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how cyberpunk stories can shape and inform
the technological imaginary

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Abstract:

Technological imaginaries can shape how consumers view technologies, what technologies are researched, and what technologies eventually get produced. While technological imaginaries can encompass both utopian and dystopian visions of the future, generally these imaginaries tend to lean towards utopian visions – which can lead to blind spots for possible dangers. Cyberpunk-genre stories, with their highly detailed, highly critical and exclusively dystopian visions of the future, can serve to sobering and informative tool for technological imaginaries, helping us to envision what moral and ethical problems future technological developments have in store for us so that we can pre-emptively start formulating answers to those problems. To illustrate an example of how cyberpunk can influence technological imaginaries in a meaningfully informative and possibly educational way, two quintessential cyberpunk-genre videogames were analyzed for key themes in their narratives, after which these disseminated themes were formulated into the technological imaginaries the games propose. The result is that cyberpunk-genre stories in particular offer a compelling counter-balance to utopian technological imaginaries, introducing a degree of skepticism and critique into our technological imaginaries related to human augmentation technologies in particular.

Keywords:

cyberpunk, technological imaginary, deus ex, videogames, posthumanism

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1 Introduction

1.1 Utopia / Dystopia

Augmentation of the human body through technology, to make it stronger or give it capabilities beyond its biological limitations, is no longer restricted to science fiction. Transhumanist movements that implant technological devices into their bodies have been around for several years already (CNN, 2020), prosthetic limbs are developing to the point of outpacing the capabilities of biological limbs, (The Guardian, 2018), and the first children that had genetic flaws edited out of their genes have already been born in (Gabbatiss, 2018).

The ethical, moral and practical questions raised by such technologies have been a subject of science fiction narratives since the genre's inception, since imagining how technological developments will influence and shape societies lies at the core of the genre. Science fiction and the concept of the technological imaginary (Lister et al., 2009, pp. 66-68) are thus inextricably linked; in *Understanding Videogames*, Rutter and Bryce describe the technological imaginary as “[taking] the form of [popular and commercial] visions of an ideal technologized future, superseding all that is imperfect and unsatisfactory in the contemporary world”. They add that simply describing these visions as “fantasy or illusion” would be reductive: the technological imaginary influences consumer expectations of technology, researcher's foci of technological development, and what technologies get produced - meaning that technological imaginaries have the potential to become technological realities (Rutter & Bryce, 2006, p.136).

While our technological imaginaries can envision both positive and negative future developments, we seem to be inclined towards utopian visions of technologized futures. This utopian leaning was reflected within the science fiction genre up until roughly the 1960s as well, something that authors of the New Wave of Science Fiction literary movement of the 1960s and 70s actively responded to by experimenting with dystopian, analytical and critical sci-fi narratives (see §2.1). This, combined with rise of anti-establishment and counter-cultural movements in the 70s, eventually led to the creation of the cyberpunk sub-genre in the 1980s.

Cyberpunk differentiates itself from its parent genre by a “shift from classic science fiction's robots and spaceships to cybernetics and biotechnology. [A] combination of technoscientific themes and urban subcultures inspired by a punk sensibility, its focus on invasive technologies and its dystopian depiction” of future societies that are largely run by computers and mega-corporations (Cavallaro, 2000, p. XVIII). The philosophical underpinnings of the genre lie in (technology-driven) posthumanism: cyberpunk narratives focus on how future technologies could influence and change us on an individual (body, mind and identity) as well as

societal level (social constructs like gender, political economy, societal hierarchies), with the question of what defines being human as the prominent thematic red thread throughout the genre (Ferrando, 2013; Cavallaro, 2000, pp.72-92, pp.109-126). The genre uses the dispositif of morally grey characters, that live on the bottom or the fringes of cyberpunk's dystopian societies, to analyze and critique the relationships between man, technology and society. Said societies take the form of massive urban sprawls that serve as a meaningful narrative spaces and symbolism, while also forming part of cyberpunk's characteristic and meaningful "high-tech, low-life" aesthetics (Cavallaro, 2000, pp.134-138, pp.150-154).

The genre's propensity to set its narratives in the relatively near future, combined with the (New Wave-inherited) hard sci-fi rule of making futuristic technologies scientifically plausible extrapolations of current-day ones, means that cyberpunk narratives and its audiovisual aesthetics eschew the fantastical and grandiose in favor of the realistic and mundane. This means that cyberpunk narratives can propose critical arguments about our relationships with technology in the now, or propose warnings about possible futures, that even laymen readers might be able to interpret with relative ease due to a degree of familiarity and intuitive understanding of how the proposed world works.

1.2 Research Question

Considering that the thoughts, hopes and fears that comprise our technological imaginaries can influence how and what technologies we dream up, develop and adopt as society, the question of how cyberpunk's characteristic critical angle can inform said imaginaries is an interesting one.

The possible informative function of science fiction on our technological imaginaries seems to be a recurring discursive topic over a long period of time; for instance, in the introduction of the 1992 essay bundle *Fiction 2000*, Slosser argues that science fiction can be the "education" that leads us out of Plato's Cave (p.2). Two decades later in 2015, Henry Jenkins argues in *Notes on the Cyberpunk Moment* that "while mainstream media treat science fiction as [...] prophecy" he considers sci-fi "less prophecy than intervention" due to the genre's ability to incite readers to thoughts and critical reflections on cultural and technological changes in their environment. Jenkins explicitly links this notion of sci-fi as intervention to cyberpunk, arguing that the genre's inception in the 80s and popularity boom in the early 90s caused a shift in discourses around (future) technology towards a more consumer-conscious and critical tone.

Entertainment media are a prime source of popular technological imaginaries; videogames in particular "occupy a place of great strategic significance in the culture" due to its wide audience demographics and cultural influence, thus analyzing videogames as possible

reflections of or influences on technological imaginaries is relevant (Rutter & Bryce, 2006, p.10). For this reason, I chose to analyze two cyberpunk-genre videogames in order to understand how cyberpunk can inform our technological imaginaries: *Deus Ex: Human Revolution* (Eidos Montréal, 2011) and its direct sequel *Deus Ex: Mankind Divided* (Eidos Montréal, 2016). The *Deus Ex*-series is considered the most prominent cyberpunk work in the medium of videogames and a quintessential example of the genre, as well as having and a large mainstream fanbase and great historical significance within the medium (Wahba, 2019), thus justifying the relevance and representativity of the research objects.

