future*, the decisions that were made, and the constraints that fostered them.

6.1.1.3 The impact of design

As design and technology grow closer to encompassing one another, the project created an eye-opening awareness, if not alarm, for the rate at which today's society readily enfolds design and technology. To this author, from an assessment of the cultural past and seemingly insatiable hunger for more information, more entertainment, more distraction, and the technology that enables it, the discussion as to whether humanity adopts to enhance itself with whatever implant or augmentation comes along, is a push over. Society will enfold it, embrace it, and ask for more.

Through reflection, the author's diegetic prototypes provide at least the opportunity for social introspection and a way of slowing (at least long enough to converse and examine) the headlong pursuit of more simply because we can. Therein the designer's experience is enhanced through a far deeper examination of the process of design and its consequences. These experiences will be elaborated upon in chapter 6.2.

6.1.2 The reader's experience.

For the audience, in many ways, *The Lightstream Chronicles* is an interactive graphic novel. Though it is not built with sophisticated programming that incorporates motion and sound, it is built in a high-resolution format (300 dpi) that on most computer displays requires the reader to engage by actively zooming, panning and scrolling to navigate the pages. This was intentional. Building this level of detail facilitates the process of inquiry. It draws the reader into a more inquisitive relationship with the environment, the characters, and the diegetic prototypes. This sense of realism, of tangible artifacts, tactile surfaces, and atmospheric detail is critical to the design fiction experience. The resolution serves the dual purpose of having artwork that is of sufficient resolution for an eventual printing and encourages the reader to push into the imagery up to five times, thereby increasing engagement with the narrative.

This is a key distinguishing difference between traditionally hand drawn sequential art and conventional web comics. While hand drawn art can be scanned or digitally built at a similar or higher resolution, it most often does not hold the level of 3-dimensional detail that would, upon inspection, yield any further value (beyond a fine

examination of the artist's technique). With CG that is built, realistically textured, lit, and rendered in virtual space, the reader must adopt the illusion that the objects and people are not simply implied through the artist's technique, but actually exist in 3D space.

It should be noted, however, that for some, this could be cumbersome. A few readers, expressed expectations of a common web comic or e-book. For others, either due to small screen resolution (the story does not translate well to a smart phone – though is quite successful on a tablet) or a lack of skill and proficiency with the tools of navigation (zoom, pan, scroll), there was some frustration at not being able to read quickly through the pages. On most displays, a view of opposing pages, as in a spread, makes the dialog (though readable) too small to be comfortable. The desire, indeed the requirement to move closer, is unavoidable, as intended. Most users found the experience to be robust, and were pleased that the story could be browsed in multiple ways, and explored more than once to reveal new detail that was missed during the first viewing.

As the author struggles to decipher the Google® Analytics™ for *The Lightstream Chronicles* web comic it is possible to discern visitors from 24 countries. Despite the fact that other pages provide backstory, character profiles, and a blog, only a tiny percentage travel to these links. The web comic page, the overwhelming destination with a viewership now in the hundreds, encourages readers to *download* the newly updated pages and view them in their picture viewer so that they can zoom in and engage to receive the fullest visual and visceral experiences. If this goes according to plan, once the page(s) is downloaded, the visitor leaves the site and their behavior is no longer observable. Unless the author invests in the next phase of investigation, (which may

indeed be an area for continuing research) it is impossible to tell if the story is provoking thought about the future. Indeed, if in the storytelling, the audience of science fiction and its design sub-genre stops with the satisfying act of consumption, a strong element of the meal is left on the table. Such design fiction is intentionally made and should be similarly examined.

6.2 Observations of the reflective practitioner

According to many futurists, the next 20, 30, or 50 years will change the complexion of humanity and redefine what it means to be human. *The Lightstream Chronicles* takes place in the year 2159, and if the last 150 years are any indication, the current social, technological and cultural world will have altered radically. Perhaps a science fiction writer (using a heavy dose of creative license) might simply decide what the world will be like 150 years from now. But in the context of this project, the designer was compelled to follow a course of due diligence before speculating on the design, the culture and the infinite number of possibilities that could affect it. From Table 1, the short list of some of these technologies illustrates the nature of these potential changes. In most cases, two citations from published journals or press announcements have been provided for the items on this list, but accounts of new technologies and the waves of unrelenting research breakthroughs would make updating this list a daily task. Current headlines attest to the fact that many ideas, cures, advancements, and dangers that once seemed like fantasy appear as real potentialities in some form. Technology and the subsequent

advancements in biotech, artificial intelligence, medicine, energy and transportation will send ripples into politics, religion and humanity.

Delving into the future of objects and technologies and their effect on the techno-social context as a means to uncover the downside is uncomfortable to think about. "It's important to explicitly acknowledge the drawbacks of any technological transformation—to "think the underside first," to think in a precautionary way" (Sterling, Shaping12). For example, there is tantalizing promise in 3D printer technology with ramifications that could create a paradigm shift in everything from individual empowerment to new possibilities of commerce. But who will ask, "Can you print a gun"? In fact, before this thesis could be completed, headlines have confirmed (Pierz) that it has already been done and debated on a radio interview, by author Chris Anderson, and not surprisingly dismissed. "When the genie gets out of the bottle, you get a really wide spread of uses. Well, you can't print a gun. You can print parts of a gun. I think that it's actually a really bad way to make a gun, you know. First of all, it's America. You can buy guns at Wal-Mart" (3D printing). These are responsible questions, but does the conventional retort, "Everything has a downside," suffice? Does the upside always outweigh the potential for abuse?

Design and technology are blurring into an inseparable form of *designechnology*, and it does affect culture. Once again, it is helpful to look at the evolution of the personal mobile phone from privileged convenience, to mass adoption, and now behavioral and social phenomenon. All good, perhaps, until issues of privacy rise to the surface which

are certain to escalate as the personal communication device evolves from hand-held, to surface patch, to internal implant, and near-future telepathy. Already, it is possible to pinpoint the position of anyone with a smart phone, track their activity, monitor texts, phone calls, downloads, internet activity, searches, transactions, hack passwords, and predict behavior. With newer more sensitive and invasive options the question might escalate to, "Can they eavesdrop on what I am thinking?" even if the user has said nothing. These questions can point to a characteristic of technology whereby it can concurrently provide the possibility of wondrous virtue and monstrous vice.

How then does society deal with the prospect of becoming more godlike in its abilities? If design fictions can engage the average person-on-the-street to dialog about the imminent future, then perhaps individuals will become more aware of their ability to engage in discussion and thereby help to direct the future rather than be directed by it. Perhaps, in the form of design fiction, these topics can be less caustic in their presentation and contentious in their controversy. And not every future discussion needs to be of the techno-human variety. The next transit system, hybrid vehicle, vaccination, hybrid crop, nuclear plant, or housing development could also bear further examination.

Can these discussions, disguised in a graphic novel —an entertainment —cause the kind of disruption and debate that can lead to a more active participation in shaping the future? The question becomes one of audience. A scholarly paper is one approach, but creating an immersive, even entertaining experience, may perhaps reach the broader audience that consumes popular culture and to whom many of the design technological

advancements will be targeted. As Resnick concludes in his analysis of what motivates individuals to become involved in changing the future, he uses the term agency.

"Scenarios work to enable agency in those who experience them by showing the breadth of possible futures and the inevitability of none.

Experiential scenarios augment this by adding depth to each individual scenario, in the form of visceral knowledge of what life in that scenario might feel like. Broadening and deepening participants' knowledge of possibilities enhances their ability to work usefully with those possibilities, enabling their agency" (82-83).

Other questions arise: Is it the designer's responsibility to raise these questions? Does the designer need to be the bearer of bad news, the eternal pessimist, or the grim reaper when it comes to future technologies? This author does not believe that the responsibility should lie squarely with the design profession. It is a matter of social engagement and individual agency. The questions are *wicked*, and the problems are vastly complex. Nevertheless, designers are uniquely prepared to contribute to these scenarios and through design fiction, to envision believable, speculative futures that can provoke the discussions that are so necessary to engage in before embarking upon the bright, glimmering designs with their inevitable downside. Whether designers take the initiative to generate these stories or are the instruments to help visualize possibilities, either through virtual or physical prototyping, the designer can help to provide the essential realism—through diegetic prototypes—and artifacts that form a cultural legibility of the future.

As the role of design and designers expands, there is the opportunity to develop new techniques that contribute to these future discussions. As debate over trans-human, technologies escalates, will designers simply adopt, or will they also debate? Allenby and Sarewitz assert that society is prone to the ideals of Enlightenment rationality and to react to new technologies purely on their Level I benefits without ever bothering to consider Level II and the wicked complexity of Level III. The authors also point out that society tends to divide itself into those who can only see the future as a utopia and those who can only see it as a dystopia. But these very characteristics of the argument, they say, are symptomatic of an inability to cope with the ramifications of what has been created. **“Our problem is that we want to turn everything into a problem that can be solved, when those problems are in fact conditions... (160). [Author’s emphasis]”** When Allenby and Sarewitz present 11 suggestions to help decision-makers and influencers cut through these issues, among them is to “...play with science fiction and multiple scenarios” (165).

6.3 Applications

6.3.1 Design Thinking and Foresight

In the course of this research—especially surrounding imminent technological advancements, the blurring of conventional distinctions between humanity, technology, and that which has been enhanced, along with something loosely called the human condition, together with a history of industrial and technological advancements that have yielded unforeseen consequences—the thesis concludes that designers can, and should,

play a larger role in helping to visualize possible futures. The rise of design fiction in discussion and practice among designers, scientists, researchers, and those in foresight studies underscores the concern for the rate at which the world invents and consumes technology and design. The pace of change has resulted in a rising call for new paradigms, and methodologies to analyze the decision-making process. Concomitantly, the design thinking methodology is broadening its influence. The designer's unique process, the art of asking questions, combined with a creative process and an adherence to systematic and rigorous iteration, is a combination that often produces surprising practicality and creative invention. It has worked to produce elegant and functional products, efficient and evocative spaces and compelling and effective communications. It has worked in capitalist commerce and third world micro-economies. It is logical to think, therefore, that this type of new thinking could make a similar contribution to the wicked problems of climate change, public policy and techno-human planning, among others. In fact, there is, "...a growing sense that design is a serious force for the shaping of collective futures, and a corresponding growth in the desire and ability to participate in that process" (Resnick 9). Nevertheless, the challenges presented by the potentiality of an impending social train wreck resulting from shortsightedness in adopting technical innovation, and transhumanism in all its varieties may, by default, fall to governments and corporations. Addressing some of these issues are the disciplines of foresight (sometimes referred to as forecasting) or futurist studies. These fields embody critical thinking about long-term developments to generate debate and participation toward

shaping the future. The question arises then as to how designers get a seat at the table in these discussions.

There are three approaches, which appear promising.

1. Design voice.

More papers and publishing are forthcoming on the marriage of speculative design and speculative fiction. The idea of embracing plurality, one of Allenby and Sarewitz's eleven principles for approaching the challenges of a techno-human future is one strong rationale for opening the discussion to new methodologies. Scenario thinking and design fiction can be powerful means of examining options and identifying multiple paths forward. When Allenby and Sarewitz suggest that debate and discussion can employ science fiction as a way of playing with scenarios, they note that institutions such as the military live and die by adaptability. "They know that no real-world situation is likely to mirror their scenarios, but they also know that such activities provide experience in adjusting to unpredictable and rapidly changing situations" (164).

2. Design practice.

As discussed in chapter 2, while only a small number were featured, there are a niche of design practitioners who are attempting to engage a broader public in issues of human and societal futures through a variety of methodologies under the broader application of design fiction. These voices, though few, have made an impact at conferences and symposiums that explore design, technology and the future. They continue to probe the possibilities and raise awareness of the link between design and future thought. Independent design fiction by design practitioners takes the form of

thought leadership, but design involvement can be broadened through participation as well. Designers have a unique ability to visualize possibilities, either through virtual or physical prototyping. In developing future scenarios, much like a science fiction film director employs the talents of an Underkloffer or Mead, the designer has the ability to provide the essential realism – through diegetic prototypes, to suspend disbelief about change. As is the intent of this author’s project, it is possible to create these scenarios. At least it is possible to participate in the future scenario being explored so that it becomes more emotional and engaging not only to researchers but to the public as well. Designers then can help provide what Dunagan calls the “deep, gut-level learning; the difference between simply knowing about something and truly feeling it” (Quoted In Resnick 46).

3. Design skill.

Part of a designer’s skill set is the ability to anticipate conflicts and obstacles in the design process and, in many cases, see beyond presumption, and the obvious parameters of scope. Asking, “What if?” can often be the starting point for thinking beyond the obvious. The ability to infuse *unconventional inquisitiveness* into the design process can not only lead to more innovative solutions, but it can lead to uncovering hidden constraints that are not articulated by clients at the onset of a project, often saving precious time and needless waste. While this ability is honed from professional experience, the practice and appreciation of technique can occur early in the designer’s training. Design fiction and exercises associated with speculative fiction can be a starting point for the designer’s use of the, *what if* tool. For example, a class may receive the following challenge: Create something that would be part of everyday life 50 years from

now. What types of questions arise? As part of a pilot study, this question was posed to 34 creative practitioners: If confronted with a project to create something that would be part of everyday life 50 years from now, what types of questions might you begin to ask yourself? 68% said they would first have to establish some sense of the future. Another 15% said they would have to set up their own constraints. Either approach requires the designer establish assumptions about what is or is not possible in the future. A *narrative* becomes essential. Many designers agreed that even *speculation* of possible futures would require some degree of research and for some, extensive research (Denison).

Narrative may not be the word that designers use to describe the design process, but in effect, creating stories that surround the design process and the end product, giving context and meaning to why it exists, looks, and performs the way that it does, is storytelling. As part of the designer's toolbox, design fiction also provides experience in adjusting to change, anticipating outcomes, and planning for the unexpected in a creative, yet systematic process of *what if*.

6.3.2 Design Education

The aforementioned voice, practice, and skill deal with ways to increase awareness of the role of design at the table where far-reaching, complex systems are discussed —frequently among disciplines other than design. In discussions among design schools, this may be a contributing factor that demonstrates the need for trans-disciplinary design curricula to frame the idea and appreciation for design thinking in disciplines such as engineering, business, computer science, urban planning and science,

among others. Instilling undergraduates across diverse program interests with knowledge of the process of design as a kind of thinking that makes solid contributions regardless of the application builds advocacy for design involvement.

Steven Dow writes,

“Stanford has a school of design known as the “dSchool.” About five years ago, they began to teach a problem-solving process known as “design thinking.” Design thinking is an interdisciplinary method of problem solving which puts a premium on prototyping and developing empathy for the target users. These days, when you step into the dSchool, you’ll find posters urging students to defer judgment, go for quantity, encourage “wild” ideas, build on the ideas of others, have one conversation at a time, stay focused on their topic, and think “visually”(Dow).

This thesis proposes that, to make productive use of combining narrative and design as part of the designer’s toolbox, building it into design education is a logical first step. Such a course could be geared to design undergraduates and graduates, as well as open to cross-disciplinary student participation. Though a proposed introductory course to design fiction would not necessarily include a graphic novel due to limitations of time, objectives in the study/creation of a design fiction are numerous:

- Constructing a speculative ethnography
- Writing a narrative
- Identifying behaviors that change over time and their causes

- Creating scenarios that could aid or interfere with design
- Exploring the idea of wild cards (hypothetical events that change everything)
- Inventing constraints to frame a project
- Anticipating design evolution / user behaviors and psychology
- Identifying diegetic prototypes to support a narrative
- Prototype design and creation (virtual or physical)

Emphasis should center on the interdependency of design and culture and through the exercise of prototyping and creating narrative that surrounds the design. Prototyping is especially valuable because it forces the designer to set parameters, explore options, and wrestle with the physical or (virtual) physical instance, but it is the narrative that is perhaps the most essential component. In constructing a narrative, the student must consider people, their lives, what they do, how they behave, and how those behaviors are affected by the design. The learning becomes larger than how to make something work. Because of the uniquely constructed set of constraints, the exercise moves into the realm of how the design has affected the culture.

Questions and discussion could include:

- How would this design change you if you were using it?
- Is that good or bad?
- How has the society affected the design?
- What iterations of the design will the society require?
- Will the design adapt or remain constant?

- What is the lifecycle of the design?
- Does the exercise encourage/provoke debate?

Opening a course of this type to interdisciplinary collaboration could provide valuable perspectives and input that is at the heart of Allenby and Sarewitz's call for plurality. A similar technique of working in multi-disciplinary teams could also be translated to application at conferences or symposiums to envision and anticipate future outcomes. The collaborative, interdisciplinary practice could also further an appreciation for greater levels of design participation in other fields.

6.4 Summary

In the broadening realm of design, beyond its more conventional practice, lies the potential to apply a unique problem-solving method together with an envisioning process that employs diegetic prototypes and narrative to frame future scenarios that provide insights into the motivations and consequences of design and technology.

Regardless of how this narrative is manifest, be it film, experiential recreation, physical instantiation, or other visual interpretation, a sense of realism through the use of prototypes can help to suspend the disbelief about change, resulting in a more emotional and resonant understanding of a future potential. Understanding these potentialities can tell a society something about the human condition, a condition that is less a problem to be solved and more a reality to be seriously considered in any course of action. Designers can take the lead in this effort as both the thought leaders, practitioners and facilitators for envisioning the future. Early training and experience in the process of asking, "What if?"

can become a valuable tool not only for tackling the more conventional challenges of making better things, spaces and communications, but in shaping the fabric of the design-technology landscape that is permeating culture, society and humanity.

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Appendix A: Shooting Script for *The Lightstream Chronicles*

The Lightstream Chronicles
By
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Page 1

Caption: Chapter 1: above and below

Page 2

Panel 1 Picture of and office in the middle of a Mediterranean courtyard.

Page 3

Panel 1 Full spread Backstory. Desktop view of the Lightstream feed. Someone is talking to a computer named Sevin

Page 4 Spread continues

Page 5

Panel 1 Another full spread with more backstory.

Caption: This is Journal Entry. Make it secure -- real secure. Timestamp. If you're reading this then you know the encryption. Congratulations! On the other hand, it might just mean that I'm not around anymore.
Things are heading up. Keiji was right. It goes deeper than anyone knows. It's important to get the story down now while it's still fresh in my mind. This is the way it happened... OK, Sevin. Download direct from my memory. All of it. Even what might be floating around in there, -- I'll edit it later. Ready when you are.

Page 6

Panel 1 Full spread continued. More backstory appears on the desktop.

Page 7

Panel 1 Tall and wide. Close up on person's thumb as they press some sort of encryption thumb scanner on the desktop

SEVIN

Prepared to infuse.

Panel 2 Extreme Close Up of image from title page. A glowing white light from inside a mechanism. Around the outside edge of the device is inscribed "Government of New Asia Lightstream Authorized Lightport" There is also the logo for the Lightstream the glowing L.

Caption BLEEKER TOWERS AIR TUNNEL. TOURMALINE LEVEL.
TOPCITY. HONG KONG 2 NEW ASIA
07.09.0230.2159

Panel 3 "Camera" dolly out from extreme close up of the lightport to enable us to see the shape of the pod that holds the lightport device, still glowing brightly from it's center core. We see that it is night but bright with reflections from signs and advertising.

Page 8

Panel 1 Tall wide. Dolly out. Now we can see the slender tube that connects the pod to the ground and the glow of the sign that hovers above it: the same glowing "L" logo and words, "Public Lightport". A blurred figure passes out of foreground frame.

Panel 2 Tall wide. Shows the lightport, now in context of a larger street scene. But this is no ordinary street, the "air tunnel" is elevated above the city and wraps around the exteriors of the buildings like the sidewalk on a street. A hovering air taxi stops "curbside" to disembark passengers. The cityscape is thick with buildings awash with advertising that wraps the exteriors. The sidewalk is bordered by glowing blue force fields and railing that prevent people from falling, jumping or being swept over the side by high winds. A few pedestrians walk by. Buildings and the bridges between them stretch out indefinitely. Aircars and air transports stream along the narrow corridors of the cityscape.

Page 9

Panel 1 Full page (half). Farther back now from the air tunnel. Camera is outside look at pedestrians unloading from an air taxi. Two men and a woman, all thinly clad with perfect bodies. Their arms are entwined like a threesome.

Page 10

Panel 1 Very wide. Camera moves to a beautiful couple standing at the taxi stand.

Panel 2 Very wide. Camera moves up above the couple to reveal more of the air tunnel and buildings in stark perspective disappearing beneath them.

Panel 3 Very wide. Camera even higher revealing even more of the city.

Page 11

Panel 1 Very tall and wide. Camera continues upward.

Panel 2 Very tall and wide. Camera begins plunge down between buildings.

Page 12

Panel 1 Very tall and wide. Zooming between structures and past air traffic.

Panel 2 The windows of a building loom in the distance and we can almost see inside.

Page 13

Panel 1 Very tall and wide. The camera zooms through the window of an apartment. A woman lies in bed with the bare minimum covering her. The bed is like a pool of virtual water, hovering over smooth, black, river rocks. The room is surrounded by palm trees and bamboo. There are subtle blue and gold lights. We can just make out the curve of a male body lying beside her.

Panel 2 Very tall and wide. The camera is directly above the woman and looking down on her as she seems to float above the bed.

Page 14

Panel 1 Very tall and wide. The camera moves in more closely on the woman.

Panel 2 Very tall and wide. The camera is not on the woman's face. Kristin Broulliard is an attractive, athletic, 30-something human with long blonde hair.

Caption DOWNLOADING...

Page 15

Panel 1 Full spread

Page 16

Panel 1 Full Spread CONTINUED. Directly above. The sleeping woman seems to be floating on a glowing blue or amber mesh gently undulating. Above her hovers a sprawl of data. Visual of a high tech interface shows downloading her preferences in multiple layers: police information and updates from her job, government news feeds, health and fitness tips, and all the things that we might get as emails or Google Alerts. This should look like a complex data feed that is going on in her mind as she sleeps. It is very detailed showing what time the feed was to begin, there are news items, biometrics, and confidential police news feeds:

Caption GPI Global Personal Interstream Scheduled
upload preferences 0300-0500GMT Days 1-5, 7
Auto Manual Preference Sort Last update
7.08.59 Name:
Kristin Broulliard Bio#
djowl3928090s0g0e900-
e9t77d90hw3i99r9367f883929u746182883944
hf7wrd883sx3178m39wsd News Feed: STATISTICS
YTD: violent crime HUMAN /HUMAN CRIME: ↓ 21%
SYNTH / SYNTH: ↑ 9% Synth/ human: ↑11%
Suicides/consensual death | wk ending 6|9:
1019 SYNTH/HUMAN sexual crimes: ↑ 33%

DETAILS: Violent Crime All four HUMAN TO HUMAN violent crime offenses INVOLVING (murder and non negligent manslaughter, forcible rape, robbery, and aggravated assault) declined IN NEW ASIA in 2159 when compared with 2158 data. Robbery dropped 8.1 percent, murder decreased 7.2 percent, aggravated assault declined 4.2 percent, and forcible rape fell 3.1 percent. Violent crime declined in all city groups. The largest decrease, 7.5 percent, was in cities Preliminary Crime Statistics for 2009 with popula...