“What hopes and fears are projected onto technologies in the cyberpunk-genre games Deus Ex: Human Revolution and Deus Ex: Mankind Divided?”

The goal of this research question is to disseminate the core messages and criticisms related to technology present in the videogames, in order to analyze in what ways the games are reflections of our society’s technological imaginaries and how cyberpunk-genre works can function as informative or shaping influences on these imaginaries.

Note that this research question consciously avoids stating a guaranteed informative or shaping effect: readers of media texts are always an active audience and critical readers, meaning that the reading of the videogames posited in this research cannot represent that of all players. Additionally, while both popular and commercial technological imaginaries are a product of society’s views on technologies, it isn’t possible to make an objective statement of what these views are: we can only speculate on possible majority-held views, with the added caveat that views of individuals can differ (radically) from the majority.

Several sub-questions serve to structure the analysis. The first sub-question is *“what is cyberpunk?”*, offering a history and detailed definition of the genre. The second sub-question is *“what is posthumanism?”*, a concept that plays an important role in the cyberpunk genre and which is the primary thematic focus of the *Deus Ex*-series in particular. The third sub-question *“what is the technological imaginary?”* to more clearly define the concept and how it is used in this research. The last question is *“How do the narrative themes, stylistic devices and aesthetics in Deus Ex: Human Revolution and DE: Mankind Divided portray transhumanism?”* will consist of the in-depth analysis of the works in question, disseminating its storyline to isolate the meaningful elements that form the answer to the main research question.

1.3 Relevance: the Future Is Now

The three examples of recent technological developments given in the introduction all share a common theme of transhumanism through human augmentation. Once relegated to the realm of science fiction, we are quickly reaching the point of technological development where posthumanism-enabling technologies are becoming accessible to and affordable for the many instead of the few.

This makes the cyberpunk genre a pertinent subject for study, due to the genre's focus on critical analysis and examination of the human condition in relation to future technologies and societies. Messages in the genre's narratives can offer either soothing or sobering influences to popular technological imaginaries, as well as deliver warnings against potentially manipulative or harmful narratives and discourses resulting from commercial technological imaginaries held by tech moguls and conglomerates. The genre also offers a potentially effective philosophical tool to inform researchers of possible pitfalls of new technologies before they are fully developed, with these new perspectives potentially mitigating or even nullifying negative effects of future technological developments through pre-emptive safeguarding in the now.

Finally, cyberpunk can help broaden our understanding of how technological imaginaries are constructed, how they can be influenced, and how to avoid negative repercussions resulting from idealistic blind spots and plain ignorance. Dystopian technological imaginaries, in particular, might have untapped educational potential as thought exercises for a variety of disciplines and trades as well as regular citizens.

2 Theoretical Framework

2.1 Cyberpunk

Cyberpunk is a sub-genre of the science fiction genre. The foundations of the cyberpunk genre came about during New Wave science fiction movement of the late 1960s and 1970s that aimed for more realism in the genre as well as more critical themes and narratives, experimenting with new literary techniques to do so. The result of this were stories with generally dystopian outlooks and conclusions, instead of the optimistic or utopian tendencies of pre-1960s sci-fi. Author J.G. Ballard is credited with laying the narrative foundations of the cyberpunk genre itself (Elhefnawy, 2015, p.46). Wanting to do away with narrative archetypes and tropes that formed the basic pattern of stories since ancient (Greek) past, Ballard aimed to create a “new, modern myth”: a reflection of the zeitgeist, insecurities and anxieties present in modern-day society, “with a more oblique narrative style, understated themes, private symbols and vocabularies” (pp.46-49). To this end, Ballard created a narrative framework for other authors to use and iterate upon, making it easier for other authors to deviate from classical literary patterns – though it took some time for this idea to be embraced (pp.55-58).

Early cyberpunk authors found inspiration in countercultural and anti-establishment movements prominent in the 1970s and 80s like posthuman philosophy, hacker culture, anti-capitalist anarchism and the punk movement. Combined with Ballard’s framework for the “modern myth”, this created the philosophical and ideological underpinnings of the cyberpunk genre: mixing realism-based aesthetics and techno-critical stance of the New Wave science fiction with social, cultural, economic and political criticisms of our modern-day societies, extrapolating them towards the future like Ballard did to create dystopian settings and narratives (Olsen, 1992, pp.143-147). These settings and narratives were considered a warning of a worst-case scenario of what society might turn into if today’s problems aren’t solved on time; in essence, using strictly dystopian technological imaginaries as a warning.

Cyberpunk authors were keen to explore the human condition in a technologically advanced dystopia through the lens of posthumanism, particularly transhumanism: “How do we reconcile our traditional models of the body with the new technological ones?” (Dyens, 2000, pp.3-4). Transhumanism at its core is the idea of transcending the limitations of the biological human form, through whatever technological or spiritual means possible. In the cyberpunk genre, this most often takes the form of human augmentation: replacing parts of the body with mechanical prosthetics, ostensibly meant to outperform their biological counterparts but often having their own sets of drawbacks.

Due to the New Wave's legacy of favoring science-based realism and Ballard's framework implicitly urging for highly personal character narratives instead of reusing tropes and archetypes, cyberpunk narratives tend to be intricately detailed. The narrative focus lies on describing the small and mundane intentionally juxtaposed against sprawling cityscapes rife with poverty and crime, creating a metaphor for the alienation from society caused by breakdown of the social order. Cyberpunk characters are never real heroes, always operate according to a grey moral code that the world forces them to uphold. While a cyberpunk setting is largely defined by its technology-led dystopia, cyberpunk characters always use the technology available to fight back by modifying and "corrupting" technology used by the oppressing class, similarly to how anarchist subcultures like hackers do in our real world (Olsen, 1992, pp.149-150; Dyens, 2000, pp.4-5).

While the aesthetic tropes that became the defining characteristic of the cyberpunk genre were still debated on, the 1982 Ridley Scott movie *Blade Runner* came out and became the audiovisual blueprint for the entire sub-genre henceforth: rain-soaked streets reflecting neon lights, East-Asian cultures and economies dominating the West, the lower classes thronging together in endless poverty juxtaposed by the obscene opulence of the upper classes, fashion trends that look like direct iterations on our current modern-day clothing, populations concentrated in megalopolises to escape the ecological devastation that has ruined the environment (Elhefnawy, 2015, pp.187-197).

2.2 Posthumanism

Posthumanism is the philosophical notion of changing our human bodies or minds to become something different than what it was before, with the result of becoming more or better than what we humans were previously. What these changes entail, the envisioned results, and the motivations behind this, can differ greatly depending on the thinker and the time and place they inhabit: examples are the spiritual concept of Nirwana as transcendence of the mind, or mastery of Chinese martial arts leading to deification (Ferrando, 2019).

Transhumanism, a specific branch of posthumanist thought that focuses on the advancement of humanity through technology, is part of the very fundamentals of the cyberpunk genre: in cyberpunk narratives, humans have the ability to integrate technology into their bodies to acquire a variety of abilities that our natural bodies do not possess (Ferrando, 2013). How far the transhumanist aspect goes depends on the narratives itself; this can range from simple changes like a mechanical eye that allows for better vision, to a person with a heavily augmented brain merging with globalized digital networks to become omnipotent and all-

powerful – what we could define as a god.

The cyberpunk genre uses transhumanism to create hypothetical scenarios that it then invites readers to question and critique. For instance, is the aforementioned omnipotent person actually a god, and what does that word mean? Or are they still human? What does it mean to be human, where does that start or stop? Critical questions such as these are sometimes woven into the narratives directly when they are part of the main plot, but cyberpunk generally chooses to invite readers to infer these questions through interpretations of aesthetics, worldbuilding and extra-diegetic information: the transhumanist aspects of the world are normalized to such an extent that it's become part of everyday life for everyone in society, and thus they aren't specifically pointed out by narrators or characters.

2.3 Technological Imaginary

The technological imaginary is derived from the Lacanian psycho-analytical concept of the imaginary, which describes “a realm of images, representations, ideas and intuitions of fulfilment, of wholeness and completeness that human beings, in their fragmented and incomplete selves, desire to become” (Lister et al., 2009, p.69). The imaginary describes a form of constant yearning for improvement, moving forward, going higher, getting more; all in an unconscious drive of desire that keeps us looking ahead for the next best thing that will surely make our lives better, as well as an unconscious fear of missing out and staying at a standstill if we don't keep moving.

The technological imaginary describes the way how new technologies are adopted by cultures, as well as how cultures either derive its social and psychological desires and fears from it or instead project said things upon new technologies (p.70). It's related to its Lacanian root concept in how we unconsciously see newer and better technologies as the answers to our hopes and fears, which results in a constant push forward for new technological development to satisfy those feelings, while at the same time we instinctively tend to cling to technologies that already satisfied our feelings before when something completely new comes out that replaces the old technologies entirely.

In a less abstract sense - still steered by that unconscious drive - the technological imaginary also works as a frame of reference of expectations, hopes and fears about and on technologies, that on both an individual and societal level steers our focus and interests towards developing and adopting certain technologies over others. The introduction of new ideas and

knowledge into individuals and society can alter the technological imaginary based on this new information, which in turn influences what technologies get developed and adopted (p.72).

3 Methodology

3.1 Research Objects

The research objects chosen for this study are the first-person action-RPG videogames *Deus Ex: Human Revolution* (hereafter abbreviated *DE:HR*), released in 2011 for the Sony PlayStation 3, Microsoft Xbox 360, and Microsoft Windows platforms; and its sequel *Deus Ex: Mankind Divided* (abbreviated *DE:MD*), released in 2016 for the Sony PlayStation 4, Microsoft Xbox One, Microsoft Windows and Linux platforms, with a MacOS version released in 2017.

The reason to choose both of these games instead of just one is that *Mankind Divided* is a direct sequel, forming a single cohesive and rich plot with both games sharing the same overarching themes.

3.2 Methods

Analysis of *DE:HR*, *DE:MD* took place using New Game Formalism, a neoformalist approach modified for analysis of videogames, based on the thesis *Neoformalist Game Analysis: A methodological exploration of single-player game violence*. There author van Vught creates a hybridized methodology that combines the neoformalist idea of film (or rather, a mediatext) as a system of devices that readers assign meaning to and derive meaning from, thus forming a meaningful subjective experience, with the game studies-methodological approach of seeing games as a black box of interlocking mechanics that create dynamics through player's interactions with them. The difference between the methods is how they define their research objects (system of devices that function independently, versus black box of mechanics that require input) and what result they analyze (subjective experience versus objective action-consequence), and combining these methods allows for analysis of subjective experiences of players resulting from objective action-consequence resulting from dynamics.

Using this method gives us tools to interpret the narratives and themes present in the research objects, allowing us to analyze how *DE:HR* and *DE:MD* portray the technologies involved in its narratives and how this can add to or influence the technological imaginary of players. Due to this research's focus on the narratives and themes in the games, different than the subject of Van Vught's research, the order of analysis will deviate slightly from his stated order of analysis to better fit the research objects and goals.

This research will analyze four particular aspects of the research objects, in order. First is an object description, consisting of base mechanical characteristics (product info, basic game

mechanics, etc.). Following that are the objects' aesthetics: artistic design paradigm, why it was chosen, what it means. The characteristic aesthetics of the cyberpunk genre means that a lot of the messaging takes place through visual metaphors and contrasts, thus analyzing this is important. Third are the games' narrative and stylistic devices: which are present, what form do they take, what is their function? This is important to denote the kind of subjective experience a player can have while playing the games, which influences how they read the games as text and thus what messages they interpret from it.

This research will take three devices into account: characters as narrative devices, meaning how player and non-player characters in the game contribute to the interpretation of the mediatext by the player (Van Vught, 2016, p.131); *mise-en-scène* as stylistic device, meaning how the game's aesthetics, audiovisuals and worldspaces facilitate the construction of meaning by the player (p.137); and point of view as stylistic device, which concerns how the player's perspective while playing the game influences construction of meaning (p.144). The other stylistic devices Van Vught lists are not relevant for the goal of this research and will thus be skipped.