Caption in the colonies Colorado, New Asia – Saturday tensions continue to mount in the former am-asian colonies as militant 'Americans' stormed barricades in the western sector of Denver city. What initially started as a peaceful demonstration turned violent when colonial troopers moved in to dispel the crowd before the arrival of Prime Minister Zhang's Secretary of Information, Chow Li Meng. The leader of the 'Americans'..

Caption BIODATA Systolic BP (mm Hg) 96 Diastolic BP (mm Hg) 61 Heart Rate (bpm) 68
 ° Temperature 36.9
 chem levels
 Progesterone 18 ng/ml 17-Hydroxyprogesterone 210 ng/dl 17-Hydroxypregnenolone 201 ng/ml 18-Hydroxycorticosterone 24.7 ng/dL Estrone 160 pg/ml
 Estriol 1.1 ng/ml
 Estradiol 312 pg/ml
 FSH 20.0 U/L
 LH15.0 U/L
 SHBG 180 nmol/L
 DHEA 509 ng/dl
 DHEAS 435 µg/dl
 Androstenedione 1.3 ng/ml
 Androstenediol 1.0ng/ml
 testosterone 43 ng/dl
 Free testosterone 2.1pg/ml
 Dihydrotestosterone 23 ng/ml

Cortisol 11 $\mu\text{g/ml}$
Prolactin 12 ng/ml

Caption New Asia Police Updates Special Tech Update
Police and government officials will get a long-awaited demonstration of the controversial new n-class synth detective/soldier at an invitation only event at the headquarters of the almost human corporation today. The 2.5 trillion yen dollar investment by AHC marks the company's latest achievements in near-human development. The yet to be named synthetic will be unveiled by AHC's prodigy chief technology officer Sean Colbert son of Prefectural Governor Heijo Colbert. The 18-year old phd also known as 'Dr. Sean' is also the designer of the venerable n-class units that are prevalent throughout NAPD. The controversy surrounding the introduction focuses on last months vote in the council to approve lethal force for t-class units. AFTER NUMEROUS CONCLUSIVE FIELD TESTS, T-CLASS PROTOTYPES WERE ABLE TO DETECT GUILT OR INNOCENCE WITHIN .019 PERCENT CONVINCING COUNCIL OFFICIALS THAT THE UNITS COULD BE EMPLOYED IN THE STREETS. The 'officials-only' even is to protect the identity of the synth as it will be employed immediately thereafter at headquarters in HK2. because of the achievements in human realism, the synth detective can be used in delicate undercover operations. A full technical briefing follows.

Caption Other News Unsolved Crimes 11 crimes remain unsolved in the greater HK2 Prefecture. only one for more than 200 days. details....
Personal Calendar: Chloe's rehearsal Tindol School 1100 hrs Thursday--- Marie: scheduled maintenance AHC local - - 10 Tandori Sta. 1400 hrs -- Saturday Retinal Update: Syte Clinic - - 4 Pormos st. 0800 hrs. Monday

Page 17

Panel 1 Daytime exterior of a tall building surrounded tightly by other tall and taller buildings. A glowing and apparently moving logo reads AHC with logo of human and synthetic hands touching.[Needs to have circular windows of Sean's lab at top]

Caption HEADQUARTERS ALMOST HUMAN CORPORATION
7.9.2159 1400 hours.

Panel 2 From high above, a surgically lit room with no windows. A presentation has just ended and a crowd of men and women in dark body suits are filing out doors on one side of the room. *Virtually all characters are perfect physical specimens.* Standing on the dais is DR. SEAN Colbert a blond surfer-type in his late teens. He wears a white bodysuit emblazoned with AHC with a security badge. He stands beside KEIJI-T a synthetic with the appearance of a 30-something Asian, another perfect physical specimen. Gathered around in front of the low stage are TOEI-N a male conformed synthetic, more robotic looking, with charcoal gray skin and a white face and COLONEL LEE CHEN a bald, Asian human, in his late 30's, muscular and dressed in police battle gear. He has a permanent frown. A corporate looking **OFFICIAL** in his 40's wears a black body suit and shakes hands with Sean.

OFFICIAL

(Great work, as always, Dr.
Colbert.)

(You've outdone yourself this time.)

Panel 3 Camera tilts and drops down toward the collective at the stage, still from above.

SEAN

(Thank you, sir.)

OFFICIAL

(I'll let you deal with these
gentlemen and we'll talk later.)

Panel 4 Camera now closer still somewhat from above. The suit turns to Toei and Lee Chen.

OFFICIAL

(I'll leave you two in Dr. Colbert's
capable hands.)
(I'm not sure who's
the real prodigy here
Sean or his creation.)

LEE CHEN

Looking sarcastic.
(He's impressive.)

Page 18

Panel 1 The camera has circled around behind Sean. The suit bows.

OFFICIAL

(Gentlemen.)

Panel 2 Mid close up of Sean looking toward Toei and Lee Chen. Keiji's shoulder in the foreground.

SEAN

(So are there
additional questions?)

Panel 3 Close up on Toei

TOEI

(How soon can
he be commissioned?)

Panel 4 Close up on Sean

SEAN

(We've run all the tests,
several times.
Tomorrow if you'd like.)

Panel 5 From behind Lee Chen

LEE CHEN

(Toei commands the synthetics.
It's his decision.)

Panel 6 Wide on Toei, Sean and Lee Chen, partial Keiji
from behind

TOEI

(Tomorrow then. 0 seven hundred?)

SEAN

(He'll be there - on time.)

TOEI

(I'm certain.)

Panel 7 Over Lee Chen's shoulder Toei walks toward the
doors.

SEAN

(Questions from you, sir?)

LEE CHEN

(Let's find somewhere
more comfortable to chat.)

Panel 8 From the doorway where everyone, and Toei exited
almost as if the doors are closing. They might
even be silhouetted in the distance

SEAN

(Certainly, we can
talk in my lab.)

Page 19

Panel 1 Very wide. Aerial shot, but not too wide of city
at night. In the distance is the AHC Headquarters
building, but now we are seeing it from above and
moving in. We can see the circular windows at the
top.

Caption 7.9.2159 2130 HOURS

Panel 2 Change to tall wide. "Camera" moves toward the AHC

building and we can see the circular windows that rim the top floor and we can begin to see inside. This is Sean's lab.

Panel 3 Change to tall wide. With the edge of the circular window in the foreground, the synthetics lab at Almost Human Corporation is two levels, open to the top floor with a skylight. There is a soft blue glow throughout the space. A texture of lights and projections meander through the maze of railings and staircases.

Page 20

Panel 1 Tall wide. Inside now, looking down from the second floor. Partial synthetic bodies are suspended throughout the space, some headless, some without limbs. Wires and tubes pour out of the open parts. Eyes, hands and limbs rest on work tables. We see what looks to be Sean seated at one of the desks.

Panel 2 Tall wide. Tighter but still from above. Sean is speaking to an image on a floating screen by his desk. On the table in front of him is half a torso.

FACE

(I think you're crazy man.)

Panel 3 Very wide. From a distance behind Sean. Silhouetted by the the light in front of him. He is speaking to a scrambled projection image of a FACE hovering hologram-style in front of him.

SEAN

(I only need one more
right now, just as a
back up, I'll make the
rest myself, trust me.)

FACE

(We're breaking up, man.
I'll see you when
you get here.)

Page 21

- Panel 1** [Change to] Very tall. Sean stands but we pull focus toward a tall clear rectangular container not far from where he sits. It is surrounded by lights, wires and tubes. Suspended inside, is Keiji-T. His eyes are closed as though sleeping.
- Panel 2** [Change to] Very tall and wide. Alongside the container, Sean is looking up at the face of the suspended form. A small thin screen floats in between them.
- Panel 3** [Change to] Standard. Profile crop from Sean's chin to his hands holding the thin screen (like he's holding a post card close to his face). Sean speaks to the silent form.

SEAN

(I'm setting this
for 0 five hundred.
You know where you have to be.)

- Panel 4** [Change to] Standard. Profile of Sean's left hand resting on the glass.
- Panel 5** [Change to] Standard. Close up on thin screen. Left hand holding, side of right thumb touching, with glow beneath: MEMORY RESET.

SEAN

(But you and I —
have never met.)

Page 22

- Panel 1** [Change to] Wide. Sean tosses the screen and it rests into position alongside the container. Also possible close up of panel saying "successful erasure"
- Panel 2** [Change to] Wide. Back alongside his chair. Sean makes two gestures: With the right hand he sweeps aside his chair and screen into dissolving with his left he shapes the table into a clear cube that surrounds the torso on the table.

SEAN

(Don't be late.
Me, on the other hand,
I'll be in at
0 nine hundred.)

Panel 3 [Change to] Tall and Wide. Camera from behind Keiji in his container. Out of focus in the foreground, Sean is walking to the door of the lab some distance away. His back is to us and he is putting on a leather jacket as he walks. We can see the light of the hallway beyond beginning to peer through the crack in the doorway that is to open. Like a clock that is parting at 12 o'clock and opening like a book.

(And don't forget to
put some clothes on.
Got to go.)

Panel 4 [Change to] Tall and Wide. The lab lights go dark except for a soft glow on Keiji. And Sean's silhouette as he turns the corner out the semi-circle opening.

Page 23

Caption A FEW MINUTES LATER.

Panel 1 Exterior on the skywalk from a worm's eye view, Sean is walking. A sign to his right reads:
EXTERNAL ELEVATOR. STREET LEVEL ACCESS.

Panel 2 Full frame front of elevator door with biometric scan pad. The elevator is mostly glass framed in stainless. Street access small print displayed right on the stainless steel front, as though part of the surface. An OLED/stainless steel nano-projection. Sean touches his finger to the pad.

Panel 3 Inside the elevator looking up at Sean

SEAN

(Street level.)

Page 24

Panel 1 Looking out the at the levels passing in front of the glass. The descent begins from high above the city with gleaming buildings, luxury advertising and glittering lights.

FEMALE ELEVATOR VOICE
(Dr. Colbert, you have
selected street level
in the Mong Kok sector.
New Asia Police has determined
that this area is an
unsafe zone for
Topcity pedestrians...)

Panel 2 Descent continues to reveal an older, darker, gray, dirtier structures.

FEMALE ELEVATOR VOICE
(Please acknowledge that you
accept the responsibility
for this destination...)

Panel 3 Luxury ads give way to cheap diversions and then sexual sleaze. Then just metal surrounding the glass. Sean smiles as he answers.

SEAN
(I accept.)

Page 25

Panel 1 A view of the elevator from street level. This is a very run down section of town. Wet pavement. Lots of debris and deterioration. A street person leans precariously against an exterior wall nearby. He has glowing tattoos, and a long tail.

Caption MONG KOK SECTOR 7.9.2159 2200 HOURS

Panel 2 Same angle, the elevator doors part revealing Sean standing in the light inside. Light spills onto the pavement.

FEMALE ELEVATOR VOICE

(Please use caution.)

Panel 3 From high above the light from the elevator door narrows as Sean crossed the street. More debris and street character are revealed. Hundreds of illuminated signs clutter the buildings. A light fog clings to the puddles. A street lamp flickers. The look is very 20th century in terrible disrepair.

Page 26

Panel 1 Low angle. Two synthetic females and a human male stumble pass in front of Sean the street and pass out of view.

Panel 2 Above and behind Sean as he walks, a police cruiser lumbers through the scene

Panel 3 A scanning light from the drone hovering above the police cruiser flashes across the back of Sean's head.

Page 27

Panel 1 Reddish surveillance screen identifies Sean from various cranial implants. He is quickly scanned and logged.

Panel 2 Back to wide front view of Sean crossing the street as the cruiser passes out of view Sean crosses the street. An old 21st century electronics store. The sign is out of focus in the foreground.

Panel 3 Rack focus to sign and storefront with Sean in background. There is a blackened front door with a bio-scanner near the front door.

Page 28

Panel 1 Sean places his hand on a scanner and the door opens.

- Panel 2** Black and white screen from an antiquated surveillance camera shows.
- Panel 3** The door parts to reveal the partial face of the nervous, dweeby TECHMAN who wears army fatigues and glasses taped in the center. It would be great to have rough-cut fingerless gloves on his hands. He is the FACE that was on the projection in Sean's lab.
- Panel 4** Techman opens the door. 3/4 length view of him in the darkened fluorescent lit interior.

TECHMAN

(Sean, c'mon in man.)

- Panel 5** From behind Sean, with the doorway in frame, Sean steps into the space. Techman looks out with a paranoid glare over Sean's shoulder to check to see if anyone might be watching.

SEAN

(I can't believe that
hand scanner still
works. It's not very
secure y'know.)

TECHMAN

(Yeah, but it's a classic.
C'mon. Back here.)

Page 29

- Panel 1** Camera is just below waist height. Wide shot as Sean follows Techman back. Mostly in silhouette. Left of frame is an edge lit maze of old stereo equipment CRT televisions, antennas and flat screens on industrial shelving, like Home Depot. More junk is silhouetted in the foreground. Hanging shop lights and junky pendant lights hang from draping wires and duct work above.
- Panel 2** Tall and narrow, camera looks up toward Techman as he opens a door that is made of perforated metal.

TECHMAN
(In here.)

Panel 3 Panoramic waist height from just inside the doorway. Sean standing in the middle of the room. The walls are framed and surfaced with the same perfed metal. It is a cramped little space full of strange and familiar tech gear.

SEAN
(Does this really work?)

TECHMAN
(Shit yeah.
Old tech is still the best.
These metal cages lock out
everything. No one can
listen, no one can see.)

Page 30

Panel 1 Another panorama from Sean's right, same angle. Techman is closing the door on the left. Sean holding a dusty old mouse with two fingers. Picture of Steve Jobs in the background. Panorama of the room. Lots of 20th century devices. Oscilloscopes, soldering iron, dark, cluttered, glowing liquid tubes, wires and electronic debris, etc.

SEAN
(That's for sure.)

Panel 2 Tight as TechMan's soiled hand reaches for an old cigar box.

Panel 3 Same view, box open. Inside is a small rectangular metal sleeve. Techman reaches in.

Panel 4 Tight as His thumb touches a red button on the side. The top of the tiny metal sleeve opens (roughly 1" x 2" x 1") and inside we see something glowing.

Caption SFX "CHINK"

Panel 5 Very wide with Techmnan's hand Close up and center frame holding the thing that was in the tiny box up to the light.

TECHMAN

(Here we go. You know,
I could get head-jacked
and put away for this.
This is serious shit.)

Page 31

Panel 1 Close up hands transferring the capsule, Techman to Sean.

SEAN

(Yeah. I know. I won't
ask you for any more.
I'm gonna make the rest
myself.)

Panel 2 Sean's right hand slips the capsule back into a small metal sleeve held in his left hand.

Panel 3 He locks it electronically.

Caption SFX "CHINK"

Page 32

Panel 1 He slides it into his pants pocket.

Panel 2 Close up on Sean.

SEAN

(You're really going
out on a limb for this.
Thanks.)

Panel 3 3/4 Shot of Techman sitting on a stool, or a high style desk chair 20th century. Hands on thighs. From Sean's POV.

TECHMAN

(Yeah, well if this is the
real item then I guess people
should know about it.)
(But I'm gettin' too old for
this shit.)

Panel 4 Sean sits on the edge of vacant stool like an old
diner stool. Feet up on the ridge. Side view.
Edge lit.

SEAN

(You were like one of the
first weren't you? So what's
your literal age now?)

Panel 5 Close upon Techman from Sean's POV. He looks down
The rim of his taped glasses.

TECHMAN

(One hundred and fourteen. I
was damn near the first. I
worked for a company called
Chronos in 2045. I
volunteered.)

Page 33

Panel 1 Shot from above of the two talking between the
mesh of the metal cage. Dimly lit from the
overhead light and the glow of electronics.

SEAN

(So what was it like? What
did they do?)

TECHMAN

(Chronos was the company that
isolated the aging genes and
figured out how to secure the
telomeres on the right
cells.) (They just turned off
the biological clock.)

Panel 2 Close up on Techman from the same angle through
the grid.

TECHMAN

(It didn't work on everyone.
Some of the volunteers got
real sick, a lot died. I was
lucky, but shortly after,
Chronos went under. That's
when I dropped off the grid.)

Panel 3 Camera shifts right now from same angle on Sean

SEAN

(That must be when Genfinity
took over and perfected the
whole thing. You should have
stuck around. You'd be rich.)

TECHMAN

(You kiddin'? I didn't want
them pokin' around in me.
Besides that was back in '45
the world was bankrupt,
threats of war...Hell, I 26
years old. What did I know?)
(I like it down here.)

Page 34

Panel 1 Camera side view waist height, wide, off center.
Sean stands up gives TechMan a hug, or bump
forearms, or shake hands or something.

SEAN

(You're a good man.)

Panel 2 Techman, uncomfortably steps back. Sean laughs.

TECHMAN

(You're nuts. Get outta here,
will ya?)

Panel 3 Sean exits the safe room.

Panel 4 Techman calls after him as his silhouette moves
through the aisles of junk and electronics toward
the front door.

TECHMAN

(Don't try that with anyone
in this neighborhood. And
watch your back.)

Page 35

Panel 1 Low and wide from behind, Sean crosses the street to the elevator that brought him down. It has started to rain.

Panel 2 Red letters scroll across the door THIS TRANSPORT MALFUNCTIONING. PROCEED TO CORNER OF FA YUEN AND BUTE. Sean's shoulder in the foreground left.

Panel 3 From above 3/4 wide with the sidewalk running off panel to the right. Sean pulls up his collar and begins the hike.

Panel 4 Directly over head looking down on Sean [center] walking. The electronic signs, clutter and debris. SERIES OF SHOTS: Sean through the viewpoint of various surveillance cameras.

Page 36

Panel 1 View of Sean from above and across the street from the surveillance camera.

Panel 2 View of Sean from above and across the street from different surveillance camera.

Panel 3 View of Sean from from a POV at ground level in the alley ahead of him

Panel 4 Shot from above, tight as Sean is just about to pass the alley. Camera cannot see what is just inside the alley because of an awning or wires or other stuff that obscures our view.

Panel 5 From directly in front of Sean, brick wall to camera left, a gloved hand shoots out of the darkness clutching the fabric of Sean's tshirt and tearing it across the frame.

Page 37

Page 38

Panel 1

Full page spread. Very high above. Strong horizontal image of the street that we saw earlier but now we are much further up some windows may have light in the and the street lighting is dimly lit below glistening off the pavement where the alley is. All vignettes off into the dark of the down town conglomeration. Rain pours down in perspective. Through the aggregate of wires and awnings below we see the slightest glimmer of activity in the alley: Red light, white armor, skin.

SEAN

(Nooooo!)

END CHAPTER 1

Page 39

Panel 1

Caption

Chapter 2: according to design

Page 40

Panel 1

Full page. Shot of Sean's naked body lying in a puddle of water and blood. The camera is close up from his waist to his head from a worm's eye view. His body is bleeding from cuts and gashes to his arm, back, all over. There is a gash behind his ear, that is bleeding down across his face and another open gash above his eye. His hair is matted, his face is lying in the water and his eyes are open and glazed staring off at nothingness. There is just a thin misty rain now, rinsing the blood from his body.

Page 41

Full page spread

Page 42

Panel 1

Inside a room that looks like an office high above the city. It is late at night, and the city is bright outside the windows.

Page 43

Page 44 Full page spread. Over top of the same view in the previous spread, there is a glowing display of information. On the left-hand side there is the transcript of an interview between a talk show host Aki Mori and historian Alvin Lee. This is more backstory about the culture of 2159. Building across the page, a interview transcript. This one is between a talk show host named Blynn Maize and Sean Colbert. This is additional backstory about the nature of mankind and the interface with synthetics.

Page 45

Panel 1 Moving over the city toward glass windows surrounding the top floor of a high tech building.

Panel 2 A tighter view on the structure, the octagonal windows. A police cruiser lands on the roof.

Caption HONG KONG2 NEW ASIA POLICE HEADQUARTERS
COMMAND CENTER 7.09.2159 2340 HOURS

Page 46

Panel 1 INTERIOR High shot of the command center, a bustling space with towering projection screens showing surveillance, traffic, maps, and communications intercepts. There are intermittent clusters of chair clusters, like the captain's chair on the bridge of a ship, but they are organically place in the space, some at different elevations than other.

Panel 2 Focus in from overhead on two characters at a central bridge area. There are four "captains chairs" two unoccupied. A woman, apparently human, sits in one, Toei, the synthetic shown earlier is in the other.

Page 47

Panel 1 Wide shot of KRISTIN BROULLIARD, a human, athletic, 30-something, with short hair wearing a

tightly-fitted jumpsuit. Her fingertips reveal small bluish dots. She is talking to Toei-N. He wears only a headset and a memory belt at his hips. He has similar blue dots on his finger tips. Camera is cropping at "table height and up" shooting past Toei who is in the foreground, closer to us but still in frame. Maybe slightly out of focus. They look like they are just casually chatting.

KRISTIN

(You're different, though.
They purposely made you look
menacing.)Frame 1

TOEI

(Menacing? Do I look
menacing?)Frame 2 Straight on
at Toei.

Panel 2 Camera shot tighter on Kristin, and the camera has come in a little more from the side.

KRISTIN

(You know what I mean. Human
enough, but you're not
fooling anyone.)Frame 2 From
Kristin's side looking at
Toei.

Panel 3 Camera from same side as Kristin but farther back to be tighter on Toei. Kristin is now in the background, possibly out of focus.

TOEI

(All the testing shows that
the humans prefer a
distinctive difference for
synthetics in authority. Too
close, and you get, how do
you say -)Frame 3 On Toei
again.

Panel 4 Same side, on Kristin, now she is looking directly at Toei.

KRISTIN

(Creeped out. Yeah. Of course
that didn't stop them from
giving you the muscle bod and
nanoprene.)Frame 3 On Kristin
from Toei's side

Panel 5 Wide .Kristin reaches across frame and pushes
gently on Toei's gray colored "flesh". Toei looks
on incredulously. Frame 4

Page 48

Panel 1 Close up on Toei. He raises his eyebrows in a Mr.
Spock kind of way. Frame 4 or 5

Panel 2 Close up on Kristin smiling sheepishly.

KRISTIN

(Sorry. It's just kind of
creepy.)Frame 5

Panel 3 Camera back on Toei and Kristin from directly
above. Toei on left. Frame 6

TOEI

(No different, really, than
your domestic, and that model
simulates breasts. Humans
prefer the naked ideal.) (You
could have serious issues
with the new T-Class model.)

KRISTIN

(so, how'd that little debut
go?) On Kristin.

Panel 4 From behind Toei and Kristin silhouetted against
the "big wall". Back and forth. Frame 7

TOEI

(Quite remarkable. You won't
be able to tell the
difference between it and a
real human.)

KRISTIN

(Great. (sarcastically) I can hardly wait.)