Lastly, the narratives and themes in the games will be disseminated: what themes are present, how do they tie into the greater plot, and what are relevant ties to current-day developments. This serves to highlight what messages the player can interpret from the games through playing them. Considering the summary of the narrative is large and can reasonably be skipped over without misunderstanding the rest of the analyses, the summary is relegated to Appendix 1.

3.3 Data collection

Data collection took place by playing both games from beginning to end in order, using the Microsoft Windows version of *DE:HR* and the Sony PlayStation 4 version of *DE:MD*, both applications of the latest version number as of 15th of August 2020. Notes were taken on paper during gameplay, in-game screenshots were taken liberally of every subject of potential interest using Windows' screenshot-key functionality and PS4's built-in *Share* functionality.

Both games were played beginning to end once. The approach was to experience as much of the game as possible before moving on to the next plot point without time being a factor, to replicate how the average video game player would likely approach the game's systems and play the game.

Considering both games' storylines can differ slightly due to player choices within the main storyline or actions taken in side-content, online game guides on popular websites (IGN,

Neoseeker, GameFAQs) were used to verify where the divergent points within game's plot are located. Let's Play gameplay videos on YouTube were then used view parts of the game I did not personally experience, to verify if the interpretations of the plot, the narrative or the themes meaningfully change.

3.4 Bias

My personal biases and ideology align largely with the ideology and philosophy underlying the cyberpunk genre, that being anti-authoritarianism, anti-capitalism, anti-establishment, anti-classism, pro-humanism, and pro-egalitarianism. I am generally skeptical of transhumanism due what I consider risks, though I do see potential in posthumanist / transhumanist philosophy and the idea of uplifting humankind through technology if society structurally changes.

4 Analysis & Results

4.1 Unpacking the Black Box of DE:HR & DE:MD

4.1.1 Mechanics and Dynamics

DE:HR and DE:MD are 3D action-RPG¹ games played from a first-person perspective² taking place in a semi-open world. The player plays as protagonist Adam Jensen, whose body has become heavily modified by mechanical augmentations after a traumatic accident.

Players can interact with game environments in a variety of ways (e.g. using PCs to gain information, hacking locked doors, using ventilation shafts as shortcuts) and are largely free to find their own ways to accomplish mission objectives. Successful actions rewarded with XP points that are used for character development³. Players can handle confrontations with enemy entities either head-on (with non-lethal or lethal options), stealthily (ambushes, avoidance, mechanical sabotage) or in some cases diplomatically, aided by a variety of Jensen's special abilities resulting from his augmentations. Players are free to decide which of Jensen's abilities they unlock and specialize in but cannot master all of them, meaning players have to commit to a playstyle and invest in corresponding skills accordingly. Due to the game's design always allowing multiple ways to complete objectives, all playstyles are equally viable.

The story moves forward through accomplishing mission objectives and interactive dialogue with NPCs, and actions and choices made by the player influence how the story develops. Choices have real consequences for both narrative and gameplay, and the player is invited to think carefully before they commit to their choices.

4.1.2 Aesthetics

Appendix references formatted as A2.#

The overarching aesthetics behind DE:HR and DE:MD are described as "cyber-renaissance": a

¹ RPG: acronym for Role-Playing Games. Genre of videogames that focuses on freedom of choice in how players customize their in-game avatar's abilities, growing in power over time. This freedom of choice often extends to gameplay as well, allowing players to make choices regarding their character's actions within a narrative (often through dialogue options), which shapes the narrative according to choices made.

² First-person perspective: meaning the player plays the game while looking through the character's eyes.

³ XP points: experience points. A staple of RPG-genre games, the acquisition of which is functions measurement of growth in ability and power. Depending on the game, reaching certain XP point thresholds will cause an increase in power, reward skill points to spend on character development, or XP points function as a pool of points that can be spent at will to increase specific aspects of the character's power incrementally. In DE:HR and DE:MD, reaching XP thresholds rewards the player with Praxis Points that are spent to unlock and empower Jensen's augmentations.

combination of Renaissance-era art and fashion, combined with cyberpunk aesthetics and the myth of Icarus (Kumar, 2010). The second game also focuses on themes and concepts relating to Apartheid, substituting mechanical augmentation for race. The Icarus myth was chosen due to the allegory of how society adopted the technology of human augmentation very quickly and enthusiastically without considering its negative side effects; Icarus is referred to both literally (A2.1, A2.2, A2.3) as well as symbolically (Goldtooth Creative: "*Purity First*"), forming the premise of the game's storylines.

The Renaissance aspect is visible in the worn fashion and styling of characters in the games, from clothing to facial hair (A2.4, A2.5, A2.6, A2.7)(Cork 2015), as well as in the dominant visual color being gold (a reference to the Renaissance as a golden age) and in the presence of Renaissance-era art (globes, paintings, books) juxtaposed with high-tech and upscale environs (A2.8, A2.9, A2.10).

The cyberpunk aspects are visible in how cutting-edge technology is integrated into every conceivable space, and the stark differences in what forms this takes between upscale and poorer areas (A2.11, A2.12, A2.13, A2.14). A clear example is the city of Hengsha, which is divided into an upper and a lower section: overpopulation motivated the government to build another city on top of the old one (A2.15, A2.16). The wealthy and powerful live under the sun in Upper Hengsha, while the rest live in the darkness and pollution of Lower Hengsha. The player visits both Lower and Upper Hengsha during the course of the first game, and thus experiences the contrast between the two worlds firsthand (A2.17).

Additionally, the cyberpunk aspect of transhumanism, in the form of human augmentation, is a concrete part of the games' aesthetics. In the finale of DE:HR a global catastrophe occurs, that leads to parts of the world enforcing a state of Apartheid segregating the augmented from non-augmented (Goldtooth Creative: "*The Mechanical Apartheid*"). Augmented are harassed by police, put in ghettos and kept under a paranoid watchful eye, denied basic human rights (A2.18, A2.19, A2.20, A2.21). But the question posited is: are they even human anymore? The definition of "being different" and "being better", juxtaposed with "being human" and the societal tensions surrounding this, find their roots in DE:HR and echo throughout the entire series of games (Goldtooth Creative: "*Sarif Industries*"; "*Purity First*").

4.1.3 Narrative & Stylistic Devices

The three devices present in DE:HR and DE:MD that are involved in the construction of meaning by players are characters as narrative devices (Van Vught, 2016, p.131), and mise-en-scène (p.137) and point of view (p.144) as stylistic devices.

DE:HR and DE:MD are generally played from a first-person perspective, with the camera taking a third-person angle in interactive dialogue scenes or during non-interactive cutscenes. The game's focus (point of view) never leaves Jensen, inviting the player to immerse themselves into his character and roleplay as him. The main storyline is told through characters Jensen engages in dialogue with or combats, and the themes are embodied by both these characters as well as Jensen himself: Jensen was augmented against his will and struggles with his new identity as mechanically augmented human constantly, and every character in the narrative has their own relationship with augmentations and their (or others') humanity (A2.22).

Mise-en-scène is how the cyber-renaissance, mechanical Apartheid and cyberpunk aesthetics are communicated to the player, with environmental storytelling (Jenkins, 2003) used liberally. The game's world is filled with books and newspapers with extra-diegetic information, every PC or smart device is accessible and contains correspondence between people that at times serve no practical purpose other than worldbuilding, flashy advertisements tell stories the corporations want people to believe while graffiti and protest signs tell the stories the people actually believe. Locations like Hengsha in DE:HR and the Golem City in DE:MD communicate their meanings almost entirely through their mise-en-scène: the socioeconomic stratification in the former is visualized by a steel plate in the sky that blocks out the sun, and in the latter the squalor of the Golem City stands in stark juxtaposition to the clean and ordered streets of Prague city proper.

4.2 Transhumanism in DE:HR & DE:MD

While the games are suffused with references to transhumanist subject matter and thought, with the recurring references to Icarus as poignant metaphor for the games' themes and narrative, DE:HR and DE:MD focus on three aspects of transhumanism in particular.

4.2.1 Societal Implications of Transhumanism

Diegetically, in DE:HR the concept of mechanical augmentation is sold to the public by corporations as making the augmented "better" than non-augmented people (Goldtooth Creative: "*Sarif Industries*"), while the reality is that good quality augmentations are expensive and the forced addiction to Neuropozyne as monopolized drug makes one vulnerable (Goldtooth Creative: "*Purity First*"). This creates a two-fold socioeconomic stratification: the rich and powerful are able to afford better augmentations and as well as Neuropozyne, allowing them to be physically and intellectually superior to the lower classes that cannot afford high-

quality augmentations or the drug.

In *DE:MD* this stratification is exemplified by the history and function of the Golem City: human augmentations have led to extreme competition in labor-intensive job markets (e.g. construction), leading to masses of the lower classes augmenting themselves in order to stay relevant and find work. This also forces them to take Neuropozyne, with a combination of low incomes due to market competition and the high cost of the drug leading to a complete lack of socioeconomic mobility.

Finally, social stratification is again displayed in the form of the mechanical Apartheid in *DE:MD*: the augmented are forced into obedience or segregated into ghettos. Feared by the non-augmented world population to unreasonable degrees.

4.2.2 Personal Implications of Transhumanism

The tension between bodily autonomy and augmentation is also a recurring theme. The augmented are dependent on megacorporations to survive, due to their need for the monopolized drug Neuropozyne as well as the complexity of augments requiring specialists for repair and maintenance. Considering the megacorporations work together behind the scene to maximize control and profits, this means that these corporations invisibly control the lives of the augmented; and considering augmentations are part of the body, there's no way to escape. The concept of bodily autonomy is also explored through the question of if augmentation is always a meaningful choice: in the case of the migrant laborers in Eastern-Europe, their choice was to either get augmented to work or die of starvation.

Additionally, in the narratives it's shown that malicious entities can exert direct control over implanted augmentations through a variety of technological means. In the opening of *DE:HR*, a terrorist is forced to do a suicide bombing through a hacker controlling his brain augmentations. Later in the game, protagonist Jensen is forced to follow the directions of an antagonist that can control and turn off his augmentations at will, demonstrating this through "turning off" Jensen's legs and hyper-charging his synthetic adrenal glands. Lastly, the ending of the first game shows how the augmented worldwide are tricked into believing their augmentations are faulty due to broadcasted audiovisual jamming, meaning that it's possible to turn the augmented blind and deaf. Soon after, the augmented are forced into a homicidal rage through another broadcast, leading to the eventual development of the mechanical Apartheid.

4.2.3 Transhumanism and Identity

The question of what defines being human is one that is generally communicated through

protagonist Jensen's struggles with his own augmented body and his struggles with his identity. Forced to undergo a life-saving augmentation process without his consent, the previously fully-biological Jensen now only has about 12% of his biological body left. Combined with his now-superhuman abilities resulting from the augmentations, Jensen's inner monologue often contemplates if he is still human or more machine, or maybe something else entirely.

Jensen's status as an augmented human means he's also affected by the Mechanical Apartheid. Here the definition of humanity is questioned through language and symbolism, for instance in how usage of slurs for the augmented and "good slang" for the non-augmented is common and how in propaganda the augmented are depicted as killer robots. The augmented are looked down by "naturalists" without pity and completely dehumanized, and despite most of the augmented only having very minor augmentations like a hand or leg there seems to be no nuance in the hatred.

4.3 The Technological Imaginary of DE:HR & DE:MD

The games' technological imaginary can be considered highly cynical in how it portrays the future. Transhumanism, in the form of human augmentation, is portrayed as something that has great potential for positive change, but the way how the games portray its implementation shows that the bad sides outweigh the good if development, implementation and adoption of human augmentation as technology is not thought through. The hypothetical examples in the games offer criticisms that are concerned with balances of power in society on several levels and how augmentations can factor into that balance, inviting the players to reflect on these examples.

The core of the technological imaginary of DE:HR and DE:MD can be considered a structured set of warnings, using its cynical yet highly detailed and scientifically plausible examples to argue that being too eager to adopt new technologies without considering the implications can lead to big societal problems, which we'll be unable to solve once things reach a tipping point. In this way, the games are quintessentially cyberpunk: not just critiquing how we interact with technologies, but also critiquing our society's technological imaginaries in how they motivate us to keep rushing towards the latest technology without stopping to think.