TOEI

(Most impressive is the one hundred percent bio data. No chips, boards, circuits. It's all liquid circuitry at the molecular level. You just port in new programming. And you'll love this...)

KRISTIN

(What?)

TOEI

(... there is a port in the navel.)

KRISTIN

(Now I AM creeped out.)

Panel 5 Kristin and Toei are interrupted by a Police SYNTH suited in full field armor. Camera is on SYNTH DROID.

SYNTH

(Excuse me Commander Toei...)

Page 49

Panel 1 Camera now in front of Kristin and Toei. Low, table-height, wide shot with Kristin left, Toei right, chairs turned toward synthetic behind them, in between. *Frame 8*

SYNTH

(It appears as though there has been another human attack
- a male, teen.)

Panel 2 Same angle but half the size film plane. Kristin turning to face the big screen as though incredulous that nothing showed up. *Frame 9*

KRISTIN

(Why didn't we pick that up
on the wall? When? Where?)

SYNTH

(The body appeared on
surveillance about thirty
minutes ago. Sector Nine.)

Panel 3 Tight shot with Kristin in foreground out of
focus but had turned to look at Toei. He looks
back. *Frame 10*

Panel 4 Close up on Kristin from Synths POV. [Play with
Synth in foreground]*Frame 11*

KRISTIN

(Mong Kok. Sexual assault?)

SYNTH

(It appears that way.)

Panel 5 Lower, from Toei's POV. Kristin turns to Toei
with eye brows raised *Frame 12*

KRISTIN

(That's the neighborhood for
it. Maybe one of Guren's
serial cases? Better relay
the details to...)

SYNTH

(This human is different.)

Page 50

Panel 1 Camera behind Toei, looking up at synth. *Frame 11*
on Toei

TOEI

(Different?)

SYNTH

(He is Dr. Sean Colbert. Data
shows that he is the stepson
of the Prefectural
Governor...)

Panel 2 Same camera angle as 31.1 *Frame 13* close up on Toei

TOEI

(He's the one I was telling you about. The prodigy. The T-Class creator from AHC...I just saw him today.)

SYNTH

(Also, unlike the others, he is still alive.)

Panel 3 From Toei's POV. Kristin stands up. *Frame 14*

KRISTIN

(That changes everything. Where is he now?)

SYNTH

(Prefectural Medical Center. His father has been notified... and Colonel Lee Chen.)

Panel 4 Extreme Close up on Kristin.

KRISTIN

(Of course - Lee Chen. I guess we'd better get over there. He'll be waiting for us.)

Page 51

Panel 1 Half-page spread. An expansive, almost empty, bright white concourse surrounded by glass windows appears in eerie silence. Camera is worm's eye and wide angle.

Caption PREFECTURAL MEDICAL CENTER 7.10.2159 2340 HOURS

Panel 2 Close up of white elevator doors from far across the concourse. A blue light flashes beside the door.

Caption SFX "bing"

Panel 3 Same camera. Doors open to show Toei and Kristin. Standing in a bright white light, but behind them are the glass walls of the elevator and the cityscape behind them.

Page 52

Panel 1 Same camera angle as 51.1 Kristin and Toei walking across the space.

Panel 2 Same camera. Kristin (on the right) and Toei are closer to view.

Page 53

Panel 1 From directly above. Another sterile totally white area. To the upper right corner a man is sitting and leaning forward on his lap. To the upper right corner is a torus style desk with a holographic monitor, and a nurse's face on it. Just below are two elite corp guards and LEE CHEN. A large blue light ring, with no visible seams, illuminates on the floor.

Panel 2 Low and from behind Toei and Kristin. The camera can now see the width and depth of the waiting area. All the characters are in the same positions. A few white floating chairs near to the man on the right who is Governor Nakamura, a composed, mild-mannered type about thirty something. Hallways curve off from the central area but there are no doors or other defining features. DETECTIVE GUREN slouches in one of the waiting chairs.

Caption SFX

FEMALE VOICE
(Waiting area)

Page 54

Panel 1 Tall shot. Low camera angle framed on Lee Chen as he glances over his shoulder at Kristin and Toei.

- Panel 2** Tall shot. Low camera angle framed on Detective Guren as he stands up upon noticing their arrival. Human, he is a tall, tough-looking dude, with a three-day growth, and a shaved head about 40 years old.
- Panel 3** Governor Nakamura stands slightly in the background (camera left) as Guren moves closer into the camera as though he is already advancing in toward the pair.
- Panel 4** Wide shot of the converging group except Lee Chen from low an behind as in 41.2 Guren is leaning into Kristin to whisper in her ear.

Page 55

- Panel 1** Extreme close up of Guren whispering into Kristin's ear.

GUREN

(Thanks for the call.)

- Panel 2** Close up, from Guren's POV, but not extreme. Kristin's eyes remain straight ahead.

KRISTIN

(Sorry.)

- Panel 3** Similar to 51.1, but tighter all participants bow.

- Panel 4** From the side, between bodies, camera about waist high Kristin is talking (camera left)

KRISTIN

(Governor Nakamura. I'm
Kristin Broulliard Chief
Investigative Science Officer
HKP, this is Toei-N,
Commander of Synthetic Police
and Detective Guren. I am so
sorry to hear about your son.
Rest assured that...)

LEE CHEN (O.S.)
(Rest assured that we
will...)

Page 56

Panel 1 Close up 3/4 from Governor's POV of Lee Chen,
almost full frame,

LEE CHEN
(...find the perpetrator in
the next twenty-four hours.
This crime will not go
unpunished.)

Panel 2 3/4 on Governor. Lab coated figure approaches
behind in the background.

GOVERNOR
(How could this happen? Sean
is a very important scientist
at AHC.)

Panel 3 DOCTOR HAYES in a white lab coat and holding a
small clear tablet is now alongside the Governor
and facing him. He is in his 40s, African-
American.

DOC
(Governor Nakamura?)

GOVERNOR
(Yes?)

Panel 4 3/4 view on Doctor, camera shifts left. He has
turned to face other visitors.

LEE CHEN
(I'm Colonel Lee Chen
Commander of Enforcement,
they're with me.)

Panel 5 Close upon Doc. (Colonel.)

Panel 6 From the left hand side of the governor looking

across him to the Doc who has turned back to face the Governor.

DOC

(Governor, your son is very lucky. Right now he's in intensive care. He has suffered a concussion - apparently an impact with the pavement, and a fractured skull-)

Panel 7 Camera closer on the Doctor 3/4. He looks at his clear tablet.

DOC

(- numerous wounds to the face and body and a dislocated shoulder. He's unconscious and will be for some time while he's in the regen pod.)

Panel 8 Close up on hands holding the tablet.

DOC

(You should know, Sir, that it appears the attack was sexually motivated.)

Page 57

Panel 1 Close up on the Governor from the Doc's side. He is stern, incredulous, squinting.

GOVERNOR

(What? What are you saying?)

DOC

(Sean was raped, sir.)

Panel 2 Extreme close up. Governor lowers his head. His left hand closes around his face.

GOVERNOR

Whispering(Oh my god.)

DOC

(If you would like to go in
and see him...)

GOVERNOR

(Yes, please.)

Panel 3 Camera over Kristin's shoulder looking at the Governor, he raises his head. She reaches out to grab his hand.

KRISTIN

(May we?)

GOVERNOR

(Yes, of course, please.)

Panel 4 Camera from behind the entourage following the Doc down the white hallway.

Panel 5 From above the Doctor stops and looks to his left. The wall in front of him appears seamless except for a white glowing square on the wall.

Panel 6 Same angle closer on the doctor's hand as he touches the square. The door disappears open.

Caption SFX: SCHINNG

Page 58

Panel 1 Inside, there is more bright white. In the center of the room is a green, glowing intensive care pod. Connected to tubes, that hang from the ceiling, it is supported by a cantilevered arm attached to the wall.

Panel 2 3/4 wide on the pod. Sean floats naked in a glowing green liquid attached to thin tubes that flow in and out of his body.

Panel 3 From the far end of the pod. Close up of Governor leaning his head and hand on the pod. His eyes are

closed.

Page 59

Panel 1 Governor (left) turns to face Doctor (right) wide shot. Refraction of Toei and Kristin on the other side of the pod.

GOVERNOR

(How long must he be in
here?)

Panel 2 Close up on Kristin studying Sean in the pod.
(probably face left pod and body right some focus
adjustments, perhaps her reflection in glass)

DOC (O.S.)

(We are monitoring all his
functions. The stem cell
medium is regenerating right
now, repairing soft tissue,
healing lacerations...)

Panel 3 Close up of Sean bruises and swollen eye gash
across forehead.

GOVERNOR (O.S.)

(But his head, his face...
what about brain damage?)

Panel 4 Close up of glove marks around Sean's wrists.

DOC (O.S.)

(This is a powerful regen.
It's working on the skull
fracture. The lacerations and
swelling have already
improved. He should be
conscious anywhere from
several hours to a day.)

Panel 5 Close up on Doc from Governor's POV

DOC

(As for psychological damage,
we can always erase the
memory if it...)

Panel 6 Camera from Doc's POV. Wide of Kristin standing
behind the Governor's shoulder.

KRISTIN

(I don't think we want to go
there yet. There may be
important evidence in...)

Panel 7 Camera pans left to where Lee Chen stands.

LEE CHEN

(Outside Broulliard.)

Page 60

Panel 1 Close upon Kristin.

KRISTIN

(Sir?)

Panel 2 Wide shot from behind Lee Chen of
the group around the pod.

LEE CHEN

(My people outside. I want to
talk to the Governor.) (If I
may, sir.)

Panel 3 Camera wide same angle as 49.1 Lee Chen is
positioned between the Governor and Doc. Camera
somewhat tighter than 49.1. Doc only partially in
frame.

LEE CHEN

(Governor, I'm extremely
familiar with cases like this
and memory erasure is highly
recommended, as soon as he's
conscious. Besides, my
officers are perfectly able

to make an arrest before Sean
ever regains consciousness.)

GOVERNOR

(We don't believe in erasure,
Colonel.)

Panel 4 Side view 3/4 on Lee Chen he turns to face Doctor
Hayes.

LEE CHEN

(What do you think?)

Panel 5 Gutter cut. Back and forth side view of Doc.

DOC

(Erasure, of course is always
advised, but...)

LEE CHEN

Following from panel 4.
(Excuse me Doctor could you
step out into the hall with
us?)

Panel 6 The Governor is facing Sean. The camera is behind
him. It is focused on the Governor's hand resting
on the glass pod.

LEE CHEN (O.S.)

(If you will excuse us sir.)

Page 61

Panel 1 Tall low shot with Kristin, Toei and Guren
shadowed in the foreground as Lee Chen and Dr.
Hayes emerge from the room

LEE CHEN

(Doctor, please let me know -
personally - if there is any
change...)

Panel 2 Same camera height but now with Kristin 3/4 on

Camera left and Doc on right. Chen behind Dr.
Some characters still in the foreground shadowed.
Kristin is reaching for the Doctor's tablet

KRISTIN

(Yes, Doctor, us as well.)

Panel 3 Close up of Kristin's left hand elevating the tablet and planting her index finger on the clear surface with her right. A glow appears on the tablet beneath her finger.

KRISTIN

(Here's my contact
information.)

Panel 4 Kristin is camera left 3/4 almost out of frame. Lee Chen is looking at her and giving the evil eye as his left hand simply clutching the tablet

LEE CHEN

(Mine, too.)

Panel 5 Same angle, a little tighter on Lee and the Doc.

LEE CHEN

(Thank you Doctor, that's all
we need from you. Perhaps the
Governor needs some time
alone with his son.)

DOC

(Why yes, of course.)

Page 62

Panel 1 Low, tall shot as Doctor moves on down the hallway. Character silhouettes in the foreground.

Panel 2 Close up on Lee Chen's face as he looks at Kristin.

LEE CHEN

(Listen, Broulliard. Just
stay out of the kid's head
and do your job.)

Panel 3 Tall, large, from above Lee turns to Guren and points a finger. The others are still gathered around.

LEE CHEN

(And what do you have to say
about this? Haven't you been
on these rape things for a
year now?)

GUREN

(Eleven months.)

LEE CHEN

(Oh, that's better!)

Panel 4 Wide camera from behind Toei's shoulder as Lee turns and glares at him.

LEE CHEN

(What are you looking at?
This happened on your watch?
I want a full report relayed
to my office in one hour.)

Panel 5 Wide camera comes around to Toei's right side, still from behind as Lee Chen turns to leave, head down.

LEE CHEN

Murmuring. (Stupid synth.)

Page 63

Panel 1 Close up of Toei a look of calm on his face.

Panel 2 Camera now from behind Kristin, again low and tall. Lee stops abruptly. Turns to face Kristin.

Panel 3 Close up of Kristin's chest from over Lee Chen's shoulder. He is staring at her chest where he has placed a digital projection of the time flashes 23.44.09

Panel 4 Wide, side view framed with Kristin and Lee. He is kind of in her face. Kristin looks down at the projection.

LEE CHEN

(I want this wrapped up by
midnight tomorrow. Put
someone on it who knows what
they're doing.)

Page 64

Panel 1 Above again but facing Lee Chen two beats later. Chen turns and strides away. Head down, facing away, he calls back.

LEE CHEN

(Keep me posted, Broulliard.)

Panel 2 Wide, directly from above, the three staring blankly after Lee Chen until he is several paces beyond them almost out of frame. No one speaks.

Panel 3 Wide and tight on the three facing each other

GUREN

(He needs to die.)

KRISTIN

(C'mon, I want to talk to the
Governor.)

TOEI

(Of course, we do.)

Page 65

Panel 1 Close up of Kristin's hand as she touches the white square on the wall.

Panel 2 Inside the intensive care room the camera view from low and wide almost below the pod facing the door as the three enter. (Toei stands a few steps behind Kristin. Guren, a few steps to her right.) Looming large camera left In the shadowed foreground is the Governor's hand and the dangling rosary beads.

Panel 3 Head and shoulders shot of Kristin.

KRISTIN

(Do you mind if we ask you a few questions, Governor?)

Panel 4 Head and shoulders Governor, possibly wiping a tear away.

GOVERNOR

(No. Go right ahead.)

Panel 5 Very close up on Kristin. Maybe a poser render.

KRISTIN

(Your son was found in the Mong Kok sector.)

Panel 6 From above left looking down on the two. Camera slightly behind Kristin.

GOVERNOR

(Yes I know of it. It used to be a bustling section of the city... way back.)

KRISTIN

(Yes, sir, well, it's known for a lot of other things nowadays, like synth brothels and sex parlors.)

Page 66

Panel 1 Very close up on Kristin from the side. Possible poser again.

KRISTIN

(Some people actually pay for the kind of treatment your son got tonight, perhaps...)

Panel 2 Back and forth across gutter gap. Very close up on Governor.

GOVERNOR

(My son does not partake in those depravities. We have strong moral convictions.)

Panel 3 Tall 3/4 side view of Kristin, looking down.
[Maybe expand for dialog]

KRISTIN

(That is a rare thing these days.)

(People can surprise you, sir. Even family. He *is* 18 after all.)

GOVERNOR

(Sorry, I refuse to accept that.)

KRISTIN

(Pardon me, sir, but I had to ask.)

Panel 4 Wide, close up on Guren.

GUREN

(Do you have any idea why he might have been in that kind of neighborhood?)

Panel 5 Head and shoulders of Governor.

GOVERNOR

(None.)

Panel 6 Head and shoulders shot of Kristin.

KRISTIN

(Hmm. Again, we're sorry to bother you.)

GOVERNOR (O.S.)

(It's quite alright.)

Panel 7 Side view wide. Possibly all silhouetted except

for the glowing pod, the three are on their way out.

GOVERNOR
(Officer Broulliard?)

Page 67

Panel 1 Camera low, very wide and looking up all have turned around.

KRISTIN
(Yes?)

Panel 2 Wide shot of Governor all alone beside the pod from the POV of the three at the door.

GOVERNOR
(I'll be praying for you.)

Panel 3 Extra wide shot of the three. Toei registers his now familiar blank stare. Eyebrow raised, Spock style. Kristin looks a bit taken aback. Guren keeps his hard ass stare.

Page 68

Panel 1 Wide head and shoulders on Kristin others with some cropping. Governor's head and shoulders out of focus in foreground

KRISTIN
(Right. Okay. Uh, thank you.)

Panel 2 Large wide from directly above. The pod glowing. the Governor all alone in the room.

Page 69

Panel 1 Tall half page directly above. Smaller in frame to show the expanse of the medical center concourse, Kristin, Toei and Guren are walking. Top frame-Guren, center-Toei, Kristin-Bottom. All looking at Toei.

GUREN

(I wanted to pump a plasma
charge into Colonel Chen back
there? How about you Toei?)

TOEI

(No.)

KRISTIN

(He *did* call you a stupid
synth.)

Panel 2 Tall, long shot (almost orthographic) camera from
behind as the three stand in front of a white
wall with a thin black seam around it. Above it
in blue glowing light. ELEVATOR. Guren reaches
toward two illuminated squares, one white, one
directly above that is blue.

Page 70

Panel 1 Camera from outside the glass elevator low and
very wide. Door are open, the three are standing
in the open doorway.

GUREN

(You two go ahead. I took the
tube over here.)

KRISTIN

(We'll drop you...)

GUREN

(Nah. I'm not good company
right now.)

Panel 2 Camera from behind Guren facing Kristin and Toei
inside. As the wall is closing - Guren is out of
focus in the foreground.

KRISTIN

(We need to talk in the
morning.)

GUREN

(Right.)

Panel 3 Inside the elevator the camera is low and wide in front of Kristin and Toei, they are still facing the door. Behind them we see some of the congested city at night through the glass of the elevator.

KRISTIN
(Transit pad.)

FEMALE ELEVATOR VOICE
(Transit pad.)

Panel 4 The camera is now outside the building again. Up above, we see that the elevator is moving laterally across the building.

TOEI
(Nothing worse than you've called me.)

KRISTIN
(That's different.)

Page 71

Panel 1 Wide shot of Kristin facing Toei in the elevator with city lights behind them.

KRISTIN
(Guren's going to have to make some headway on this and fast.)

TOEI
(Are you sure that's the best approach?)

Panel 2 Wide close up of Kristin. She raises her eyebrows and looks at Toei.

Panel 3 Outside again, the camera is above the elevator and looking down at the exterior of the building. The elevator is one floor from the top. Part of the roof is visible.

TOEI

(We only have twenty-four hours. Detective Guren has been chasing this case for more than a year. Don't you-)

KRISTIN

(Guren's a good detective. You shouldn't be second guessing him -)

TOEI

(Because I'm a synth, you mean?)

KRISTIN

(Because he's a good cop. I take it you have a better idea.)

FEMALE ELEVATOR VOICE

(Transit pad.)

Panel 4 Wide camera is above and Kristin and Toei. They are facing the front. The elevator door has opened.

TOEI

(Our new T-Class)

KRISTIN

(No way. I can't give this to a synth.)
(No offense intended.)

TOEI

(Governor Nakamura was at the demonstration as was Colonel Chen. They are both aware of its capabilities.)

Page 72

Panel 1 The camera is on the roof looking in toward the building. The transit pad is a sunken area on the roof. In the distance we can make out the

elevator doors still open at the far end of a white hallway that is separated from the transit pad by glass doors. The small shapes of Kristin and Toei are walking towards the camera. An armored SYNTH stands at the opening of the doors.

Panel 2 Camera over Toei's shoulder looking at the sentry synth.

TOEI

Not speaking - thinking. (My shuttle please.)

Panel 3 Close up on the sentry synth who turns his head and touches his headset.

Panel 4 From directly above Kristin and Toei stand and wait.

KRISTIN

(I'm aware of synth capabilities, too, but -)

TOEI

(Not like these. T-Class synths are ninety nine point seven six four percent accurate in determining guilt. That is why he carries lethal force clearance.)

Page 73

Panel 1 Close up of Kristin's face. She is stunned.

KRISTIN

(They passed that protocol?)

Panel 2 Very wide. Left to right Toei, Kristin, Sentry Synth. Camera is roof floor level. Reflections in rain puddles.

TOEI

(When a T-Class has determined guilt in a capital

crime it is authorized to
terminate.)

KRISTIN

(How did this go through, who
authorized?)

TOEI

(Chancellor Zhang.)

Panel 3 Camera from behind, wide, framed on either side
by head and shoulders of Toei and Kristin.

KRISTIN

(And I'm supposed to bump
Guren for this?)

TOEI

(It will be awkward.)

KRISTIN

(Damn right it will be.
Sorry, I'm not going for it.)

Page 74

Panel 1 From on the roof looking back, not far from where
the two are standing, the rooftop floor opens and
a police shuttle rises up from below. Kristin
stands just beyond.

TOEI

(Regardless, Keiji-T arrives
tomorrow. It has been on
order for several months.)

KRISTIN

(Find something else for it
to do.)

Panel 2 From above the two walk toward the shuttle. The
hatch is opening.

TOEI

(I have scheduled you for an
interview with Keiji-T at 0
nine hundred.)

KRISTIN
(!) *Manga style.*

Panel 3 POV: above the hospital. The police shuttle lifts off from the hospital rooftop. There is a large white H on the building. The cruiser drifts into air traffic and accelerates away.

Page 75

Panel 1 Camera low and wide shooting over the backs of sofas into a dimly lit room that overlooks the city through a wall of glass. Upscale furnishings are slowly revealed as points of light twinkle in the distance. A portion of the wall to the left is translucent and a figure can be seen behind it.

Caption KRISTIN BROULLIARD'S APARTMENT 7.11.2159
0109 HOURS

Panel 2 Same camera but very wide, and panning slightly left. The translucent part of the wall becomes an open door. Kristin arrives at her apartment.

Page 76

Panel 1 Camera now opposite the wall with the door. Kristin has stepped inside and the wall is translucent again. A pin down light illuminates a table by the door.

Panel 2 Camera tight, table height, close up of hands as she touches the dots on her fingertips together.

Panel 3 Same angle as panel 3 now the room is dimly lit.

Page 77

Panel 1 Tall and wide. From over Kristin's shoulder (left

in camera)in the distance, in the hallway to the kitchen, is female synth, MARIE-D holding a tray with a glass of red wine. MARIE is a female version of TOEI, with pinkish exterior and same whiteface. Her form is distinctively female.

Panel 2 Tall from behind Marie with the wine glass out of focus in the foreground, Kristin walks toward Marie.

MARIE

(Welcome home. Miss. You come home so late.)

KRISTIN

(It's been a rough day.)

Panel 3 Profile of Kristin full frame tall. She sips the glass of wine.

Panel 4 Very wide of Kristin and Marie centered in frame at arms length. Cityscape behind them.

KRISTIN

(Mmmm. You're a saint. How's Chloe?)

MARIE

(She fast asleep, Miss. We read stories and I tell her you would come in and kiss her when you come home.)

Page 78

Panel 1 Tall shot wine glass in foreground on table. Kristin walking past the modern kitchen toward dimly lit hallway.