The games also state that that human augmentation is the type of technology that our technological imaginaries are primed to sell us on already - who hasn't considered replacing a weak or crippled limb with a superior mechanical one? – and the games are quite honest in acknowledging that this is also because the technology is just attractive on an aesthetic and

emotional level. The message here is that it's okay to like Jensen as a character or because of his augmentations, that it's okay to like the idea of augmentation technology in general, but that such feelings do not contradict the necessity of skepticism.

5 Conclusions & Discussion

Deus Ex: Human Revolution and Deus Ex: Mankind Divided offer a cynical perspective on human augmentation technology, and transhumanism in general, arguing that the implementation and adoption of such technology into society shouldn't be rushed without considering the implications.

The way how the games convey their messaging, namely through stylistic and narrative devices that invite the player to actively engage with the themes and narratives present in the games, means that players should be able to engage with the messaging in a way that leads to new knowledge and understanding of the subject matter. This, in turn, has the potential to influence the technological imaginary, by introducing nuance to and critiques of the specific technologies the games portray.

What makes the games particularly poignant in their messaging is a trait inherent in the cyberpunk genre: the active critiquing and challenging of one's individual and societal technological imaginary, by not just stating that a technology has flaws but arguing that such flaws are primarily an error of human greed or over-eagerness. This is worth looking into more: considering how the games actively engage with the player's technological imaginary in ways that non-interactive media cannot, for instance by immersing the player into the role of an augmented confronted by the social dynamics of the Mechanical Apartheid, they offer compelling evidence that combining that medium with the cyberpunk genre's penchant for questioning the reader's beliefs might make for an effective means of altering and expanding the technological imaginaries in society – and hopefully bring some important subjects up for discussion, before it's too late to discuss them at all.

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Appendix 1: Narrative Summary

DE:HR takes place in the year 2027, and mechanical augmentations have just become widely adopted throughout the world.

The technology for human augmentation came from the mind of Hugh Darrow, who developed the “biochip”: a sort of CPU made out of both biological and mechanical parts that functions as necessary component for augmentations to function in the human body, which when implanted into the brain allows it to use the nervous system to control or send instructions to these mechanical augmentations as if they are part of the biological body.

Augmentations are integrated into the body by PEDOT clusters, which like biochips are biomechanical and are placed in the connecting points between the human biological tissue and mechanical augmentations. These clusters function as receivers for inputs from the biochip in the brain, function as the bridge between biological tissue and mechanical parts to better integrate them into the body, and serve to keep the body from rejecting the augmentations through auto-immune responses.

The downside of PEDOT clusters interacting with the nervous system in ways that the body “doesn’t understand” is that glial tissue (non-neuronal supporting the nervous system) starts building up around the clusters over time; sufficient buildup means the PEDOT clusters lose their ability to trick the body’s auto-immune system. The result is that the body starts to reject the augmentations, over time disconnecting them from both the nervous system and the surrounding tissue, leading to a variety of extremely painful consequences (inflammation, sepsis, auto-immune disorders, necrosis, etc.) that often result in death.

The only way to combat this buildup of glial tissue is a drug called Neuropozyne, which augmented people will have to take for life. The formula, patents and production rights for Neuropozyne are monopolized by pharmaceutical corporation Versalife, that has steadily been driving up the price of the drug over the years as a larger percentage of the world’s population became augmented – and thus dependent on Neuropozyne to live. The CEO of Versalife, Bob Page, is a member of the Council of Five: the leadership of the Illuminati, who intend to use Neuropozyne as a means of control.

Adam Jensen, security officer at the world’s leading human augmentation developer Sarif Industries, is present during a terrorist attack that kidnaps a lead augmentation scientist (and his love interest) Megan Reed, suffering traumatic injuries in the defense. CEO David Sarif makes the comatose Jensen undergo a full-body mechanical augmentation with advanced prototype

implants; the implants take perfectly but Jensen struggles with if he's still actually human or more machine at this point.

Jensen eventually uncovers a plot by the father of human augmentation technology, Hugh Darrow himself, who with backing from the Illuminati wants to stop humanity from relying on the technology at all and embrace their pure humanity once more. His plan consisted of sending a fake error signal to the neural-implanted augmentation biochips that every augmented person needs as basis, causing audiovisual glitches for victims and urging them to replace their biochips with newly fabricated ones. However, these new biochips are contaminated, and Darrow sends out a new global signal that causes the augmented to break out in a murderous rage - causing worldwide devastation. Jensen is too late to stop this plot though he does manage to turn the signal off, and (depending on player choice) he can change how the world perceives what becomes known as The Incident.

In DE:MD, taking place in 2029, it turns out that The Incident has led to extreme fear and resentment of the mechanically augmented: after they came back to their senses, many were murdered in retaliation and fear, with leftovers being strictly watched by authorities or segregated in ghettos and concentration camps – leading to what's known as Mechanical Apartheid.

Traveling to the city of Prague and the Golem City, the world's largest segregation complex, Jensen attempts to stop a plot by the Illuminati to cause a massacre of politicians in London by an augmented terrorist splinter cell called Stormsurge. The Illuminati's goal is flaring up anti-augmented sentiments worldwide through secretly funding and manipulating this radical group to commit acts of terror, leading to another extermination war against the augmented and finally wiping them out for good. The Golem City is perfect for this plot: first constructed as a habitat for migrant workers that were forced to augment themselves to compete for jobs in the increasingly competitive labor market, global society turning their backs on this twice-impooverished working class has bred an intense amount of resentment within the residents of the complex.

The Augmented Rights Coalition (ARC), led by the famous intellectual Dr. Talos Rucker from within the Golem City, uses consistently peaceful resistance to mend the wounds caused by the The Incident even though he and ARC are slandered by the news media; but his more militant right hand Victor Marchenko is manipulated by the Illuminati into forming Stormsurge, killing Rucker and using ARC's name to perform acts of terror – undoing all the goodwill ARC previously gained, and flaring up societal tensions all the more by playing into media narratives.

Appendix 2: Visual Accompaniment to §4.2



A2.1: Jensen as Icarus, flying towards the sun (*still from DE:HR game trailer*)



A2.2: Jensen as Icarus, flying too close to the sun and burning up (*still from DE:HR game trailer*)



A2.3: Jensen flanked by an array of tube lights, suggesting the appearance of shining wings similar to the Icarus (still from DE:MD game trailer)



A2.4: concept art of office worker outfits. Note the incorporation of leather parts, as well as the collars and shoulders: angular, flaring or ruffled, indicating the Renaissance-era inspirations.



A2.5: concept art of Eliza, an AI newscaster and fashion icon. The coat's ruffled collar and non-fitting sleeves refer to Renaissance aesthetics, while her hairstyle and make-up are a reference to cyberpunk aesthetics.



A2.6: various concept art of Renaissance-inspired fashion worn by characters in the game.



A2.7: concept art of Adam Jensen, particularly signature coat and outfit, worn within city hubs. The embroidery of the coat has a floral pattern and material make that is evocative of materials and designs used in Renaissance-era clothing, and Jensen's facial hair is a style that was commonly worn by men during that historical period.



A2.8: in-game screenshot of light fixtures in the lobby of Jensen’s home apartment building in Detroit, in DE:HR.



A2.9: in-game render of an office in a tower in the Útulek Complex in DE:MD. Note the light fixtures and industrial technological design of the space versus the Roman statue next to the bookcase on the left wall.



A2.10: in-game render of the office of the Sarif Industries CEO, in the corporate tower in Detroit, in DE:HR. Note the leather chair, bronze statue in the back, low light level, patterning of the carpet and floor, and the overall messy environment (referencing the chaotic scientist-archetype often seen as Renaissance-era stereotype).



A2.11: concept art of a Detroit city street, outside Sarif Industries HQ. Clean, optimized for function, but not necessarily for comfort or warmth.



A2.12: the courtyard of a capsule hotel in Lower Hengsha. Once just a hotel, now due to overpopulation it has become a small village in and of itself with stores on the bottom level and the capsules on the upper levels – a tight and messy hive of people and garbage. Note the corporate-run board and ticker in the center, spurring on denizens to work hard.



A2.13: a small thoroughfare in Lower Hengsha. Note the steel plate of Upper Hengsha in the sky, a constant reminder for citizens below that they are lesser than the rich and powerful that live literally and figuratively on top of them.



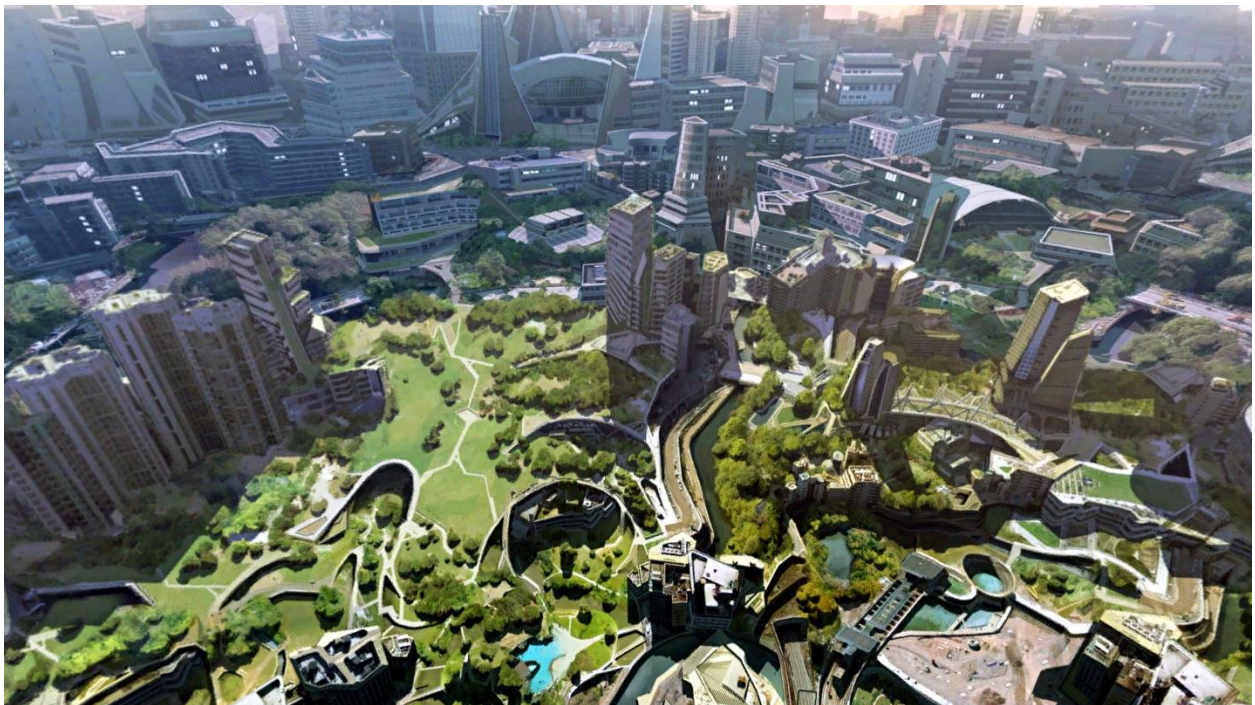
A2.14: A rooftop in Lower Hengsha, where new housing is built on top of already existing buildings and criminal gangs have their own empires.