Panel 2 Tall narrow with close up of Kristin's hand on light panel on wall.

Panel 3 Scene from inside bedroom it is dark and Kristin is in the doorway as a silhouette. Light spills into the room and edge lights the child lying on her side on a pink glowing lattice mattress like Kristin's in the early pages. The child, CHLOE is

about 6 years old, blond. She is asleep and clutches a stuffed animal.

Panel 4 Very wide. Same angle and lighting but zoom in as Kristin kisses Chloe on the cheek.

Page 79

Panel 1 Very wide ortho side view in living room of Marie [left] sitting in one of two arm chairs across from Kristin on sofa. Kristin sips her wine. Cassina style furniture.

MARIE

(You want to talk about your day, Miss?)

KRISTIN

(Sigh! I don't know...)

Panel 2 Tall and wide. Kristin gives a long sigh, tentatively begins, rambling at first, and quickly ramps up passionately.

KRISTIN

(I don't know. It just seems so hopeless. I just came from the hospital, a handsome, brilliant kid from good family - nice people - gets beaten - nearly killed - and raped for gods sake.)

Panel 3 Tall shot, chest and shoulders Marie.

MARIE

(Gasp.)

Panel 4 Tall shot, chest and shoulders Kristin.

KRISTIN

(But, of course, we can fix it. Twenty four hours in suspension and we can heal even this kind of beating.)

Page 80

Panel 1 Very wide again like 79.1

MARIE

(That's good, no?)

KRISTIN

(Sure, we can make anything better? Touch a button - a '39 Cabernet, Rub our fingers - see the lightstream on my retina, or voice someone - by thinking. We don't even have to speak anymore.)

Panel 2 Same angle but zoomed in on Marie chest and shoulder. She looks confused.

Panel 3 Back and forth across the gutter gap. Kristin head back and eyes close exhausted. She leans back in the sofa staring up at the ceiling.

Page 81

Panel 1 Overhead very wide. Directly above Kristin and Marie as if we took 69.1 and rotated the camera.

KRISTIN

(And so there's this kid, probably scarred for life and his father holds rosary beads and prays. Like that's going to get him anything.)

Panel 2 Tall. Profile view Full frame face. Kristin downs her Cabernet.

Panel 3 Tall. Marie chest and shoulders.

MARIE

(They can fix the memory, too.)

Panel 4 Tall wide on Kristin, chest and shoulders.

KRISTIN

(Oh, yeah. We can erase
horrible memories. But we
don't stop there. We'll erase
anything now. Stuff maybe we
shouldn't, like guilt, or
remorse.)

Page 82

Panel 1 Wide from the dining kitchen area camera shows
silhouette of Marie and Kristin in background.

MARIE

(But the government say, 'Our
science. Your hope'.

KRISTIN

Half laughs (Ha...I'm just
not sure I believe it
anymore. The problem is not
the science, it's us...)

MARIE

(Maybe you adjust your chems.
You want another glass,
Miss?)

Panel 2 Tall wide. Ortho front shot of Kristin in chair,
legs crossed holding empty glass on her knee.
Camera frames from feet on floor to top of head.

KRISTIN

(Unfortunately, that's
everybody's answer to
everything. But, I'm ranting.
I'll stop now. I've got an
early day tomorrow.)

Panel 3 Wide, same camera but zoom in close up. Kristin
turns her head.

Caption INCOMING

KRISTIN

(Speak of the devil.)

Panel 4 Wide. Close up on touching fingertips and certain ones glowing.

Page 83

Panel 1 Tall wide. Change in line or border color on panel to show that this is another location. Lee Chen is in what must be his home office looking at life size schematics of synths. The camera is waist up, but it he is apparently naked except for a towel around his neck. He looks as though he has just come out of or is about to go into the shower. [He speaks aloud. Kristin speaks telepathically.]

LEE CHEN

(It's me. I want you to oversee this investigation – put somebody on it but not your synth buddy, Toe-jam or that idiot Guren.)

Panel 2 Tall wide. Same angle as 82.2. Kristin looking down, her hand covers her face.

KRISTIN

Caption IT'S TOEI, AND DETECTIVE GUREN IS NO IDIOT. LEE, IT'S REALLY LATE. WHY?

Panel 3 Standard.[*Border color.*] Head and shoulders Chen in profile looking left. Still inspecting the charts.

LEE CHEN

(There's been a lot of fuck ups over there lately. Do I need to remind you? And, you know I don't trust synths.)

Panel 4 Standard. Close up on Kristin head in hand.

KRISTIN

Caption OKAY, FINE. IS THAT IT?

Panel 5 Wide. [Border color.] Extreme close up on Lee Chen's mouth left of frame for extra space on right. He speaks.

LEE CHEN

(I promised the Governor.
Just tag it as a typical Mong
Kok gang bang and arrest
somebody. There's an endless
supply out there.)

(Besides, we don't need
Prefectural Agents combing
through police headquarters.
I don't want that. You don't
want that.)

Page 84

Panel 1 Standard. Same as 83.4

KRISTIN

Caption I SUPPOSE.

Panel 2 Standard. Border color. Lee Chen close up back of head, schematics in front.

LEE CHEN

(I'm just trying to save you
the time and effort. For all
we know the little prince was
in Mong Kok looking for
action.)

Panel 3 Standard Same as 84.1

KRISTIN

Caption SOMEHOW, I DON'T THINK SO.

Panel 4 Standard. [Border color.] Camera has now rotated to Chen's right side. Face still full frame.

LEE CHEN

(Don't be so sure. I have a
nose for these things.)

Panel 5 Camera has not moved from 84.1 but Kristin has stood up

KRISTIN

Caption RIGHT. I FORGOT.

Panel 6 Tall. [Border color.] Side view from behind and just below the waist of Lee as he lays his hand on one of the drawings.

LEE CHEN

(Just trying to help. Clock's ticking. Keep me posted.)

Panel 7 Close up of Kristin's fingers disconnecting from voice.

Panel 8 View from Kristin's POV. Wide angle with somewhat forced perspective of Marie looking up at us.

MARIE

(Everything Okay, Miss?.)

KRISTIN(O.S.)

(Lee Chen.)

MARIE

(He been out of your life for years. Why does he call you now?)

KRISTIN

(Maybe, I'll have another glass after all.)

Page 85

Panel 1 Camera is above from the area of the front door as Kristin and Marie make their way toward the kitchen. Probably just rounding the corner.

KRISTIN

(It was only a few dates. It was over a long time ago. I hardly even run into him anymore.)

Panel 2 Close up from counter height of Kristin placing her wine glass inside a clear box.

MARIE (O.S.)
(He was trouble, Miss?)

Panel 3 She touches a button.

KRISTIN (O.S.)
(Lee is a sad story, Marie.
He used to be a decent guy.
Then he changed. He was top
of his class at the academy.)

Panel 4 The glass is full.

MARIE (O.S.)
(What happened?)

Panel 5 Very wide shot from above Kristin steps to the window.

Page 86

Panel 1 Tall shot from behind Kristin, left 7/8 shot as she looks out at the city, her reflection in the glass and Marie's, too, behind her in the kitchen entrance.

KRISTIN
(There was a raid on a
children's rehab center. I'm
not sure what happened or
what he saw, but after that
case, he was never the same.)

MARIE
(And now he go for the boys.)

Panel 2 Tall wide, full length shot of Kristin as she turns toward Marie [from Marie's POV]

KRISTIN
(That wouldn't bother me. I'm
afraid, now he goes for
anything. He became bitter.
Mean. And the kinky sex thing
- well-)

MARIE
(Sad, Miss.)

KRISTIN
(Frankly, I don't even know
how he passes the stability
exams every year.)

Panel 3 Extreme close up. If you can get watery eyes.

KRISTIN
(I'm going to take a shower
and go to bed.)
(You're a good listener,
Marie.)

Panel 4 Full face on Marie.

MARIE
(You welcome, Miss. What time
would you like your coffee in
the morning?)

Panel 5 3/4 on Kristin's right side as if walking

KRISTIN
(Ugh. Five, I guess.)

Panel 6 Silhouette of Kristin holding her glass, from the
top and walking down the hallway to the bathroom.

Page 87

Panel 1 Wide, medium, head and shoulders shot. Kristin in
shower. She is leaning her forearms against the
shower wall. Walls look like bamboo. Lots of
steam. Need to model wet hair drawn back and
simulate shower stream, splashes, etc.

Panel 2 Wide close up on finger tip luminous implants in
the water. Touching and glowing light.

Panel 3 [Border color.] Begins telepathic conversation.
Tall and wide, 3/4 length. Toei stands in a lab-
like environment that we can barely make out in
the background, dark with indications of tubes

and LED lights. The right half of his body is inside a greenish blue beam of light. He speaks telepathically without moving his mouth

TOEI

Caption KRISTIN BROULLIARD.

Panel 4 Tall and wide shot. Still head and shoulders, but outside the shower with lots of steam. Sunset style backlighting through trees and leaves. Camera can only see her profile behind the foliage and steam.

KRISTIN

Caption YEAH. IT'S ME. I'VE HAD SECOND THOUGHTS.
I WANT TO GO WITH MR. T.

Page 88

Panel 1 Wide.[Border color.] Wide close up on Toei, half in and half out of the beam of light

TOEI

Caption YOU MEAN KEIJI-T?

Panel 2 Wide. Same angle as 87.4. Wide camera a little further back maybe waist high.

KRISTIN

Caption WHATEVER. I'LL SEE YOU IN THE MORNING.

Panel 3 Full wide, rule of thirds Kristin silhouetted in shower. Camera almost at floor level. The scene looks almost tropical as though the room is on a virtual beach grove and she is showering outside. Lots and lots of steam almost obscuring her completely, we can see some of the bathroom interior.

END CHAPTER 2

Page 89

Panel 1 Ex tall, wide. Camera at same height as the scene we just left. Kristin on right of frame walking briskly down the dim corridors of Police Headquarters. She seems lost in thought. Everything is black metallic rimmed with red and white lights. Other humans and synths busily pass by.

Caption POLICE HEADQUARTERS. 7.11.2159. 0850 HOURS.

Panel 2 Wide. From Kristin's POV she spots Detective Guren coming the other way in the corridor.

Panel 3 A little farther along, Guren closer in frame, same POV. Almost past her.

KRISTIN
(Guren.)

Panel 4 Wide from Kristin's left. Full body shot of both characters. Camera mid height. Detective Guren stops and turns around.

Page 90

Panel 1 Same camera angle, close up head and shoulders of both characters. Both characters on left of frame, balloons on right.

KRISTIN
(We need to talk.)

GUREN
(I was on my way to the
firing range.)

KRISTIN
(Put it on hold.)

GUREN
(Okay. So what's up?)

KRISTIN
(Not here. My office.)

Panel 2 Tall and wide, the two are walking directly toward the camera which is in a similar position to the opening scene, the two are walking.

GUREN

(Is this an apology for why
you didn't inform me about
the Colbert thing last
night?)

KRISTIN

(It all happened very fast. I
would have called eventually.
Chill out already.)

GUREN

(Well it is my case.)

Panel 3 Wide, close up of Guren turning to Kristin as they walk. We see both heads in the frame. Kristin is looking straight ahead.

Panel 4 Wide, close up on Guren. Face full frame.

GUREN

(Or is it?)

Page 91

Panel 1 Tall. Same angle Camera tighter just on Kristin who is cropped almost half in frame right. She is still looking forward, walking.

KRISTIN

(It's still your case. You
just need to take a day off.)

Panel 2 Tall. Guren, as though frame left is now a few paces behind he has stopped. (The gutter has included the passage of time.) A slight bit of Kristin in in frame right turning to look over her left shoulder.

GUREN

(What? What the hell for?)

Panel 3 Tall, wide Directly overhead. Guren is top left third, Kristin is lower right third. Balloons between.

KRISTIN

(Chen is breathing down our necks on this one. He's all worried about Prefects pouring in here and making life miserable. He put me in charge.)

GUREN

(So it's your ballgame. What's the problem?)

KRISTIN

(You heard him. Chen's given me twenty-four hours--)

GUREN

(That's fucking ridiculous. And impossible. So if I'm out, who's in?)

Panel 4 Very wide. Kristin takes a deep breath but won't look at Guren. She is right third. He is out of focus, left third

Page 92

Panel 1 Same shot, but very tall. Kristin is still looking away.

KRISTIN

(They just commissioned a T-Class to investigate. I'm letting Toei bring --)

Panel 2 Very tall. Almost extreme close up of Guren's face.

GUREN

(Am I hearing this right? You? You are replacing me with a synth?)

Panel 3 Small. Same style close up on Kristin.

KRISTIN

(There's like seventeen hours left. Then it's yours again.)

Panel 4 Small. Camera pull back to head and shoulders of Guren. He has a silent look on his face, he has turned away or is looking to the ceiling.

Panel 5 Tall and wide. Full length Kristin and Guren. She is facing Guren and he has turned back to look at her. Her arms at her sides but palms raised in a sort of "What do you want me to do?" Kind of pose.

Page 93

Panel 1 Tall and wide. They are walking again. Guren in left third, Kristin in right, balloons between. Camera from behind, like a steady cam, about chest height. If they could be turning a corner, that would be great.

GUREN

(I don't get it, what do we think this synth's gonna do?)

KRISTIN

(Nothing! Chen gets to tell the Governor we have the latest and greatest on the case.)

GUREN

(And Guren, who hasn't delivered on the case in a year - -)

KRISTIN

(That's not what it's about. It's the game. Get over it. You'll be on it tomorrow.)

Panel 2 Wide. Camera is now slightly above and

behind. Kristin and Guren stop at the door to Kristin's office (on left). There is a projection alongside the door KRISTIN BROULLIARD.

GUREN

(So I guess we're done?)

TOEI(O.S.)

(Officer Broulliard.)

Panel 3 Wide. Camera still behind Guren who is right third and cropped right. Kristin is half turned away from Guren to see who was calling her. Toei is walking up from behind her with KEIJI-T, he is dressed in the NAP body suit.

Panel 4 Very wide. [time inclusive] Kristin left. Toei and Keiji center. Guren right, his back is still to the camera. Keiji is making a slight bow.

TOEI

(Officer Broulliard,
Detective Guren, this is
Keiji-T. 0900 as promised.)

Page 94

Panel 1 Wide, from above frame left Kristin left third turned toward her office door. She is looking at Guren and touching the entrance sensor. Toei, Keiji and Guren are in the same positions.

KRISTIN

(Keiji we'll talk in here.
Thanks Toei. Guren, I'll
catch up with you later.)

Panel 2 Wide. Guren head and shoulders frame right. Walking back the way he came. Leaving others frame left in the distance.

GUREN

(Yeah. Right.)

Panel 3 Very wide of Kristin's office door that looks like frosted glass. Kristin and Keiji with their backs to the camera.

Panel 4 Very wide from inside Kristin's office. Camera at table height and behind Kristin's desk which is out of focus. The door that looked like green glass is now invisible and Kristin is starting through the doorway.

Page 95

Panel 1 Large wide. The office has the characteristic Police Headquarters look of black metal. There is a glass desk and some black leather chairs. Kristin is upper left third but slightly out of focus and partially cropped and standing on the other side of her desk Keiji is left third and center and a dark blur. Half the frame [right] is focused on the smoggy, outside as daylight filters into the room. From windows on one side, a mishmash of adjacent structures seems to press a slim gap between buildings.

KRISTIN

(Have a seat. Coffee?)

Panel 2 Very wide. From Kristin's side of the desk. Keiji is half way to the sitting position. Desk in the foreground. Camera slightly above desk height.

KEIJI

(Thank you.)

Page 96

Panel 1 Very wide. Same general camera position but now Kristin is frame left, blurred moving away to the left from her desk.

KRISTIN

(How do you take it?)

KEIJI

(Black.)

- Panel 2** Very wide. Camera is now behind Keiji from the POV of the coffee device. Kristin's hands, forearms and hips are in frame [left third] as well as the coffee cup inside a glass globe.
- Panel 3** Wide. Camera behind Keiji. Kristin [carrying two cups] approaches. [Maybe begins to reach over his shoulder to place the coffee on her desk with her right hand. Or she keeps her coffee in her right hand and reaches over his left shoulder... tbd]
- Panel 4** Wide. Camera in position of 85.2 but closer up. Possibly coffee cup on the table, way in the foreground of her reach. She bends to smell the base of his neck.

Page 97

- Panel 1** Back to 85.2 Kristin is now left third and moving left to walk around to her desk to chair. Keiji is looking up and over to her nonchalant. The look on his face is, "Did you just smell my neck?"

KRISTIN

(Hmm, no scent of nanoprene.
That's an improvement.)

- Panel 2** Mid wide. Camera is at table height. Coffee cup is in extreme foreground as Keiji's head is further in the background. Either the cup or the head is out of focus.

KEIJI

(I have forty-three different
pheromones to choose from if
you would prefer something
else.)

- Panel 3** Close up on Kristin's hand as she pushes a clear tablet about the size of an iPhone across the desktop.

KRISTIN

(Well why don't you just port
your stats here.)

Panel 4 Close up on Kristin-left third.

KRISTIN

(You can still port by
fingertip? We don't have to
go in through the navel do
we?)

KEIJI

(I have multiple ports for
data. Fingertip remains the
most efficient.)

Page 98

Panel 1 Wide. Close up on Keiji's hand from beneath the glass table looking up as he plants his fingertip on the clear tablet.

Panel 2 Wide.Camera from Keiji's side of the desk. Very close up on the tablet - left third - as Kristin places it in a notch on her desk.

Panel 3 Camera from slightly above table looking down as a hologram of transparent three-dimensional data springs up from the desk surface.

Panel 4 Kristin's POV looking at data with Keiji seated in the chair on the other side. She scrolls through it with the glowing dots on her gloved fingertips.

Page 99

Panel 1 Camera side view of the two of them across the table facing each other. The hologram between them and the balloons.

KRISTIN

(The equivalency of fourteen
Doctorates, that's handy.
Heavy in the sciences.)

KEIJI

(Science is at the core of
the government. It answers
all things.)

KRISTIN
(Except what it can't.)

KEIJI
(What science can't answer is
unknowable.)

KRISTIN
(Can we prove that
scientifically?)

Panel 2 Close upon Keiji. Silent, he stares forward.

KRISTIN
(Have I stumped you already?)

Panel 3 From behind Keiji close upon the back of his head
looking across at Kristin

KEIJI
(Some humans have difficulty
with the concept, but in the
final analysis, it is the
law.)

Page 100

Panel 1 Close up on Kristin. The hologram is gone. She
leans forward.

KRISTIN
(How much do you know about
the case?)

KEIJI
(I have inducted all the
pertinent data. I plan to
visit the hospital and
inspect the patient.)

KRISTIN
(You're an MD. You've got
that going for you.)

Panel 2 Tall. Close upon Kristin's hand as she removes the tablet from its dock. Same angle as putting it in the slot.

Panel 3 Tall. Almost full length as she stands by the window and stares out at the city holding the card.

KRISTIN

(You're also the first synthetic to have a the authorization to kill a human.)

Panel 4 Very wide. Keiji camera left, fairly close up, half profile. Balloons in between Kristin camera right still looking out window.

KEIJI

(Only in the case of a capital crime. Eliminating a human who has committed a capital crime is eliminating a genetic mutation from your race. This is a positive improvement and a strong deterrent.)

Page 101

Panel 1 Very wide. Close up on Kristin, left third, still looking out the window.

KRISTIN

(Hmm. Hasn't worked yet. And if new evidence comes to light and you've already murdered this genetic mutation...

Panel 2 Wide, still close up on Kristin. Now she is facing Keiji.

KRISTIN

(...would you change your mind?)

Panel 3 Wide, waist-up, profile view of Keiji seated with

table in front of him.

KEIJI

(Changing the mind is a purely human characteristic, impossible in my case. The chances of miscalculation are point 0 two three six which is both highly unlikely and considered to be an acceptable risk.)

Panel 4 Very wide 3/4 profile view of Kristin leaning back against window ledge in the right third and Keiji in the left third seated, but now he has turned toward the camera.

KRISTIN

(They trained you up right. Aren't you going to drink your coffee?)

KEIJI

(Of course.)

Page 102

Panel 1 Tall, wide. Extreme close up of Kristin's eyes watching intently.

Panel 2 Extreme close up profile of Keiji's hands around the mug, the mug to his lips and sips.

Panel 3 Close up on Keiji. Still holding cup close to his face he looks over to Kristin

KEIJI

(Mmm. Starbucks. Italian roast.)

Panel 4 Kristin with a hint of disdain. Close up on her profile right third.

KRISTIN

(The molecular equivalent, anyway.) (Synths drinking coffee. What's the point?)

KEIJI

(T-Class specifications call
for virtual human
characteristics in every
detail.)

Page 103

Panel 1 Very tall. Kristin, 3/4 length from front, back
lit, crosses her arms facing Keiji. [Still
holding the tablet in her right hand.]

KRISTIN

(OK.) (Stand up. Let's see
what's under that suit.)

Panel 2 Very tall and vertical of Keiji's finger parting
the front of his body suit. Possible a zipper,
but more like an invisible seam that is self
healing but opens easily

KRISTIN (O.S.)

(To the waist is fine.)

Panel 3 Profile view from mid thigh to head. Window as
backdrop. Keiji and Kristin stand inches apart.
His suit hangs around around his hips. Kristin
looks down. Her finger is about to touch his
chest. It is millimeters away.

Page 104

Panel 1 Very tall. Camera moves around slightly to focus
close up on Kristin's finger tip depressing
Keiji's skin on his pectoral muscle.

KRISTIN (O.S.)

(Warm. Why the muscles, the
sexy bod?)

Panel 2 Very tall Wide. Camera moves around to back of
Keiji and Kristin moves to his side. Still
inspecting him.

KEIJI

(The goal of the T-Class is
to appear human in every
detail. Investigations may
require that I go
undercover.)

KRISTIN

(Does that include under the
covers? You have genitalia?)

Panel 3 Very tall. Same view as 103.2 only lower. Very
close up. Keiji begins to undo his pants.

KEIJI

(Quite.)

Page 105

Panel 1 Very tall. Same shot as 104.3 Kristin rests her
fingertips on Keiji's hands at the seam of his
pants.

KRISTIN

(Easy tiger. Keep your pants
on. I believe you.)

Panel 2 3 wide. Kristin is behind Keiji and reaches up to
run her fingers through his hair and stares into
his eyes.

KRISTIN

(They always do a great job
with eyes and hair. The skin
has come a long way, too. Ooh
and a vein on the temple.
Nice.)

Panel 3 Tall, 3 wide. Keiji still standing motionless.
Kristin is inches from his face. Camera front.
Windows as backdrop.

KRISTIN

(His family's religious, but
it's always possible that
Colbert was in Mong Kok

looking for some kind of
kinky sex play.)

KEIJI

(My first order of business
will be to go to the hospital
do a complete diagnostic.)

Page 106

Panel 1 Tall wide. Kristin walks back to her desk., sits
down and accesses the tablet again.

KRISTIN

(There's a pattern to these
crimes you know?)

KEIJI

(Except this time the victim
is alive.)

KRISTIN

(Lucky for us.)

Panel 2 Tall. Close up of Kristin replacing the clear
tablet into the desk.

Panel 3 Very wide. Camera low at desk height. Keiji
shirtless in the foreground [left third] Kristin
is leaning forward on the desk. Her hand is still
on the clear tablet and the swirling data is
already projected above Kristin's desk.

KRISTIN

(I'll admit, you're nice to
look at, but you should
probably put your shirt on.

Page 107

Panel 1 3 wide. Camera in similar position to 84.4.
Directly behind Kristin and viewing over her
shoulder, Keiji partly in view across the table,
zipping up, somewhat out of focus. Keiji's data
on the holographic screen is partially covered by
a message that says "INCOMING CALL. COL.LEE CHEN"

Four options appear below: AUDIO, VISUAL, TPATH, REFUSE.

Panel 2 Small. Kristin's finger tip touches TPATH which glows.

Panel 3 Small. Kristin pinches her fingers together and the hologram closes.

Panel 4 3 wide.[Border color.]*Begins telepathic conversation.* Lee Chen is standing on the rooftop the enforcement depot headquarters. CinemaScope. Camera is looking up at Chen. It is foggy and police shuttles and cruisers are taking off around him. He is looking up, off into the sky.

LEE CHEN

Caption (BROULLIARD. UPDATE TIME.)

Panel 5 Same angle as 104.3. Wide. Keiji is still standing and watching Kristin intently who is back up and facing the window. Her chair has spun around, too. Both hands are resting on the window sill.

Panel 6 Wide. Extreme close up on Keiji's eyes. Possible reflections on the surface.

KRISTIN (O.S.)

Caption I'M PUTTING THE DEPARTMENT'S NEW T-CLASS ON THE CASE.

Page 108

Panel 1 POV KEIJI: Tall, Very Wide. A transcript of the conversation scrolls over top of what he sees. Lots of visual interface artifacts around the periphery of his vision. The remainder of the conversation in its entirety scrolls in front of his view of Kristin at the window is:

Caption [as though a scrolling transcript]
BROULLIARD. UPDATE TIME.

I'M PUTTING THE DEPARTMENT'S NEW T-
CLASS ON THE CASE.

WHAT? NO FAITH IN DETECTIVE DAN? A SYNTH WAS
NOT PART OF MY INSTRUCTIONS.

YOU TOLD ME TO GO THROUGH THE
MOTIONS. WHAT ARE YOU WORRIED
ABOUT? I THOUGHT YOU'D BE PLEASED
HE'S A SYNTH. THEY'RE INEPT, REMEMBER?

I'VE SEEN HIM. HE'S DIFFERENT.

OKAY, SO WHAT'S WRONG WITH FINDING
THE REAL PERP?

Panel 2 [Border color] Small. Very low view up at Lee
Chen's fingertips as he "flicks" [motion blur] to
disconnect.

Panel 3 3 wide. Close up of Keiji's POV readout with
DISCONNECT in the center.

Page 109

Panel 1 Tall. Full length shot of Kristin from Keiji's
side of the table. Kristin turns around, arms
folded and looks at Keiji. No speak.

Panel 2 Tall. Chest up shot of Kristin, probably cropped
either side.

KRISTIN

(Are you aware that Colonel
Lee Chen has promised
Governor Nakamura that the
perpetrator will be
apprehended by midnight
tonight.)

Panel 3 Tall. Same chest up shot of Keiji

KEIJI

(Commander Toei informed me.)

KRISTIN (O.S.)
(And?)

KEIJI
(I see no problems meeting
that objective.)

Panel 4 Tall. Side view of Kristin about to access
something on her desk.

KRISTIN
(You'll need transportation?)

KEIJI
(Commander Toei has arranged
a police shuttle.)

Panel 5 Small. Profile of Kristin facing Keiji.

KRISTIN
(Then you'd better get going.
You should pick up a weapon,
too. At armaments.)

Panel 6 Small. Same shot.

KRISTIN
(I want regular updates.)

KEIJI
(Of course.)

Panel 7 Wide. Camera low at Kristin's desk shooting from
the same angle as when they entered the room.
Keiji at the door as though he has stopped and
turned before exiting.

KEIJI
(Have a nice day.)

Page 110

Panel 1 Very Wide shot facing Kristin. Close up on head.
Her hand is across her mouth, in a thinking mode.

Panel 2 Very wide. Back to the rooftop of the medical

center. Need some sort of ambulance shuttle. Camera is on the tarmac of the roof and looking up at air traffic. An ambulance descends but our focus is on the police shuttle in the foreground. Signs and other paraphernalia help to indicate location. Fog and mist mix with some patches of blue sky.

Caption PREFECTURAL MEDICAL CENTER 7.11.2159 1054
HOURS

- Panel 3** Shot from low again, on tarmac of Keiji as he as exits his shuttle. He has since strapped a holster and weapon on his thigh.
- Panel 4** Wide. POV From the interior console of another aircraft the view out the windows is out of focus and a surveillance display shows Keiji walking away from shuttle. Someone is watching.

Page 111

- Panel 1** Wide. View from the hallway behind Keiji, slightly low, as he stands in front of the open door to Sean's intensive care room. Keiji's hand is still on the light panel that opens the door. We can see the regen pod in the background.
- Panel 2** Wide. Close up of Sean's face and upper torso in the pod. He steps around the resuscitation pod and studies the face of Sean as he floats in the green liquid.
- Panel 3** Tall Wide. Close up of Keiji's face, eyes, with some of the pod in the foreground. Possibly through the pod.
- Panel 4** Tall Wide[Jagged or snowy video border.] View from Keiji's cylinder on page 19. He is looking slightly down on Sean through the liquid or noise, or whatever is inside the cylinder.

SEAN

Jagged dialog box.

(Don't be late. Me, on the
other hand, I'll be in at 0
nine hundred. Got to go.)

Page 112

Panel 1 Wide. Looking over pod with Keiji still looking into resuscitation pod - left third- Dr. Hayes appears in the door way.

Panel 2 Wide. Waist level. Camera opposite the pod the Doc and Keiji. 3/4 view. Doc is left third slightly bowing, pod, Keiji right third. Both are bowing.

Panel 3 Wide. Panels 3 and 4 are counter puntal. Close up head and shoulders of the Doc and Keiji.

DOC

(I'm Doctor Hayes.) (They
tell me you are the
investigator on this case.)

Panel 4 Wide. Close up head and shoulders of Keiji.

KEIJI

(Keiji-T, T Class Synthetic
Investigator. Hong Kong
Police.) (What can you tell
me about the patients
condition?)

Panel 5 Wide. Close up on Doctor Hayes' hand as he turns the palm of his right hand over revealing the blue dots on his fingertips.

Panel 6 Keiji reaches forward and rests his index finger on the Doctor's.

Page 113

Panel 1 Tall and very wide. Camera is above, but not directly above, looking down on the Doc - left third - and Keiji - right third - and the pod. Balloons between

KEIJI

(This was a sexual assault
but there was no fluid
traces? No DNA?)

DOC

(Only synthetic skin, SNA.
Residual nanoprene.)

KEIJI

(So he was assaulted by a
synth or a human with a
device.)

DOC

(There were marks on his arms
indicating that he was
restrained by two assailants
while a third committed the
actual rape.)

KEIJI

(You kept a sample of the
residue.)

DOC

(It's in the file. I assume
you have clearance?)

KEIJI

(Yes.)

Panel 2 Small. Close up of Keiji's hand as he places his
finger on a small lightport on the side of the
resuscitation pod.

Panel 3 3 Wide. Extreme close up of Keiji's eyes closed.
Scrolling data is superimposed analyzing the
nanoprene residue, identifying the type and
manufacturer.

Page 114

Panel 1 Tall wide, same overhead camera but zoomed in
mostly on Keiji. His hand is still resting on the
port/panel.

KEIJI

(When do you expect him to be
conscious? I will need to
access his memory.)

DOC

(Probably another eight
hours. There may be some
residual short term memory
still active - -)

KEIJI

(I will attempt.)

- Panel 2** Wide. Close up of Keiji's eyes closed.
- Panel 3** Wide. [Smokey border.] Inside the elevator
descending to street level in Mong Kok.
- Panel 4** Wide. [Smokey border.] Sign: RADIO SHACK
- Panel 5** Wide. [Smokey border.] Sean's hand on Radio Shack
scanner

Page 115

- Panel 1** Wide. [Smokey border.] Face of TechMan with
snippets of dialog
- Panel 2** Wide. [Smokey border.] Placing liquid circuit into
the small box.
- Panel 3** Wide. [Smokey border.] Malfunction sign on street
elevator
- Panel 4** Wide. [Smokey border.] Flash of looking down at
gloved hands around the upper arms of his jacket.
- Panel 5** Wide. Flash of police body armor emblem on arm
with fist full of torn shirt.
- Panel 6** Wide. [Smokey border.] Flash of looking down at
gloved fist hitting his bare stomach.

Page 116

- Panel 1** Wide. [Smokey border.]Flash of Sean's hands being held on either side over a dumpster.
- Panel 2** Wide. [Smokey border.]Flash of fist.
- Panel 3** Very Wide. [Smokey border.]Flash of Sean's POV lying in puddle on pavement.
- Panel 4** Very wide. Keiji opens his eyes.

END OF CHAPTER 3

Page 117

- Panel 1** Very wide. Close up view of Keiji in shuttle seat frame far left. Through the window are the Mong Kok streets.

Caption MONG KOK SECTOR 7.11.2159 1259 HOURS

- Panel 2** Tall from directly above. Keiji walking to top of frame. Nose of shuttle at bottom. Rundown section of town.
- Panel 3** Tall. Camera knee height and to Keiji's right. The Radio Shack sign is just above his shoulder in the distance. He is looking right at something.
- Panel 4** Tall. View of the elevator that Sean used to descend to this part of town from Keiji's perspective.
- Panel 5** Small. Close up on Keiji's hand as he removes his weapon.
- Panel 6** Small. Places his hand on the scanner and transmits a hand print. Text at top shows that it is a duplicate of Sean's hand print. Off to the right is a piece of Radio Shack logo in the store window or maybe an old hours of operation sign.

Page 118 *All this section inside Techman's place is in heavy shadow.*

Panel 1 Tall. Inside the store Techman is leaning against the door with fingers touching a button on an old intercom.

TECHMAN

(Sean. Is that you?)

Panel 2 Tall. Profile of Keiji looking forward at door of Techman's shop.

KEIJI

(Hong Kong police. Open the door or risk serious injury.)

Panel 3 Tall. Camera in front of Techman, no longer leaning. Grabbing either side of his head looking down. He is in a panic.

TECHMAN

(Shit Shit SHIT)

Panel 4 Tall. Camera knee height. Techman spins to run toward the back of the store.

Panel 5 Very wide. Camera is centered between the wall of Radio Shack with Keiji on one side and Techman in mid stride on the other. Keiji fires a massive electrical charge through the door of the Radio Shack and the electrical charge travels through the door and interlacing itself around TechMan.

Page 119

Panel 1 Very wide. Camera is on the floor as Techman comes crashing down on his cheek. Some spittle flying from his mouth.

Panel 2 Tall wide. From floor looking back at the doorway with Techman's shadowed hulk in the foreground on the floor. Both doors are in motion - open. Keiji stands in the doorway, back lit looking down at Techman.

Panel 3 Wide. Floor level close up on head and shoulders of unconscious Techman as Keiji's hand grabs and drags from the collar of Techman's fatigue jacket

Panel 4 From above looking down at Techman propped up against the wall. Shadow of Keiji standing over him.

Page 120

Panel 1 Wide. Very close up front view of Techman's crumpled face resting on his chest as Keiji rubs his fingertips together under Techman's nose.

Panel 2 Wide. Extreme close up of Techman's eyes, wide open.

Panel 3 Very wide. Kilter shot from Techman's POV out of focus Keiji

KEIJI

(By law I must identify myself. I am Keiji-T, T-Class Synthetic Investigator. Hong Kong Police.)

TECHMAN

Wobbly balloon.
(Holy shit a real T-Class.)

KEIJI

(Give me your finger.)

Panel 4 Very wide. Close up of Techman turning his grimy hand over to reveal grungy different faded dots on his fingertips. Keiji touches index finger to index finger.

Page 121

Panel 1 Tall. [Finger printy border] Techman's POV. Sean speaking to Techman in the safe room.

Panel 2 Tall. [Finger printy border] Techman's POV. Techman handing Sean the liquid circuit.

Panel 3 Tall. [Finger printed border] Techman's POV. Sean about to hug Techman.

Panel 4 Tall. Close up looking up at the shadowy Keiji still stooped by his side.

KEIJI

(What was on the circuit?)

TECHMAN

(Nothing. Just stuff.)

Panel 5 Wide. POV Keiji looking down at Techman: readout in his vision with neurobiological jargon and: LYING

Panel 6 Wide. Looking up at Keiji from Techman's point of view. The gun barrel is in his face.

KEIJI

(You are lying and in risk of further injury.)

Page 122

Panel 1 Tall wide. Side view to Techman's right of Techman slumped and propped against the wall, Keiji squatting beside him and pressing the gun into to TechMan's chest.

TECHMAN

(Okay, okay. It was a religious circuit.)

KEIJI

(What kind of religious circuit?)

TECHMAN

(Scripture.)

KEIJI

(What kind of scripture.)

TECHMAN

(Judeo Christian. The Quran.
The Bible. Religious stuff.)

KEIJI

(I will have to arrest you.
Give me the circuit coding
number.)

TECHMAN

(I don't have it anymore. I
dumped all the records.)

Panel 2 Wide. POV Keiji: readout: TRUE

Panel 3 Wide. Side view again but close up on Techman's
face left and Keiji's face above right.

KEIJI

(You are telling the truth.)

TECHMAN

(Shit yeah, man.)

KEIJI

(Why did Sean want this
circuit?)

TECHMAN

(I don't know.)

Panel 4 Small. POV Keiji: readout: LYING.

Panel 5 Small. Keiji presses the gun into Techman's
chest.

KEIJI

(You are -)

Panel 6 Wide. Close up profile of Techman.

TECHMAN

(Alright. Alright. I think he
was experimenting with
putting them in synths.)

KEIJI
(This is highly illegal.)

Page 123

- Panel 1** Tall. Full length view, Keiji hoists TechMan to his feet, with one hand by his collar.
- Panel 2** Tall. Looking down, behind Techman. Keiji pulls his hands together behind him.
- Panel 3** Tall. Close up, looking down on wrists. Keiji is holding a container about the size of dental floss and pulling a strip out of it to wrap it.
- Panel 4** Tall. Side view, the band is now like a bike lock around his wrists. It glows blue and become a set of glowing blue wrist cuffs.

KEIJI
(Come with me.)

- Panel 5** Very wide. Directly overhead outside on the street the two approach the shuttle. The door is open.

KEIJI
(Get in.)

Page 124

- Panel 1** Very wide, and wide angle interior shot looking to the back seat inside the shuttle. Keiji sits on the edge of the seat frame right turned toward Techman. Keiji's left hand is situated under Techman's nose.
- Panel 2** Wide. Close up on Keiji's fingers again. Keiji rubs his fingers together under Techman's nose. A wiff of vapor rises.
- Panel 3** Wide. Like we cropped the center section of panel 1 just centered on Techman. His head is slumped down. Keiji is gone.
- Panel 4** Very wide. Directly overhead shot of Keiji

crossing the street. The street cuts through the frame at an angle from the lower left to the upper right. The back end of the shuttle can be seen in the lower left of the frame. Typical Mong Kok debris on the street.

Page 125

Panel 1 Tall. Very wide. Same overhead shot that we saw when Sean shouted from the alley back on page 33-34. Except now it is daylight. Keiji stops in the exact place where Sean was snatched.

Panel 2 [As Keiji begins to investigate each piece of evidence triggers a visual of the actual attack taken from Sean's memory.] Very wide shot from Keiji's POV - EYES: So what we see is a panoramic view of the alley littered with trash and debris as Keiji scans it looking for clues. POV readouts circle and identify everything from rat dung to candy wrappers.

Page 126

Panel 1 Wide. Looking down by some garbage is a torn rag with the AHC logo on it. Readout indicates that the it is an article of clothing, how many hours old...

Panel 2 [Smokey border.] Duplicate from 105.5."Flash of police body armor emblem on arm with fist full of torn shirt."

Panel 3 Wide shot from Keiji's POV - EYES: He sees the puddle of blood on the pavement. Readout identifies it as probably blood.

Panel 4 Wide, side view very low from behind some garbage as Keiji stoops to touch the puddle.

Panel 5 Wide. Close up of blood on his fingertips.

Panel 6 Wide shot from Keiji's POV - EYES: Readout indicates blood type and DNA analysis of Sean Colbert.

Page 127

- Panel 1** Wide.[Smokey border.]Duplicate from 106.3."Flash of Sean's POV lying in puddle on pavement."
- Panel 2** Wide shot from Keiji's POV - EYES: Touching spots of blood on the garbage can, readout identifying Sean's fingerprints around the area.
- Panel 3** Wide. [Smokey border.]Duplicate of 106.1 "Flash of Sean's hands being held on either side over a dumpster."
- Panel 4** Wide shot from Keiji's POV - EYES: Sees the leg of Sean's bodysuit behind the dumpster. Readout identifies it as clothing number of hours exposed.
- Panel 5** Wide shot from the side, shoulder to elbow. One hand holding the fabric open from the front split open dangling, the other hand resting on the surface, blue dots glowing.
- Panel 6** Wide shot from Keiji's POV - EYES: Looking at sleeve. Readout confirms DNA: Sean Colbert.

Page 128

- Panel 1** Tall wide. Keiji run over a lump in the arm of Sean's sleeve.
- Panel 2** Wide. Very close up on Keiji's palm open with the small box sitting in the center.
- Panel 3** Wide. He opens it. SFX:chink. Very close up inside the box. The glowing blue, liquid circuit is still in tact.
- Panel 4** Wide. [Smokey border.] Placing liquid circuit into the small box.
- Panel 5** Wide. Very close up of circuit in between Keiji's fingertips.

Page 129

Panel 1 Tall and wide shot from Keiji's POV - EYES:
Readout: TYPE: LIQUID CIRCUIT
NUMBER:JN1.1.13.7064:RELIGIOUS TEXT: HOLY BIBLE.
Flurry of scrolling activity. Readout flashing:
MATCHES DORMANT INTERNAL CIRCUITRY. TYPE: LIQUID.
NUMBER:JN1.1.13.7063: ANCIENT SCRIPTURES.
INITIATING SEQUENCE.

Panel 2 Tall and wide. Close up on Keiji's face. Staring.

Panel 3 Very wide. POV readout:LIQUID INFUSION COMPLETE.

Page 130

Panel 1 Tall and wide. Camera is below Keiji's open hand looking up at him with a puzzled look on his face. Keiji blinks, somewhat stunned.

Panel 2 Tall. From Keiji's POV close up on Keiji's fist as he closes it around the box.

Panel 3 Tall. Side, telephoto view of Keiji walking out of the alley.

Panel 4 Very wide. Same aircraft interior as at the hospital. Keiji is out of focus through the windows. Focus is on display in the cockpit of Keiji walking. Now we see fuzzy dice somewhere in the cockpit.

Page 131

Panel 1 Tall. Telephoto shot again from across the street looking at Keiji on the other side of the shuttle. The door is open and we can see him partially through the glass.

Panel 2 3 wide. View of Keiji's head and shoulders inside the shuttle. We are looking up at him from Techman's perspective. Thinks for a second.

Panel 3 3 wide. From side view with Techman on camera

left. Keiji stooped from the height of the cab, he rubs his fingers together under Techman's nose.

Panel 4 Wide. Close up from same side view of TechMan's face his eyes are wide open.

Panel 5 Wide. From Techman's perspective looking out of the shuttle to the open door in front. Keiji is already standing outside.

KEIJI
(Come out.)

Page 132

Panel 1 Tall from behind Keiji who is standing back from the door and Techman appears in the shuttle doorway.

KEIJI
(Hurry.)

Panel 2 Tall full length camera low. Both are standing profile to the camera in silhouette, Techman facing the shuttle, and Keiji behind him grabbing the wrist cuffs.

Panel 3 Wide. Close up side view of Techman's hands, the cuffs have disappeared.

KEIJI
(Get out of here. NOW.)

Panel 4 Wide. Head and shoulders of TechMan and Keiji. Camera is behind Keiji. Techman whirls and stares at him stunned.

TECHMAN
(You're letting me go?)

KEIJI
(Go. Before I change my
mind.)

Panel 5 Very wide. TechMan stumbles away and starts running down the street. The back of Keiji's head is in the foreground camera left.

Caption Thought. "BEFORE I CHANGE MY MIND."

Page 133

Panel 1 A long, wide angle, very wide shot of the firing range with some glass walls behind it. Detective Guren, way down the row, is carrying a big gun.

Caption POLICE HEADQUARTERS 7.11.2159 1550 HOURS

Panel 2 Tall. Full length profile of Guren who has stepped into a lane.

Panel 3 Tall. Close up of the vertical electronic display inside the lane with the warning read outs and a touch to lower a blow back shield from above of the table in front of him.

Panel 4 Tall. Detective Guren from a similar profile as Panel 2, but closer, draws the gun to his shoulder in a firing position.

Panel 5 Tall. Looking down range we can see the glowing, digital viewfinder display and the dummy far off at the end of the lane.

Page 134

Panel 1 Very Tall. Full length on dummy.

Panel 2 Very Tall. Dummy explodes in a blue haze. Lots of debris.

Panel 3 Very Tall wide. Looking back across the lane table that separates the shooter from the lane we are now looking back at Guren who has a half

smile on his face and has lowered his gun. Behind the glass booth door Keiji stands behind him.

Page 135

Panel 1 Side view, full length, very tall and wide. Keiji and Guren who has just stepped outside of the curved door of the firing range. Guren has the weapon cradled in his arms. It almost looks like it's pointed at Keiji.

KEIJI

(Detective Guren.)

GUREN

(Did you see that?)

KEIJI

(Effective.)

GUREN

(Shit, yeah.)

(So, shat do you want?)

Panel 2 Low to the ground as they walk toward us with Guren on the left holding the gun downward as in the character shot. Keiji looks at Guren. Guren looks at the floor

KEIJI

(I thought I might ask you
some questions.)

GUREN

(Why, Wonder Boy?)

KEIJI

(This was your case.)

GUREN

(Was, and will be again.)

KEIJI

(Unless the criminal is
apprehended.)

GUREN
(Unlikely.)

Page 136

Panel 1 Very tall. Full length Guren only. He starts to turn back toward the range. Looking back he says:

GUREN
(But that's your problem now.
Just use your X-Ray vision or
whatever it is they've
installed and go get 'em. I'm
busy.)

Panel 2 Very tall, wide. Same low camera full length on Keiji and Guren who is a few paces beyond, his back is toward us moving toward where they came from. Keiji is frame right in the foreground, possibly silhouetted.