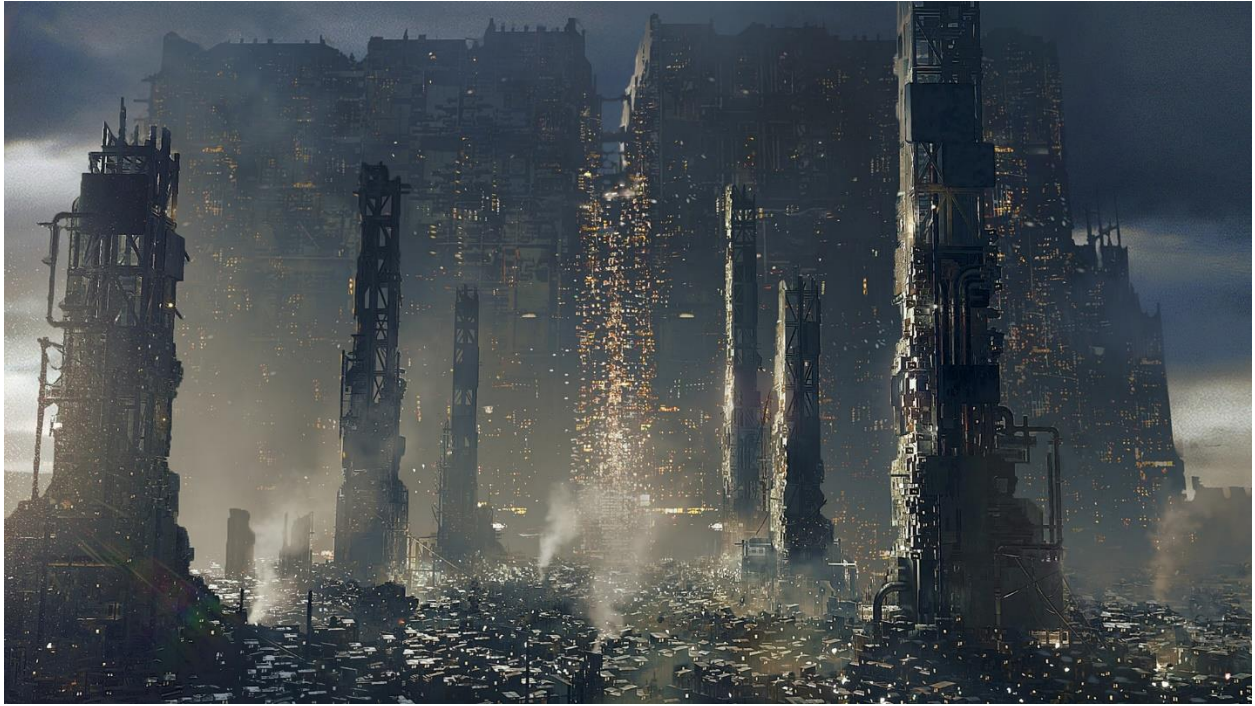
A2.15: concept art of the city of Hengsha, with Lower Hengsha covered by Upper Hengsha, the latter of which is supported by a system of pillars and platforms called the Pangu. The Pangu generates clean water and energy for the top residents, and functions as a city-wide military security checkpoint to block Lower residents from going up.



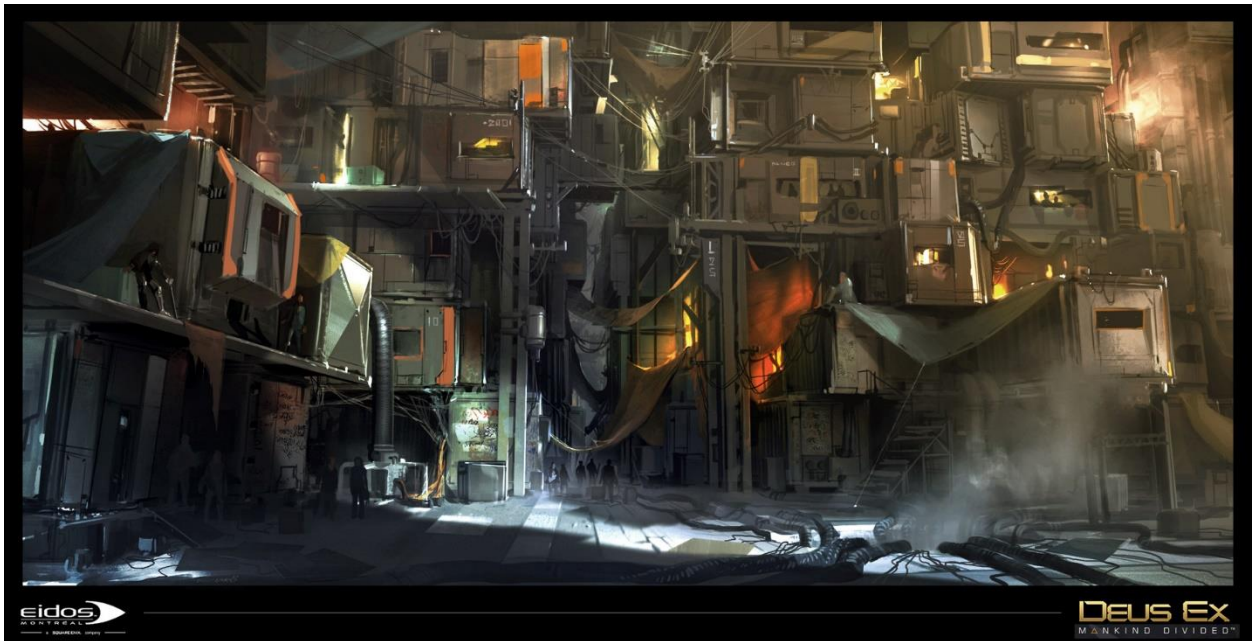
A2.16: screenshot from a CGI movie in the game, that introduces the city of Hengsha to the player upon their first journey there.



A2.17: in-game render of Upper Hengsha cityscape, which the player can see when moving up to Upper Hengsha via an elevator from Lower Hengsha. Note the sunlight, greenery and public space present here, which is absent in Lower Hengsha.



A2.18: the Útulek Complex in Prague, nicknamed the Golem City. Originally meant as temporary housing complex for migrant workers, after Mankind Divided's instigating crisis the complex became a ghetto (and pseudo-concentration camp) for the mechanically augmented.



A2.19: concept art of a habitation block in the Golem City, with stacked containers and rickety walkways that barely keep the place together.



A2.20: in-game screenshot of a police raid in the Golem City in Mankind Divided. The police act with impunity and harass the augmented residents regularly, oftentimes for no other reason than simple hatred.



A2.21: in-game screenshot of a law enforcement trooper checking citizen papers in Prague's Central Station. While the Golem City is meant for augmented people that break the law, law enforcement is known to send anyone they don't like to the City for no legal reason. Note the mechanically augmented man in the yellow hood to the right (the legs); and the police trooper in the EXO-suit on the left, who is barely recognizable as human anymore when donning the suit.



A2.22: final concept art of Adam Jensen, brandishing the extendible blade in his arm. After his accident, all of Jensen's limbs were replaced augmentations, all major organs in his torso were replaced or enhanced, his eyes replaced, and digital interfacing systems built into his brain. The sunglasses are also mechanical, and fold back behind Adam's temples at will. Only parts of Jensen's skull bone, brain, and skin on his head and upper torso are still biological. How much of Jensen can still be considered human? Is he still human at all?