KEIJI
(It's true I could do this
without you. But you have
human insights that I have
not fully developed since
commissioning. And we are
both on the same side.)

Panel 3 Very tall. Now the camera is facing Guren with Keiji in the background. Guren is stopped. His head is a little hunched over like he is stopping in mid stride.

Page 137

Panel 1 Tall. Guren has turned around. We see him waist up. Keiji's shoulder is slightly camera left out of focus so we know he has turned around.

GUREN
(Yeah, I guess we are. Fine.)

Panel 2 Tall, but long shot of silhouetted Guren as he re-racks his weapon into a coffin-like box that radiates light, and Keiji looking on. The shot

gives us some sense of the high ceilings and vast space. Camera is from the deep end of the firing range looking back from where Keiji probably came. The firing range is to the right.

Panel 3 Tall Wide. Still silhouetted against the dark reflective doors of the ARMAMENTS LOUNGE. Still full length shot. The Armaments lounge is directly behind the firing range.

GUREN

(We can sit over here.)

Panel 4 Low and wide camera about the height of the arm the Le Corbusier chair that Guren is in. Keiji in the same opposite him. A Breuer table separates them. There is dish on the table full of sticks like chop sticks. The lighting is very low and you can barely make out a sort of panoramic view of other chairs and sofas, possibly some kind of bar.

Page 138

Panel 1 Very Wide. Ortho side view of Keiji leaning forward in his LC chair which takes up a full third of the right of the frame. He is reaching toward the sticks in the dish.

Panel 2 Tall. Close up on Keiji's hand as he lays the stick on the table and splits it apart pulling the new piece upward like an elastic screen.

Panel 3 Tall. Exact same angle and shot but now there is a holographic image from Sean's memory flash of a police body armor emblem is displayed.

KEIJI

(Can you identify this emblem?)

Panel 4 Tall. Low, like the camera is on the table shooting back through the hologram up toward Guren who is seated opposite in the chair.

GUREN

(That's the emblem for
Colonel Chen's Elite Corps.)

Panel 5 From Guren's perspective tight on the hologram. Schematics of the Elite Corps field armor appear (in vertical array) on the holographic projection.

Page 139

Panel 1 Very wide. Camera above Keiji's chair aiming down toward the table and hologram. We can see both characters and a new hologram this time of the same surveillance photo that we saw when Sean was approaching the alley. And below that the elevator message.

KEIJI

(There were surveillance
outages in sector nine at
precisely the time of the
attack, and an elevator
malfunction that directed Dr.
Colbert directly past the
alley.)

Panel 2 Very wide. Looking across the table at the hologram which is now on wider than tall and the camera is on Guren's side of the table. Diagrams of the surveillance cameras around the alley, the elevator appear as a map on the projection. The camera is at table level and we can see Keiji's knees, out of focus behind it.

GUREN

(The outages are standard in
these cases. Someone with
clearance is shutting them
down just long enough so that
they don't register in the
command center. But the
elevator, that's a new twist.
You think someone set him
up.)

KEIJI

(Highly probable.)

Panel 3 Very wide. Guren in chair straight on from Keiji's side. Tip of hologram at low center.

GUREN

(Interesting. But the kid
also fit's the profile
perfectly.)

KEIJI

(You mean physically.
Previous victims were young,
white, blond, but usually
prostitutes.)

Page 140

Panel 1 Tall wide. Low camera at table height, looking through the hologram and faces of victims appear on the projection. Keiji is still out of focus in the background.

KEIJI

(If this was a standard
human-synthetic rape team
where the synthetic assaults
the victim while the human
observes -)

GUREN

(Tag teams.)

KEIJI

(Yes, then a basic retinal
scans would have identified
Dr. Colbert and they would
have passed over him as too
risky.)

Panel 2 Tall wide. Sean's face close up, not clearly focused on the projection but we can see through it back to Guren.

GUREN

(Maybe the kid was looking
for a little kinky.) (Maybe
he knew the perp and they had
this you-capture-and-rape-me
thing going.)

Panel 3 Very wide. Keiji focused frame left third balloon
text right.

KEIJI

(No longer a possibility. I
have accessed the latent
memory cache of his brain
functions. The neural
activity combined with the
levels of norepinephrine,
epinephrine, ACTH and CRF
clearly indicate the fear
response. Quite different
from the response to sexual
arousal or the anticipation
thereof.)

Page 141

Panel 1 Tall very wide. Camera directly overhead with the
two seated, table and hologram in between.

GUREN

(So you're saying the perp
knew the kid and either
wanted to fuck him up or kill
him, maybe to make it look
like it turned into a bad
trick?)

KEIJI

(But then they would have
erased his latent memory so
that there would be no
recording of the fear
reaction.)

GUREN

(Unless they thought the kid
was dead already.)

KEIJI

(That is possible. Have you
assembled a psychological
profile?)

Panel 2 Very wide. Guren frame left third as Keiji was on
the previous page.

GUREN

(Like all rapes, he's playing
out a power trip. Never any
human fluid so that means he
either watches a synth do it
or straps one on - so to
speak. Likely abuse by synths
as a kid, like in a sex
house. An authority figure,
possibly a parent was
involved. Probably blond.)

Page 142

Panel 1 Tall wide. Directly across at Keiji left third
and balloon right top, and data overlays are
displayed on the projection lower right

KEIJI

(If we overlay of data from
the previous assaults - the
level of technical knowledge,
three assailants, victim
profiles - strongly suggests
that Sean's assailant and the
serial rapist are the same.)

Panel 2 Tall. Again looking through data. A long list of
names scrolls on the projection. Keiji out of
focus in the background.

KEIJI

(There are 27 humans and
synths with security

clearance of the kind that
would allow infiltration into
systems.)

(Until we overlay those who
also had some connection to
Sean Colbert in the past few
days.)

Panel 3 Tall. Camera over Keiji's right shoulder. Guren
in focus and focus drop off toward us, but we can
make out the long list of names significantly
shorter. A list of bright lines (we can't read
then from this distance as anything other than
entries) reduces to three.

KEIJI

(That narrows things down to
three.)

Panel 4 Very wide close up on Guren's face.

GUREN

(You, Colonel Chen and Toei,
all at your little debut
yesterday. I can't vouch for
you, but these are not
exactly hot leads.)

Page 143

Panel 1 Very tall, wide. Camera from above Guren's left
side shooting back at the two sitting. Split
balloons from top and bottom.

KEIJI

(Except for the emblem.)

GUREN

(Anyone could have swiped the
emblem. Besides, Chen's
impossible. He doesn't fit
the profile and if he did, he
would never have made the
grade with that kind of past
still in his cortex.)

KEIJI

(There is the possibility
that you will find my next
question offensive.)

GUREN

(I'll refrain from punching
you.)

KEIJI

(This case has been
manipulated by someone in
authority, for so long, why
haven't you reported it.)

Panel 2 Guren leans forward and pushes the projection
down and into the stick.

GUREN

(We're talking about
prostitutes here. So, first
of all, nobody cares. Second,
I just walk in and say I
think the Commander of
Enforcement or his Elite
Corps are involved or
covering for someone. I don't
think so.)

(Besides, this shit is legal,
no matter how sick or
perverted. If it's consensual
it's legal. Pleasure rules.)
(Everybody's happy, right?)
(Except that we log about a
couple hundred suicides a
day.)

Page 144

Panel 1 Very wide. Camera is at arm chair height again as
in the initial lounge scene but on the other side
looking back past the two toward the firing range
behind the glass. Keiji stands.

KEIJI
(The myth of freedom.)

GUREN
(Huh?)

KEIJI
(Nothing.)

Panel 2 Tall. From Guren's perspective looking up at Keiji who is reaching for his holster.

KEIJI
(Perhaps you could show me an
acceptable replacement
for...)

Panel 3 Tall. Close up on Keiji's hand holding the pulse gun he used on Techman.

KEIJI
(...this.)

Panel 4 Tall wide. Both men full length with their backs to us heading toward the doors to the firing range. Probably silhouetted. Furniture still in the foreground. Guren is looking down at Keiji's gun as they walk toward the glass.

GUREN
(A pulse gun is for pussies.
Yeah I'll show you something.
C'mon.)

Page 145

Panel 1 Wide. 3/4 length side view with Keiji closest to us and Guren alongside standing in front of a long, horizontal coffin like box. A hologram display hovers above it. Guren is touching it with his right hand.

Panel 2 Wide. Camera now by Keiji's shoulder looking over into the coffin as the top slides open to reveal several handguns.

Panel 3 Tall. Looking at waist up Guren from around back of Keiji silhouetted and cropped right. Guren is holding the handgun by the barrel and handing it to Keiji. It is silver with a handle grip and two barrels.

GUREN

(This delivers a stun and there's also a modified plasma charge. Very lethal but not as messy. It explodes then sucks everything back in.)

Panel 4 Tall. Head to elbow on Keiji as he grips the Weapon.

KEIJI

(Capacity?)

GUREN

(Probably about thousand stuns, one hundred charges per power jack. This is charged.)

(Try it out.)

Panel 5 Tall. Full length profile back lit in front of gun coffin.

GUREN

(So what was the kid doing in Mong Kok then?)

KEIJI

(He was purchasing illegal circuits from an electronics hack.)

GUREN

(So you made an arrest?)

KEIJI

(Yes - and then I changed my mind.)

Panel 6 Tall. Waist to shoulders on Guren. He is squinting and looks perplexed.

Page 146

Panel 1 Tall wide. Full length of Keiji and Guren as Keiji is turning toward the firing range, opening one of the door.

GUREN

(Okay. What kind of circuits?)

KEIJI

(Religious.)

GUREN

(For implanting?)

KEIJI

(Yes.)

GUREN

(Into who?)

KEIJI

(Me.)

Panel 2 Wide, telephoto. Keiji is in his lane and Guren is entering the lane beside him.

Panel 3 Wide. Head to elbow of Guren from inside Guren's lane looking over to Keiji's lane. Keiji is aiming. Guren's fingertips are together.

GUREN

(No shit. Implanted or intended to implant?)

Panel 4 Wide closeup on profile of Keiji aiming

KEIJI

(Implanted.)

GUREN

(Well you better get that
taken out or you be
in refurb before your
deadline.)

KEIJI

(Too late. They were
induction chips. Part of
the chemistry now.)

GUREN

(Uh, oh.)

Panel 5 Wide. Closeup on Keiji's finger on the trigger.

GUREN

(Any affects?)

KEIJI

(Yes. I think...)

Page 147

Panel 1 Focus on dummy down lane. Keiji reels off one...
two...

Panel 2 Focus on dummy down lane. Keiji reels off
three...

Panel 3 Focus on dummy down lane. Keiji reels off
four...five rounds that slice the dummy into neat
pieces

Panel 4 ...which collapse to the floor.

Panel 5 Very wide. Keiji turns only his head to look at
Guren in the other lane.

KEIJI

(I was blind. But now I can
see.)

END OF CHAPTER 4

Page 148

Caption POLICE HEADQUARTERS 7.11.2159 1757 HOURS

Panel 1 Very wide. The camera is about 20 feet away from the outside windows of Kristin's office. She is Staring out into space. We may be able to make out Keiji who is sitting across from Kristin's desk.

KEIJI

(Do you want me to take my
clothes off again?)

Panel 2 Very wide, wide angle profile shot of the two in the room. Keiji seated and Kristin standing, leaning against the glass, now facing Keiji. Camera is on the opposite side of the room from the last confrontation. Kristin is left frame, Keiji right.

KRISTIN

(Are you being a smart ass?)

KEIJI

(Sorry. I thought you might
find that humorous.)

Panel 3 Very wide same angle, camera zooms in on the hand of Kristin she hand the clear tablet across the table and Keiji reaches out to receive it.

KRISTIN

(What's got into you?) (Port-
in for me.) (Fingertip.)

Page 149

Panel 1 Tall. Camera from Keiji's left. Close up of Keiji's hand as he presses his thumb onto the tablet

Panel 2 Tall. Close up on Kristin's hand as she inserts the tablet into the slot on her desk.

Panel 3 Tall wide. Camera to Keiji's left off the end of

the table facing back wide toward Kristin, but wide enough to get them both. The hologram is up in front of them again.

KRISTIN

(You seem different.) (Give me an update. What's going on?)

KEIJI

(I believe that I have narrowed in on small number of suspects. You can see my data points in my report.)

KRISTIN

(Human or synth?)

KEIJI

(Inconclusive at this point. There is only one human suspect aside from Toei and myself. If it is a synth there is a human accomplice.)

KRISTIN

(And what was the kid doing in the Mong Kok sector in the first place?)

Panel 4 Very Wide. Same general camera direction, but close up on Keiji's hand in far left of frame. He has just placed the small black box that he found in the alley. His hand is posed in motion blur as though he has just started the box sliding across the table. The box is mid way across.

KEIJI

(It is in my report.)

Page 150

Panel 1 Tall. Close upon Kristin holding the circuit between her fingers. It is tightly focused Kristin is out of focus.

KRISTIN
(A liquid circuit?)

Panel 2 3 wide. Very wide angle. Keiji is at the door looking back, Kristin is inspecting the circuit.

KEIJI
(Yes. I must excuse myself. I have a suspects to interview. Six hours left.)

Panel 3 3 wide. Close up from Kristin's perspective of her hand holding the circuit.

KRISTIN
(Sure. Go ahead. Check back here in two hours. Colonel Chen is going to start getting anxious.)

KRISTIN
(So what's on the chip?)

Panel 4 Very wide. Close up on Keiji's eyes

KEIJI
(The truth, I think. I will report back in two hours.)

Panel 5 Keiji leaves. Kristin frowns with confusion. She slots in the tablet and scans the circuit. Her eyes widen as she reads the information on the projection.

Page 151

Panel 1 Tall. Full length shot of Keiji rounding the corner outside Kristin's office. A lightport station is camera left on the wall. The dome over the port is closed.

Panel 2 Tall. Dome is opening and Keiji is moving his finger into position.

Panel 3 Tall wide. Keiji's eyes POV. A readout search for Colonel Chen displays: ELITE FORCES COLONEL CHEN, FLOOR 175 EAST.

Panel 4 Very wide. Keiji's eyes POV. The screen flutters and a WOMAN'S FACE appears on the screen. Keiji's speaks telepathically.

KEIJI

(Colonel Chen, please.)

WOMAN'S FACE

(Colonel Chen is off site at the Elite Corp Terminal. He is not available.)

KEIJI

(Thank you.)

Page 152

Panel 1 Very wide. Keiji's eyes POV. The screen flutters and a map appears, a vector zeroes in on Elite Corp Terminal.

Panel 2 Tall and very wide. Aerial shot of Keiji's shuttle settles onto a rooftop of a black, ominous looking building high above the city. Early evening lighting. Cloudy with a patch of late sun.

Caption POLICE ELITE CORPS TERMINAL 7.11.2159 1920 HOURS

Page 153

Panel 1 Tall wide. Telephoto shot of Keiji stepping out of the shuttle. An ELITE CORPS SENTRY is already standing by with weapon in hand.

ELITE CORPS SENTRY

Caption WHAT IS YOUR AUTHORIZATION?

Panel 2 Tall. 3/4 shot of the sentry, half cropped in the frame. A soft light shines on the emblem on the body armor.

KEIJI

Caption KEIJI-T, T-CLASS SYNTHETIC INVESTIGATOR.
HONG KONG POLICE. I AM HERE TO SPEAK WITH
COLONEL LEE CHEN.

Panel 3 Tall. 3/4 shot centered. The sentry turns away
and touches his headset.

Panel 4 Very wide. Camera his only head and shoulders of
Keiji (left frame) and sentry (right frame).

ELITE CORPS SENTRY

Caption THE COLONEL IS NOT AVAILABLE.

KEIJI

Caption TELL HIM THIS IS REGARDING GOVERNOR
NAKAMURA'S SON, SEAN.

LEE CHEN (O.S.)
(What do you want?)

Page 154

Panel 1 Keiji turns to see Lee Chen standing behind him.
Keiji bows.

KEIJI

Keiji-T, T-Class Synthetic
Inves -

LEE CHEN

I know who you are. I saw
your little demonstration at
AHC. What do you want?

Panel 2 Wide. Close up of Keiji's face.

KEIJI

(I thought I might review the
case with you.)

Panel 3 Tall wide. Full length side view of Keiji[left]
back of sentry [center] and Chen [right], the
shuttle is in the background facing left.

LEE CHEN

(I'm busy. Broulliard is in charge of this case. Review it with her.)

KEIJI

(I have. I thought you might want to see the latent memory images that I accessed from Sean Colbert. I have some questions.)

Page 155

- Panel 1** Tall. Waist to shoulder side shot of Keiji reaching inside his suit.
- Panel 2** Tall. same angle slightly closer. He removes a small clear slate holding it on the edges. He is about to transfer it to his left hand.
- Panel 3** Tall wide. With his left, Keiji thrusts the slate in front of Lee Chen who leans back at the affront.
- Panel 4** Very wide. Close up on Chen left third over the out of focus shoulder of Keiji on right third. Chen is frowning. The tablet still extended.

LEE CHEN

There's nothing on here.

Page 156

- Panel 1** Very tall wide. Camera directly overhead. Keiji moves much closer to Lee. Lee's hand is extended in front of him in a stop gesture.

KEIJI

(Perhaps it is malfunctioning. Here. Hold it like this.)

- Panel 2** Very tall wide. Camera is waist high and looking

up as Keiji sidles around Lee sets his right hand on the left shoulder of Lee's body armor and the pushes the tablet toward Lee Chen's halting [right] hand.

Page 157

Panel 1 Very tall. Shoulder to thigh close up of Keiji's forceful hand and Lee's hand is trying to push back.

Panel 2 Very tall. Zoom in on the two hand cropping out of frame.

Panel 3 Very tall. Ultra close up of Lee' finger making contact with the slate. A glow as contact is made. Tries to push it away but makes contact with his index finger.

Panel 4 Very tall. Zoomed back now (a little)so that we can see Keiji's hand holding the slate a vector light connection bridges to Keiji's hand. And this image seems to connect to the next on the following page.

Page 158

Panel 1 Very tall. Still holding the slate, the idea is that this all took place in about 2 seconds. Now Keiji's thumb is glowing. The slate has formed a bridge connection between the two.

Panel 2 3 wide. The borders are stark white like a flash frame. Lee Chen POV: in the alley tearing open Sean's shirt

Panel 3 3 wide. Lee Chen POV: Grabbing Sean's hair from behind. Two sentries on either side hold Sean's arms over top of the dumpster.

Panel 4 3 wide. Keiji POV eyes: Looking at Lee Chen. Readout flashes: CONFIRMED. CAPITAL CRIMINAL. MULTIPLE HOMICIDE, SEXUAL ASSAULT. AUTHORIZATION TO TERMINATE. Small area of screen says. INITIATE SPOT PARALYSIS.

Page 159

- Panel 1** Tall wide. Camera down low looking up at Keiji and Lee, the slate flashes bright white and travels up the forearms of Lee Chen.
- Panel 2** Tall. Camera waist height on Keiji looking down at the slate. Now back in his possession.

KEIJI

(An unfortunate malfunction.)
(I won't bother you anymore.)

- Panel 3** Tall. Camera waist height on Lee Chen still momentarily paralyzed. He is staring down at his hand.
- Panel 4** Very wide telephoto from behind the shuttle as Keiji steps in.

Page 160

- Panel 1** Tall. Leaning out of the door way full frame.

KEIJI

(Have a good evening.)

- Panel 2** Aerial shot of the shuttle slowly lifting off. Lee and the sentry far below.
- Panel 3** Wide. Lee sort of jerks back
- Panel 4** Wide. Same shot Lee is looking up at the disappearing shuttle.

LEE CHEN

(That little fucker jacked
me. Follow him. I want to
know his whereabouts at all
times. And get me my shuttle.
NOW.)

Page 161

- Panel 1** Wide. Close up of Chen touching his fingers.
- Panel 2** [Border Color]. Kristin at her desk. Camera is low where Keiji was sitting and we are looking up

through the hologram that is displaying text from the Bible.

KRISTIN
(Yes?)

Panel 3 Wide. Long telephoto of only Lee and Sentry silhouetted against the sky. He is striding away.

LEE CHEN
Caption KRISTIN.

KRISTIN
(Yes?)
Radio balloon.

Panel 4 Wide, Lee Chen still in silhouette striding toward camera, head to knees shot.

LEE CHEN
Caption MEET ME AT YOUR APARTMENT. IMMEDIATELY.

Panel 5 Wide. Lee Chen is closer to us. The cropping is head to abdomen.

KRISTIN
(I've been trying to reach
you. Keiji-T is on his way to
see you.)
Radio balloon.

Panel 6 Wide the frame is black.

LEE CHEN
(No shit. Leave now.)

Page 162

Caption 7.11.2159 2001 HOURS

Panel 1 Very wide. Kristin at the end of her hallway walks hurriedly down to her apartment.

Panel 2 Wide. Close up of her hand touching a light panel on the wall.

Panel 3 Wide. Camera behind Kristin. The wall/door of her apartment is open. [But we can't really see much into the room.] Coming in from frame left is Lee Chen.

Panel 4 Very Wide. Elbow to shoulders on Kristin and Lee. He grabs her arm.

LEE CHEN
(Get inside.)

Page 163

Panel 1 Tall wide. Camera is low on floor behind Chloe who is kneeling frame right [partially cropped] with Marie frame left [also cropped]. In the doorway, looking down are Kristin, frazzled and Lee Chen at her back.

CHLOE
(Mommy!)

MARIE
(Miss?)

Panel 2 Tall. Full length from camera at knee height window side of the room [north]. Kristin hurries picks up Chloe and hugs her.

Panel 3 Tall. Camera rotates clockwise but is at the same height. Some silhouetted furniture in the foreground. Kristin, still full length. She hands Chloe to Marie. We can probably see Lee Chen in the background now, if so, the door is closed.

KRISTIN
(Put Chloe to bed.) (You go
to bed now. Mommy has some
business to take care of.)

Panel 4 Wide. Shot from above, [west side of room and south of the doorway] Marie, holding Chloe rounds the corner to the hallway to leave the room.

Panel 5 Wide. Camera still south of doorway but waist

height. Tight shot of Lee and Kristin.

LEE CHEN
(Sit down.)

KRISTIN
(Lee, what is going on?
You're acting -- -)

LEE CHEN
(Sit down. Please.)

Page 164

Panel 1 Very wide. Super wide angle with the camera in the north side of the room directly across from Kristin, who sits on the sofa. Isolated in the center of the frame.

Panel 2 Wide. Waist height camera. From Kristin's perspective. 3/4 shot of Lee opening a drawer on the table by the door.

LEE CHEN
(As I recall you keep a gun
in here.)

KRISTIN
(What are you doing. You're
scaring me.)

Panel 3 Wide. Close up on the gun in the palm of his hand. Camera is from Kristin's side of the room but looking down at the gun.

Panel 4 Very wide. Camera is pointing east, very wide angle and low to the floor so that it looks like Lee (standing in the middle of the room holding the gun at his side) is towering over her. Kristin is on the edge of her seat.

LEE CHEN
(We have a problem. Your boy
Keiji just paid me a visit.)

KRISTIN
(So?)

LEE CHEN

(So I'm on his list of
suspects.)

KRISTIN

(What are you worried about?
Toei was a suspect, too.
Youboth attended the AHC
press conference. What's the
problem?)

Page 165

Panel 1 Tall. Looking up at Lee (waist to shoulders) from
Kristin's perspective.

LEE CHEN

(There's more. Your boy head-
jacked me.)

KRISTIN

(More? What more?)

Panel 2 Tall wide. Camera directly overhead Lee has
turned away as though he is pacing across
the room, still holding the gun.

LEE CHEN

(The kid was becoming a
problem.)

KRISTIN

(You're not making any sense?
Who?)

LEE CHEN

(The kid! Colbert.)

KRISTIN

(A problem, how?)

Panel 3 Tall. Camera is where Kristin sits, looking at
Lee. He is standing between rooms so there is
going to be some furniture in the foreground. He

is facing east looking down at the floor like a kid caught in a lie.

LEE CHEN

(We met. After the Keiji Show at AHC, I wanted to talk to him after the presentation.)

KRISTIN

(And?)

Panel 4 4+5 Wide-side-by-side. In 4, Camera is behind Lee. Closer, chest up in the left third. He is standing at the window looking out. Balloons straddle the frame of 4 & 5.

LEE CHEN

(We talked. I wanted the override protocols for these new synths. Modifications are what keep my Elite Corps in line. Well, he wasn't, shall we say, cooperative.)

KRISTIN

(Of course not, AHC maintains strict control on protocols.)
(So then what?)

Panel 5 In 5, Kristin is the same size and cropping but we are looking her in the face. Balloons straddle the frame of 4 & 5.

LEE CHEN

(So I tried to charm him.)

KRISTIN

(Don't tell me you made a pass at him.)

Page 166

Panel 1 Wide. Close up on Lee from the west side. Profile. He is still facing the window and has a sheepish grin. Their balloons as in 165.4 & 165.5 straddle the frame.

LEE CHEN
(A small one.)

KRISTIN
(Lee. Really.)
(OK, so at the least it was
inappropriate.)

Panel 2 Wide same camera as 155.5 Kristin has her left
hand half covering her mouth. Their balloons as
in 165.4 & 165.5 straddle the frame.

KRISTIN
(So then what?)

LEE CHEN
(So I was just going to have
him followed...)

Panel 3 Very wide. Extreme close up on Kristin's face.
She is squinting incredulously.

KRISTIN
(What are you saying?)

Panel 4 Wide. Camera from Kristin's perspective. A full
length, across-the-room shot of Lee who has
turned from the window possibly starting to
stride toward her [if it works]. His face half in
shadow. Balloons as in 165.4 & 165.5 straddle the
frame.

LEE CHEN
(I was just going to put a
little pressure on him.
Things got out of control.)

Panel 5 Wide. Kristin's head and shoulders profile from
camera on the west side close up. Balloons as in
165.4 & 165.5 straddle the frame.

KRISTIN
(Ohmygod. You were THERE?)

Page 167

Panel 1 Very tall. Full length profile [camera pointing west to east] of Lee as steps into the room facing off with Kristin. His fists are clenched and he is leaning forward.

LEE CHEN

(Yes, Dear Heart I was there.
And it was time to teach the
little prick who's in
charge.)

Panel 2 Very tall. Kristin full length profile from the same camera viewpoint. She is standing now and has an incredulous look on her face. Her arms are raised with her fingertips to the sides of her head.

KRISTIN

(I'm not hearing this!) (My
god he was beaten and
raped!?)

Panel 3 Wide. Extreme close up on Lee. He glares defiantly, with a demented smile.

LEE CHEN

(Not in that order.)

Panel 4 Wide. The camera is south shooting north at Facing Kristin from the chest up. She has turned away, and we can see Lee in the background behind her. She has a look of panic now.

KRISTIN

Small type like under her
breath. (What's happened to
you?)

Panel 5 Wide. 3/4 view of Lee from behind. He has turned back toward the view of the city.

LEE CHEN

(I didn't know he was the
Governor's son.)

Page 168

Panel 1 Tall very wide. camera is at the window looking back into the room. Lee is left third chest up rubbing the gun across his forehead. Kristin is in the background facing him.

LEE CHEN

(I'm afraid I've been going off a lot like this lately. Especially if they fit the profile.)

KRISTIN

(What does that mean? What profile?)

LEE CHEN

(Blond, fit, just like ---)

Panel 2 Very wide. Camera is low, behind Kristin shooting past her right hand which is slightly out of focus in the foreground about to touch her fingertips together to make a call. In the distance across the room Lee spins around with the gun pointed at her.

LEE CHEN

(There's no need to call anyone, that would just bring your daughter unnecessary harm.)

Page 169

Panel 1 Very wide. Camera is low and shooting east to west. Very wide angle of the room to get Kristin on the left and Lee on the right. Silhouetted perhaps.

KRISTIN

(You're threatening us?)

LEE CHEN

(Don't get all hysterical. These punks were whores and pimps — just like my father.

Colbert was a mistake.)
(Besides, I thought he was
dead.)

Panel 2 Tall wide. Camera from the same side a close up
profile of Kristin. Balloons straddle the frames
of 2 & 3.

KRISTIN

(You need help, Lee. If
there's some memory,
something from your past-
they can fix that.)

Panel 3 Tall wide. Close up of Lee looking at the
ceiling. Balloons straddle the frames of 2 & 3.

LEE CHEN

(That's a laugh...You have no
idea.)

KRISTIN

(What happened to you? Tell
me.)

LEE CHEN

(Do you have something to
drink?)

KRISTIN

(Anything. What?)

LEE CHEN

(A single malt.)

Page 170

Panel 1 3 wide. Camera is behind Lee's left arm capturing
a elbow to shoulder shot with Kristin in the
background. Kristin raises her right hand to
touch her fingers together. Lee instinctively,
jerking, raises the gun. Kristin's left hand is
in a "stay calm" pose.

KRISTIN

(Easy...I'm calling Marie.)

Panel 2 Small. Camera from the same general direction close up on Kristin's hand touching the dots on her fingers, certain dots are lit.

Panel 3 Tall, waist-up shot, front-facing Marie walking into the room with a tray and a glass of scotch.

MARIE

(I hear already that, Miss.)

Panel 4 Tall wide. Lee takes the glass from the tray and walks back to the window.

Panel 5 Tall. Kristin nods silently to Marie who exits the room.

Page 171

Panel 1 Very wide. Camera is on the side of the windows looking back at an extreme close up of Lee with the glass just below his lips. He is just holding it there staring out the window as he speaks.

LEE CHEN

(That raid on the rehab center four years ago. There were hundreds of files recovered in that raid. (Mine was one of them.)

KRISTIN

(You were a patient there?)

FLASHBACK

Panel 2 Tall. Blue duotone grainy with fogged edges. A small room, maybe 12 x 12 with a door, a bed, a small table with a chair and a night stand. Camera is low and waist high. Young Lee Chen is being restrained by a robotic synth in foreground right. Lower and across the room sits a bleach-blond 40-something in a chair by a small desk with a grungy neon lamp. He takes money from what looks to be a client.

Caption LOTUS HOUSE, HONG KONG 2135

LEE CHEN

Caption TRUE. MY OWN FATHER WAS WHORING ME
OUT WITH SYNTHS — PEOPLE PAID TO WATCH — MEN
MOSTLY.

Panel 3 Tall. Blue duotone grainy with fogged edges. The camera is just above the level of the bed facing the door. The shoulder and torso of the synth are in the foreground sort of reclined on his side, then just on the other side of him is Young Lee Chen. We can see some of his head and upper, (implied) shirtless torso. Nothing too graphic. They are sitting up startled as bedroom door bursts open to reveal police swat team.

Panel 4 Tall wide. Blue duotone grainy with fogged edges. Overhead of room. Father and client are getting cuffed camera left. Camera right, the synth, camera right, is getting head-jacked in a flash of sparks, as Young Lee Chen looks on. A police social worker is kneeling in front of him. He is now robed in a blanket.

LEE CHEN

Caption TRUE. BUT, I WAS RESCUED —

Page 172

Panel 1 Very wide. Blue duotone grainy with fogged edges. Perspective shot of a traditional type building with columns and the defacto sign out front. Shelter House for Boys. Est. 2099

LEE CHEN

Caption AND TAKEN TO SHELTER HOUSE.

Caption SHELTER HOUSE — 2135

Panel 2 Very wide. Blue duotone grainy with fogged edges. Overhead shot of an operating room with bright lights. Doctors and nurses surround the table and

Young Lee Chen lies on his side covered in a sheet on the table. They are accessing the back of his head.

LEE CHEN

Caption OF COURSE THEY ERASED ALL THAT. ALL THE POISON.

Panel 3 Same camera as 171.1 except that Lee has turned to his right and downs the scotch.

PAUSE FLASHBACK

Page 173

Panel 1 Very wide. Camera shooting east to west across the room maybe silhouetted like 169.1

KRISTIN

(So?)

LEE CHEN

(So I was cured. Honors at the academy. Rose through the ranks.)

KRISTIN

(But that changed.)

LEE CHEN

(It was years later I had just been promoted to Colonel.)

(I'm sure you remember.)

FLASHBACK CONTINUES

Panel 2 Very wide. Blue duotone grainy with fogged edges. Camera low to the floor shooting directly across as SWAT team is poised at either side of a door labeled: SHELTER HOUSE EXECUTIVE DIRECTOR DR. Sheldon Swede PhD.

LEE CHEN

Caption HARD TO IMAGINE, BUT SOME OF THE MANAGEMENT
 AT SHELTER HOUSE HAD STARTED UP THEIR OWN
 PROSTITUTION RING. WE RAIDED THE PLACE.

Panel 3 Very wide. Blue duotone grainy with fogged edges.
 Camera is positioned in the room looking directly
 back at the doors that are now open and officers
 are rounding the corners into the room. The
 camera is desk height and in the foreground are
 the silhouettes of two startled adult males
 behind a desk and a digital capture device
 between them. Across from them is a young boy,
 clothed, in a chair. With a photo sweep backdrop.
 Large projection screens show names and faces of
 children and teens. Lee Chen and police
 break down a door to an office.

Page 174

Panel 1 Very wide. Blue duotone grainy with fogged edges.
 The camera is in a similar position as the last
 panel with a futuristic file cabinet in the
 foreground, it's drawer ajar and hanging open.
 Glass discs and clear tablets are scattered
 everywhere. Lee stands beside it looking down at
 the debris. In the background the SWAT team
 escorts the perps out of the room in hand cuffs.

Panel 2 Very wide. Blue duotone grainy with fogged
 edges. Camera is from Lee's perspective. Close up
 down his arm to his hand, thumbing through the
 names and faces on the touch hologram.

Panel 3 Very wide. Blue duotone grainy with fogged edges.
 Extreme close up of the name and face of Young
 Lee Chen. And some data like. Patient from 2135-
 2139. Surgical memory erasure. Data files: Stored
 awaiting deletion. A small 2 inch glass disc
 hovers near the projection.

LEE CHEN

Caption THEN I FOUND MY OWN FILE, MY MEMORY TRACKS,
 STILL IN TACT.

Page 175

Panel 1 Very wide. Blue duotone grainy with fogged edges. Camera is just below the disc shooting up at Lee who now holds up the disc in his hand.

Panel 2 Very wide. Blue duotone grainy with fogged edges. Extreme close up on Lee's hand holding the disc and waving a small round-like 1" circular device (like a thumb drive) over top of it.

LEE CHEN

Caption AND THEN I DID A VERY STUPID THING.

Panel 3 Very wide. Blue duotone grainy with fogged edges. Camera looking down on an extreme close up of the thumb drive thing. Lee lifts a small liquid, glowing capsule from the center of the circular device.

Page 176

Panel 1 Very tall. Blue duotone grainy with fogged edges. Camera is low again shooting upward waist up on Lee. He puts the capsule in his mouth.

Panel 2 Very tall. Blue duotone grainy with fogged edges. Side view knees up shot of Lee. His head is down and he has raised his fists to his temples. He is grimacing in pain.

Panel 3 Very tall and wide. Blue duotone grainy with fogged edges. Camera is directly overhead looking down but much higher than the actual ceiling. Lee is on his knees arching backwards in agony. He screams.

END FLASHBACK.

Page 177

Panel 1 Very wide. Camera is behind Kristin looking back through the room toward Lee who is still in profile quaffing the last of his scotch.

KRISTIN

(You infused them, didn't
you?)

Panel 2 Tall and wide. Very close up on Lee's face. A tear perhaps.

LEE CHEN

(It's a transforming experience to suddenly see the world through a black, dirty cloud.)

Panel 3 Wide. Looking down at the edge of the dining table. Lee sets the glass and gun down at the same time, leaning forward on the table.

KRISTIN

(Turn yourself in, Lee. They can help you.)

Panel 4 Wide. Close up from Lee's perspective of him holding the gun, now in both hands.

LEE CHEN

(It's too late for that.)

Page 178

Panel 1 Very wide. Camera is low shooting west to east across the room Lee steps closer to Kristin.

LEE CHEN

(All I need you to do is get rid of the report he logged. I'll take care of Keiji-T.)

KRISTIN

(You need to stop this.)

Panel 2 Very wide. Camera shooting west to east. Head and shoulders of Lee and Kristin. Lee is holding the gun in his right hand to his temple

LEE CHEN

(This is the only way to stop this. Just do what I say. My officers are right outside the building. Don't force my hand.)

Panel 3 Very wide. From Kristin's vantage point looking across the room Lee Chen is standing at the doorway. It is open.

LEE CHEN

(I'll take this with me. This time follow instructions.)

Page 179

Panel 1 Tall wide. Overhead shot of the entire room including the hall way to the left where Lee is now striding down the hall. Kristin is alone. in the space.

Panel 2 Wide. Close up of Kristin's hand touching her fingertips certain ones are lit.

Panel 3 Wide. Extreme close up on Keiji's face with a red glow on it from the interior of the shuttle.

KRISTIN

Caption WE NEED TO TALK. YOU'RE NOT SAFE.

Panel 4 Very wide. Aerial shot above the city with a police shuttle cruising through the maze.

KEIJI

Caption IT'S COLONEL CHEN, I KNOW. MEET ME ON THE SHUTTLE PAD OF POLICE HEADQUARTERS.

KRISTIN

Caption I CAN'T... NEVER MIND. I'M ON MY WAY.

END CHAPTER 5

Page 180

Panel 1 Very wide. Lighting dim. Bluish. Keiji is standing inside the rooftop hangar of Police Headquarters alongside the shuttle. Glass windows surround the vast space. Keiji and the shuttle are camera left in the foreground. Kristin emerges from a sliding metal door in the distance camera right.

Caption POLICE HEADQUARTERS HANGER DECK 7.11.2159
2120 HOURS

Panel 2 Tall. Waist to shoulders close up of Keiji facing Kristin. Her shoulder is out of focus in the foreground camera right. Keiji has his finger to his lips.

Panel 3 Tall. Waist to shoulders of both. Taking Kristin at the elbow Keiji leads her to an enclosure with high tech tanks of something surrounded by a metal grid fence.

Panel 4 Tall. 3/4 Length as Keiji opens the chain link door.

KEIJI
(In here.)

Panel 5 Waist to shoulders shot of Kristin facing Keiji in even darker lighting. Pretty much just rim lighting on their contours. Keiji's shoulder and upper torso are out of focus camera right.

KRISTIN
(What are we doing in here?)

KEIJI
(This metal enclosure will
help block surveillance. We
don't have much time.)

Page 181

Panel 1 Tall. From Keiji's perspective, 3/4 view Kristin amidst the barrels and tanks with her back turned toward him.

KRISTIN
(Listen, I'm taking -)

KEIJI
(Please allow me to speak.)

Panel 2 3 wide. Head and shoulders both. Kristin facing

right on left third and Keiji on right third.
Balloons between

KRISTIN

(No. You listen to me. We
have to back off the case for
right now.)

KEIJI

(That's irrational. I've made
a positive identification.
Dr. Colbert's assailant and
the serial rapist are the
same.)

Panel 3 3 wide. Camera looking at Kristin. Head and
shoulders in left third of frame. Keiji out of
focus shoulder and head in right frame.

KRISTIN

(I know it's Lee Chen. He
gave me a full confession
minutes ago - at the same
time he threatened my
daughter.)

KEIJI

(I have memory prints of the
attack on Dr. Colbert. One
hundred percent confirmation
of a capital crime.) (He has
obviously reprogrammed some
of his elite corp enforcer
synths to commit the actual
rapes. Then he keeps the
experience for his own use.)

Panel 4 Very wide. Kristin turns away fighting off tears.

KEIJI

(If we take this information
to Governor Nakamura the case
is closed.)

KRISTIN

(His synths are watching my apartment. I had to use the service entrance just to get here.) (Don't you see, there's no winning?)

KEIJI

(There's still hope. We can do this.)

Page 182

Panel 1 Very tall and wide. Counter puntal with panel 2. Close up on Kristin as though she whirled around to face Keiji in panel 2. Balloons straddle gutter.

KRISTIN

(My God, Keiji!)

KEIJI

(In your case, that could be the answer.)

Panel 2 Very tall and wide. Counter puntal with panel 2. Close up on Keiji facing Kristin

KRISTIN

(What!?)

KEIJI

(That circuit I gave you earlier. Dr. Colbert, installed one in me. When I discovered it, the triggering mechanism was released. Infusion was instantaneous.)

KRISTIN

(So?)

KEIJI

(Look, it's something they purposely leave out of our programming. It's all but eradicated from society. But,

it's had a -- profound --
affect on me. Everything
coheres. There is hope in all
this, perhaps even the
truth.)

Page 183

Panel 1 Very wide. Very close up on Kristin's profile
mostly her eyes still focused and looking right
toward Keiji.

KRISTIN

(Look, it would be great if
there was a transcendent
creator but I'm a scientist.
I don't even know how you can
be having these thoughts.
There's only facts, and
there's no such thing as an
ultimate truth.)

Panel 2 Tall and very wide. Side view of Kristin on left
and Keiji on right. Kristin's arms are
outstretched and resting on Keiji's shoulders.
They are looking eye to eye. Balloons in between.

KEIJI

(We really don't have time
for this, but that doesn't
hold up or the statement
itself is empty. If science
is all there is, then what of
ethics, or logic, or love.
Why is it that inside you
feel like there's something
missing... that there's
more?)

Page 184

Panel 1 Very wide. Camera is outside the cage and looking

in. Kristin is turned toward it and her left hand clutching the the metal grid. Chest up shot with Keiji in right third of frame in the background.

KRISTIN

(You're right, we don't have time. This sermon is going to have to wait.)

Panel 2 Tall and wide. Camera zooms in to the the outside of the cage. Kristin is still holding on to the metal but has turned her head around to look back at Keiji.

KRISTIN

(I mean, is God going to save my daughter from Lee Chen?)

Panel 3 Tall. 3/4 length of Keiji, facing Kristin, but he has opened the door to the cage. Kristin's silhouette on the right of the frame.

KEIJI

(Actually, that's our job. I've already alerted Detective Guren. He will make certain that Chen's officers make no move on your apartment.)

KRISTIN

(When did you do this?)

KEIJI

(A few seconds ago - multi-tasking.)

Panel 4 Tall. Camera back in the cage, medium shot, elbows up as Kristin touches her forehead to Keiji's shoulder. Her arms are at her side.

KEIJI

(We can stop him. It's the right thing to do.)

Page 185

Panel 1 Very wide. Side shot inside the cage. Kristin is facing left. Left hand on the cage wire. Right hand wiping a tear. She is left third of the frame and we can see the open door, but Keiji is no longer in the shot.

KRISTIN

(Sniff. Thanks, I mean...)

Panel 2 Wide. Over Kristin's shoulder looking back at the open door and no Keiji.

Panel 3 Wide. Camera is above Keiji's shuttle which is rising up on the elevator toward the roof top. Kristin is the distance below exited the cage looking up.

Panel 4 Wide. Camera Close up on Keiji in the drivers seat in the shuttle. Camera is looking through the glass, but up as though from Kristin's perspective. Keiji is looking at Kristin. His are hands together in a prayer position.

Panel 5 Wide. Side view of Kristin's face close up. Whe is looking up at the shuttle.

Page 186

Panel 1 Very wide. POV From the interior of another aircraft. Shoulder pads of Elite synths are watching Keiji hovering outside of police headquarters. Through the windshield we see Keiji's shuttle leaving the rooftop bay.

Panel 2 Tall. Forced perspective looking down on Kristin where we left her. She is touching her fingertips together. Tight enough to see that.

KRISTIN

(Guren. Where are you.)

Panel 3 Tall 3/4 on Guren in a room full of guns racked on the wall. He is holding a shotgun style plasma rifle and speaking aloud.

GUREN

(I'm in armaments. I'm heading to your place.)

KRISTIN

Balloon over from Panel 2
(Stay that. I'll cover my apartment. I need you somewhere else.

Panel 4 Close up of Guren.

GUREN

(What? Why?)

Panel 5 Close up of Kristin she may be walking now.

KRISTIN

(Get a big gun...)

Page 187

Panel 1 Wide. Shot of the Governor in the back seat of an air limo. Camera is wide looking back.

GOVERNOR

(on phone) (Perhaps you could meet me at the hospital. They just called. Sean is out of intensive care. He's conscious. I'm on my way there.)

Panel 2 Wide. Close up of Keiji at the controls of the police shuttle. Front view wide angle. Balloons straddle the gutter.

KEIJI

(voice) (I will meet you there.)

Panel 3 Very wide. View from Keiji's POV Eyes and interface. Looking down at his controls. He sees he is being followed. READ OUT: Load evasive maneuvers.

Panel 4 Very wide. Front view of shuttle banking left between buildings with the Elite Corps cruiser close behind. Motion blur.

Page 188

Panel 1 Very wide. Interior of Elite Corps Cruiser. Following Keiji as he banks between buildings.

Panel 2 Tall. A twisted camera view as though the camera were locked on the shuttle several yards ahead but Keiji has made a steep bank and is plunging downward. Now there are two cruisers in pursuit.

Panel 3 Tall. Shot from inside Keiji's shuttle plunging straight down through lanes of traffic and pedestrian bridges.

Panel 4 Tall. Shot from outside as Elite Corps cruiser veers to miss an air taxi as though it has ricocheted directly toward the camera.

Panel 5 Tall. From inside a pedestrian walkway. Cross members and glass in the foreground. Tilted camera. We can see that the cruiser is in for an imminent collision.

Page 189

Panel 1 Tall very wide. Extravagant. From outside and beyond the walkway as though the camera has pulled itself out of the way of the crash. The walkway erupts into shower of glass and flames are just erupting from the point of contact. A building, left is just in the foreground.

Panel 2 Very wide. Inside Keiji's shuttle, through the window and over his shoulder, we are still plunging downward. The city below becomes darker.

Page 190

Panel 1 Very wide. Exterior looking at Keiji's shuttle as

it levels off. Behind it we see a tilted trajectory of walkways and traffic. Camera is outside looking back at the shuttle.

Panel 2 Wide. Interior of Keiji's shuttle. The view is from Keiji's eyes and his interface. Read out: OPTIMAL FOR CONCEALMENT: INVISIBLE CITY. 1 KM. NUMEROUS CONCEALMENT OPPORTUNITIES. A SMALL BACKGROUNDER APPEARS: A FAILED EXPERIMENT IN MODERN DESIGN AT THE TURN OF THE C 2091. CURRENTLY LARGELY ABANDONED. FEATURES: TRANSIT BALCONIES> WAREHOUSING. SOME DOWNTOWN BUSINESS. SEX. INFUSION, etc.

Panel 3 Wide. Camera is about at the 10th floor and looking up at Keiji's shuttle only twenty floors above street level as it slows. We are far below the glimmering Hong Kong Top City which fade above into infinity. This area is a mix of rubble, destruction, and old store fronts. A few old bars with some neon lights that still operate.

Panel 4 Very wide. From above camera on Keiji's shuttle slipping under an overhead walkway. Perspective is from the Elite Corps cruiser windshield a target and cross hairs align on Keiji's shuttle.

Page 191

Panel 1 Wide. Side view of roof of cruiser as the drone detaches from the top.

Panel 2 Wide. Front view of drone from about the same distance now it is aiming directly at the camera. Camera flare from the headlamp.

Panel 3 Wide. Inside Keiji's shuttle a warning light and alarm: YOU ARE BEING TARGETED. LOCKED.

Panel 4 Wide. Front view of drone firing blue plasma blast.

Panel 5 Very wide. Camera shows Keiji's shuttle making a

sweep up from below the walkway as a huge explosion erupts from the building behind him.

Page 192

Panel 1 Very wide. Keiji's shuttle drops down even lower. Camera is viewing the shuttle head on and smoke and flames can be seen around the corner from the tight ally where is parked. His running lights are off we can only see a rim of light around the edge of the shuttle and a reddish glow from inside.

Panel 2 Very wide. Above a cruiser. The drone is out front projecting an orange scanning light onto everything in the narrow streets below.

Panel 3 Very wide. From inside Keiji's shuttle. Camera is facing Keiji and orange beam is crossing over his arms and the control panel.

Page 193

Panel 1 Very wide. Camera in front of the shuttle. Keiji punches it to escape and glances off a fire escape or platform and sparks ensue. The cruiser and drone are in attack mode behind.

Panel 2 Tall wide. Front view of the police drone as it fires.

Panel 3 Tall wide. Outside the shuttle camera in front. The back end of the shuttle dips down and fish tails left as it takes a direct hit. There is a mix of blue plasma and the erupting flames.

Page 194

Panel 1 Very wide. The view through the windshield of the shuttle is the side of a brick building rushing toward it.

Panel 2 Tall and very wide. Extravagant shot from the left side of the shuttle as the right side tears through the building in a burst of fire and debris.

Page 195

Panel 1 Very wide. The camera is floor level in the warehouse and the shuttle is tearing up floorboards, scattering debris, knocking down posts and beams coming directly toward the camera, a la Men in Black space ship crash.

Panel 2 Tall and very wide. Same angle. The smoldering shuttle, skids to a stop inside an old warehouse.

Page 196

Panel 1 Very wide. Amidst smoke, view of Keiji on the floor of the shuttle from directly above. His suit is torn and bloodied. Metal bone structure on his shoulder is exposed.

Panel 2 Wide. the left shuttle. Camera at floor level, Keiji stumbles from a gaping hole in the left side of the shuttle.

Panel 3 Wide. Close up on Keiji's hand and waist as he takes the weapon from his holster

Panel 4 Very wide. Through Keiji's eyes a 3D floor plan of the warehouse, indicating possible escape routes. Readout indicates that he is on the third floor. Directly across from him is a railing that overlooks to the first floor. A ramp leads from the railing to a catwalk suspended above the open area below. FLASHING READOUT. PROBABLE DANGER: ADDITIONAL VEHICLES ARRIVING.

Page 197

Panel 1 Very wide. From outside the warehouse. The cruiser is in the foreground and a drone shines the orange scanner through the smoke and the huge hole that is in the side of the building.

Panel 2 Very wide. From directly above as the cruiser

hovers outside of the building. Another cruiser arrives to assist.

Panel 3 Very wide. Camera is street level shooting across debris. At a cruiser that has set down. The side door is open and four Elite Corps Sentries deploy.

Page 198

Panel 1 Wide. Through Keiji's eyes: READOUT. SENTRIES DEPLOYING 109.728 METERS SSW. He sees through the side of the building the heat signatures from below.

Panel 2 Very Wide. Medium shot outside the catwalk looking back at Keiji, crouching at floor level, and aiming his gun bracing his position against the railing. Aiming from the bridge of the catwalk across to the other side of the building and through the windows, Keiji takes aim.

Panel 3 Very wide. From street level, the camera is alongside the cruiser that has set down, looking past the sentries up toward the building that is in the background.
Two sentries erupt in blue debris. Tracer shots can be seen from the third floor window of the warehouse.

Page 199

Panel 1 Very wide. A long horizontal shot of Keiji darting and ducking across the long catwalk back towards the ramp as a blitz of blue beams and explosions rack the warehouse interior.

Panel 2 Very wide. Keiji in mid-air diving over the catwalk railings back to the 3rd floor overlook.

Panel 3 Very wide. Camera is floor level looking at Keiji's back. He is lying on his side. Beyond him two sentries are coming through the doorway. He blasts both of them.

Page 200

Panel 1 Wide. Camera still at floor level. Keiji pushes himself into a sitting position against the wall.

Panel 2 Close up of Keiji, full body in a seated position one leg bent, one outstretched on the floor. Shoulder oozing and exposed. A scanning beam from the police cruiser spreads in an X across his body. He looks directly at the camera as though it is the source of the beam. Superimposed image of Keiji's readout. PLASMA SURGE DETECTED.

Panel 3 Tall and very wide. Extravagant long shot of Keiji flying through the air as the entire background erupts into a massive explosion of flame, smoke, and debris. See source images.

Page 201

Panel 1 Tall and wide. From same exterior angle as 188.3 Same explosion as previous page viewed from the outside of the building. The shot came from the second cruiser hovering above the one on the ground. Tremendous destruction.

Panel 2 Tall and wide, same camera angle. When the smoke clears, an entire section of the building is gone.

Panel 3 Very wide. View from where the shuttle crashed with part of it is in the foreground the camera is very wide angle looking across through lots of smoke and twisted steel. Most of the railing and catwalk are gone and the wall that was at the south of the building is gone.

Page 202

Panel 1 Very wide. Red lit interior of Elite Corps cruiser. One pilot and two sentries in the back. The camera is wide with the pilot sentry in the left third.

Caption AREA SECURE. CONTINUE SCANNING.

Panel 2 Very wide. Looking over the top of the cruiser and drone toward the smoke in the open side of the building. The drone is beaming the orange scanning light through the smoke.

Panel 3 Very wide. Wide angle shot on the twisted metal of the catwalk from the perspective of the the open side of the building. Part of the catwalk dangles downward at almost a right angle to the floor. Still lots of smoke.

Page 203

Panel 1 Very tall. Close up on on Keiji's hand and forearm dirty, sweaty, scraped grasping to the metal railing of the catwalk. The angle is severe like the catwalk is dangling at 80 degrees.

Panel 2 Very tall 3 wide. Looking along the the dangling catwalk with Keiji's hand still clutched to the metal. We can see down to the first floor below.

Page 204

Panel 1 Very wide. Camera at level area of remaining catwalk as Keiji pulls himself up and crawls toward the camera. Something crashes down in a blur in the foreground.

Panel 2 Tall wide. Camera is low looking back from the destroyed area of the catwalk toward Keiji's right side. He has reached a somewhat level part of the catwalk and pulls himself up to a sitting position. His wounds appear more severe. Metal is exposed on his arm and leg. There is a gash on his head. The orange lines from the drone scanners cross his chest.

Panel 3 Tall wide. The interior of the police cruiser is filled with a red glow. There are panels, lights and a projection screen alongside the pilot (right) Lee Chen is on the screen. The pilot touches the headset on his helmet.

ELITE CORPS SENTRY

Caption [left]WE HAVE CONTAINED THE T-CLASS
SYNTHETIC AS YOU HAVE ORDERED. HE IS
DAMAGED. AWAITING AUTHORIZATION TO
TERMINATE.

LEE CHEN

Caption [right](on screen) NO. I'M ON MY WAY.
MAKE SURE HE STAYS WHERE HE IS.

Page 205

- Panel 1** Very wide. Keiji's POV. Looking out across the twisted railing in front of him toward the hovering cruiser with its spotlight on him. His readout assesses various damage reports that scroll through his vision.
- Panel 2** Wide. Another Keiji POV. Looking down below his readout locks onto his gun lying in the rubble.
- Panel 3** Wide. Camera is below the cruiser with the spot light looking up as Lee Chen's shuttle descends alongside.
- Panel 4** Very wide. Camera behind Lee Chen in his shuttle as he looks out through the window passing along the broken structure.

Page 206

- Panel 1** Tall. Camera directly overhead as Lee's shuttle maneuvers alongside the hanging catwalk on one of the open sides of the building.
- Panel 2** Tall. Close up on Lee Chen's hand and forearm as he grabs a plasma shot gun.
- Panel 3** Tall. Outside the shuttle as Lee straddles from shuttle to the catwalk.
- Panel 4** Tall. Close up blur of Lee Chen's boot on the catwalk as it shift and creaks. Some kind of debris drops into the foreground and bounces.

Panel 5 Very wide. Camera at catwalk level [which is sloping left toward the abyss] behind Lee can see up to his knees and the barrel of his shotgun. In the distance is Keiji where he has propped himself up.

Page 207

Panel 1 Very tall. Camera from Keiji's perspective looking up at Lee Chen who is balancing on the catwalk towering over him.

LEE CHEN

(So much for T-Class technology. Every iteration of synths they think they've saved the world.)

KEIJI

(I have proof of your guilt in these crimes--and your network of illegally extracted consciousness.)

Panel 2 Very tall. Close up chest and shoulders on Lee Chen, the camera is still looking up.

LEE CHEN

(You mean head-jacking? Ha!)
(They were pimps and rental boys with heads full of commercial grade experiences.) (Arrest me.)

Panel 3 Very tall and wide. Camera is directly overhead focused on Lee standing over Keiji.

LEE CHEN

(I was impressed at your debut the other day. All muscled up and sexy. But now look at you. You're a mess. The taxpayers are not going to be happy.)

Page 208

Panel 1 Very tall. Close up on Lee's right arm to his shoulder as he primes his weapon. SFX: A whirring sound is heard as the gun comes up to full power.

Panel 2 Tall and 3 wide. Back again from where the shuttle crashed looking across at what's left of the railing and structure, the two balanced on the catwalk and the cruiser with spotlight focused on them.

KEIJI

(I have not logged my data into the Lightstream yet, but terminating me will not erase your crimes.)

LEE CHEN

(You didn't log the data, and you didn't terminate me when you had the chance. The reason for this?)

KEIJI

(There's forgiveness once you surrender.)

LEE CHEN

(You're going to forgive me?
Ha!)

KEIJI

(Perhaps you could start by forgiving yourself.)

Panel 3 3 wide. Waist to shoulder shot. Lee looks incredulous.

LEE CHEN

(You are an odd one. Too late for that. These were capital crimes and you're not the only one who knows. You should have terminated me.)
(All I really want right now is to see you explode.)

Page 209

- Panel 1** Very wide. Target vector overlays a side view of the cruiser that has its spotlight focused the building.
- Panel 2** Tall and wide. Camera is low below the rubble looking up at Detective Guren trains the scope of an enormous cannon-like weapon on the Elite Police Cruiser.
- Panel 3** Directly overhead high enough to get both Guren [about 50 meters away from the cruiser] and the cruiser. He launches a crooked, lightning-likebeam at the cruiser.

Page 210

- Panel 1** Tall and very wide. Extravagant side view close up on cruiser as the hull erupts into a ferocious explosion that sends a shock wave and fiery debris inside the warehouse.
- Panel 2** Very wide. From inside past Lee and Keiji who are in the foreground looking back at the explosion that rocks them forward and almost engulfs them.

Page 211

- Panel 1** Very tall and wide. Camera at the level of the 3rd/4th floor directly across. Full length of Keiji who is clinging to the railing. The catwalk is gone only some twisted debris, wires a chain from the ceiling. He squints through the smoke. A couple of meters from him and a meter below hangs Lee Chen from a piece of chain that is hanging from a precarious piece of twisted metal above. All this is within camera view.
- Panel 2** Very tall. Close up of Keiji's hand outstretched toward Lee and Lee's hand holding on to the chain. Keiji's hand is inches from Lee's.

KEIJI

(Give me your hand.)

LEE CHEN

(This is your chance fuck
nuts. Terminate me. You're T-
Class. You've got the
authorization.)

Panel 3 Very tall. Close up on Lee Chen's face. Looking down from Keiji's perspective.

Page 212

Panel 1 Very tall. Close up on Keiji's face from Lee Chen's perspective.

Panel 2 Tall Close up on forearms wrists and hands. Keiji reaches down and grabs Lee Chen's wrist.

KEIJI

(Let go. I have you.)

Panel 3 Tall. The chain breaks loose and falls from the twisted metal frame above.

Panel 4 Tall. From behind Lee Chen head to waist. Lee reaches into his belt and pulls out his side arm.

Panel 5 3 wide. Looking down at Lee Chen his left hand is on the upward arc with the gun now almost pointed directly at Keiji.

Page 213

Panel 1 Tall and wide. Same angle, but a bright flash and beam of light cut through the darkness from the wreckage below. The panel is almost entire blue and spattering debris.

Panel 2 Tall and wide. the camera is looking up at Keiji. He is covered with spattered blood and is holding only Lee Chen's gloved hand. Keiji's eyes may be squinted closed.

Panel 3 Very wide. Camera view is from Keiji's perspective. Guren is standing 3 floors down amidst debris, rubble and flame. Shouting up.

GUREN
(Everything's secure. Sorry
it took so long.) (Need a
hand?)

Page 214

Caption A FEW MINUTES LATER.

Panel 1 Tall very wide. Back of Guren's shuttle.
Detective Guren is crouched and settles Keiji
into a seat. He drapes a silver blanket around
him.

GUREN
(You look like shit pal. How
bad is it?)

KEIJI
(Expensive but not terminal.)

GUREN
(Good. Where to?)

KEIJI
(My transmitter is
malfunctioning. We need to
contact Officer Broulliard.
Governor Nakamura is waiting
for me at the Prefectural
Medical Center.)

Panel 2 Very wide. Guren settles into the pilot seat.

GUREN
(You got it.) (You were going
to save him, weren't you?)

KEIJI
(You put an end to that.)

Page 215

Panel 1 Tall and wide. Close up on Guren from Keiji's
view.

GUREN

(He would have killed you.
What about your protocol? You
had every right to extinguish
him!)

Panel 2 Tall and wide from outside the shuttle, as though through the windshield. Camera is in front of Guren on the pilot seat angled toward Keiji but framing both characters.

KEIJI

(It was the right thing to
do.)

GUREN

(How do you know?)

KEIJI

(It was in the book.)

Panel 3 Very wide. Camera to Guren's left with him out of focus in the foreground.

GUREN

(You mean those scriptures
that were infused in you
illegally?)

KEIJI

(Yes, those.)

Page 216

Panel 1 Tall and very wide. Camera is behind. Guren and Keiji are silhouettes against the control panel and view out the windshield.

GUREN

(That's going to put a crimp
in your license-to-kill-kick-
some-ass- super-cop-duties.)

KEIJI

(My overriding protocol is to help humans. There may be a better way.)

GUREN

(Right. You could become a preacher.)

KEIJI

(Yes, I've thought of something like that.)

GUREN

(Not in New Asia you won't. Maybe in the colonies.)

Panel 2 Very wide. Same shot at 215.3 but from Keiji's side of the shuttle.

KEIJI

(You're and 'ager' aren't you?)

GUREN

(Hold on. I drive a little crazy.) (You can tell?)

Page 217

Panel 1 Full half maybe full page. Aerial shot of shuttle over HK2.

KEIJI

(It's starting to show. May I ask why?)

GUREN

(Time used to be a precious commodity. Every moment was meaningful. Now it means nothing. People waste time. It's one long pleasure binge. Days, weeks, months in the V. And then they kill themselves. Have you seen the

suicide rate?) (So what do
you think?)

KEIJI

(If I were human, I should
think that living forever
without meaning would be
similar to being dead,
possibly worse.)

GUREN

(Yeah. Kinda like hell. What
did your mystery chip say?)

KEIJI

(A fairly thorough compendium
of religious texts with many
beneficial aspects.)

GUREN

(Which one do you believe?)

Page 218

Panel 1 Very Wide. Directly in front of the windshield
framing both characters.

KEIJI

(I'm a T-Class synthetic. I
don't have the option of
belief or disbelieve. I can
only assess. Like guilt or
innocence.)

GUREN

(OK, but you can choose. What
would you choose?)

Panel 2 Standard. Close up on Keiji.

KEIJI

(I think I would choose the
Christian belief.)

Panel 3 Standard. Close up on Guren.

GUREN
(Why?)

Panel 4 Standard. Close up on Keiji. Direct on.

KEIJI
(Perhaps because it is the
only one with a Savior. It
seems to me that is what you
humans need most.) (You are,
of course, free to choose.)

Panel 5 Standard. Direct on Guren.

GUREN
(Right. The Christ followers;
except in that scenario, if I
choose to live without God, I
end up in hell.)

Panel 6 Very wide. Aerial shot from roof of hospital.
Perhaps an out of focus sign in the foreground
and the shuttle a small element in the center of
the shot.

KEIJI
(And here we are.)

GUREN
(Did I ever tell you, you
were a smart ass?)

Page 219

Panel 1 Very wide. Establishing aerial shot of
Prefectural Medical Center.

Caption PREFECTURAL MEDICAL CENTER 7.11.2159 2331
HOURS

Panel 2 Tall wide. From above about where the door would
be. This is no longer intensive care. It is a
recovery room Sean Colbert elevated in what
appears to be a bed but it is angled up at the
knees and the entire unit is angled at about 60

degrees with side shelving attached. He is covered with a blanket up to his waist. He is flanked by Kristin Broulliard on his right, and Governor Nakamura and Dr. Hayes on his left. Sean is wearing a thin white, hospital body suit and a device is wired to part of his head.

Panel 3 Tall wide. Camera is over the shoulder of Sean as the door to the room slides open and Detective Guren and Keiji step in. Keiji is wearing Detective Guren's coat over his shoulders.

SEAN
(Keiji.)

KEIJI
(Dr. Colbert.)

Page 220

Panel 1 Tall. Waist up shot of Sean from Keiji's perspective. He reaches out with finger tips extended. Foreshortening for drama.

Panel 2 Tall, 3 wide. Close up on fingertips touching mimicking the AHC logo without being too cutesy. Keiji's hand is battered and dirty, his forearm is bloody and pieces of internal structure exposed.

Panel 3 Very wide. Head and shoulders on Keiji. Guren probably in the background.

KEIJI
(I see you are feeling much better.)

Page 221

Panel 1 Very wide. Close up on Sean.

SEAN
(Does it hurt?)

Panel 2 Wide. Close up on Keiji.

KEIJI

(Initially it was quite
painful. I have since
adjusted my pain receptors to
a more tolerable level.)

Panel 3 Wide. Head and shoulders of Governor.

GOVERNOR

(Officer Broulliard has told
us everything. Thank you. And
you, too Detective Guren.)

Panel 4 Very wide looking back at Sean, the Governor and
the doctor. Sean speaks to Dr. Hayes.

SEAN

(We need to get Keiji back to
AHC. I'm not transmitting
yet. Can someone call an
ambulance?)

DOC

(I'll tend to it?)

Page 222

Panel 1 Tall and very wide. Side view with Kristin camera
left foreground looking across the bed wide angle
to get in the whole room as Doc Hayes leaves.
Guren's side is in camera edge right. Sean looks
at Keiji.

SEAN

(How bad is it?)

KEIJI

(Transmission circuits, fluid
loss, muscle, ligament
damage. All other processing
is in tact except for the
extensive damage to the
nanoderm.)

SEAN

(We'll fix that. Nice work.)

KRISTIN

(Yes. Keiji. Nice work.)

Panel 2 Very wide from the front of the bed with Keiji on Sean's left and Guren on Sean's right. Profiles of Keiji and Guren. Keiji is handing the jacket back to Guren. Everybody in the scene.

KEIJI

(If you are pleased that I
have not been terminated,
then Detective Guren is to be
credited.)

GUREN

(I'm afraid Colonel Chen
didn't fare so well. We're
also short about a dozen
Elite Corps.)

GOVERNOR

(That is unfortunate.)

GUREN

(to Keiji- Keep the jacket.
It has stuff on it.)

Page 223

Panel 1 Tall from Sean's perspective looking back past Keiji to Doctor Hayes as steps into the doorway.

DOC

(The ambulance will be on the
rooftop in five minutes.)

Panel 2 Tall. Close up on Keiji looking at Sean.

KEIJI

(Your status shows dramatic
improvement. Perhaps I will
see you at the lab.)

Panel 3 Tall. Camera pulls out to 3/4 view as Keiji bows to the group.

Panel 4 Tall. Waist up shot of Kristin.

KRISTIN
(I'll walk you.)

Panel 5 Very wide. Silhouette of Kristin and Keiji paused at the door way. Camera is low and waist height, looking past them back into the room to the Governor.

GOVERNOR
(Officer Broulliard, if you
ever need anything. Please do
not hesitate.)

KRISTIN
(Thank you. I may have to
take you up on that.)

Page 224

Panel 1 Tall and very wide. Kristin and Keiji stand on the roof awaiting the AHC ambulance. The city scape is in the background.

Caption 7.11.2159 2357 HOURS

KRISTIN
(Thank you. You saved us.)

KEIJI
(What about the illegal
information in my circuitry.)

KRISTIN
(Toei said they were
recalling the T-Class
project. Shutting down the
operation. I'm going to fight
that. And it looks like the

Governor will back me on
this. I want you back.)

KEIJI

(You have the only other
circuit? You should infuse
it?)

KRISTIN

(I'll hold on to it. After
you get refurbished you might
need it more than me.)

Panel 2 Very wide. The ambulance shuttle descends to the
rooftop behind them.

KEIJI

(Accept it as true... and it
changes everything.)

KRISTIN

(I've thought about what you
said. Maybe you should come
back as a preacher.)

KEIJI

(That idea has been gaining
momentum.)

KRISTIN

(Get out of here you look
like crap.)

Page 225

Page 226

Panel 1 Full spread. The camera is low with Kristin's
hands in the foreground. She is holding the small
black box and a blue glow is emanating from it.
The ambulance lifts off into the night sky in the
background.

END