Transcending a Black-Box Theory of Gaming and Medicine

Seeing Disease through an Eco-Epidemiological Model in *Trauma Team*

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Abstract: This chapter explores the epidemiological framework of disease constructed in the 2010 Wii-console release *Trauma Team* (Atlus Games). By fabricating the antagonistic »Rosalia virus« as an ailment of insidious phases, volatile symptoms reminiscent of present-day outbreaks that perplexed contemporary practitioners, of molecular complexity and spread through such conspicuous and rudimentary ecological means as to make surreptitious, the game designers have provided a vivid allegory advocating for a modern paradigm of disease theory/epidemiology; one that transcends a web of causation. The ultimate result is a game that embodies and engages not only complex medical theory, but showcases the downfalls of provincialism regarding the gameplaying apparatus as a whole.

Keywords: Epidemiology; Black Box Theory; Biomedical Individualism; Ludology

Schlagworte: Epidemiologie; Black Box-Theorie; Biomedizinischer Individualismus; Ludologie

1. Introduction

Her body delicately preserved in adipocere, a young woman named Rosalia lays dead in a quiet flower field after being shot by her own adoptive father. The ascelpias in her immediate perimeter that have been painted an impossible blue from the dispersed blood sharply contrast with the typical white their nutrients biologically imprint them. After taking respite on the discolored flowers, of which the monarch butterfly larvae store toxins of the plants ingested, flakes from their wings shower death on human publics during migration. It is unbeknownst to the

unlucky humans that a group V RNA virus will insidiously infect their cells after seemingly unceremonious contact with the shavings.

Showcasing intertwining levels of epidemiology on a social, biological, and ecological level, this complex tale was not constructed in a medical narrative program, film, or novel, but a modestly popular videogame released for the Nintendo Wii. As with past new mediums, videogames have been provincially relegated to entertainment, seen as unable to work as art, allegory, or pedagogy about the human experience. Building from prior research, critical discourse analysis will show how the game *Trauma Team* (Atlus Games 2010) provides a comprehensive and interactive dialogue on contemporary theories of epidemiology. Central to this argument will be the deconstruction of black-box theory, a topic covered in such contentious areas as climate change (Besel 2011). The theory posits that a technical/physical artifact's input is known (e.g., the Mann, Bradley, and Hughes 1998 article focuses on an increase of carbon emissions to the atmosphere) which leads to a discernable output (hotter temperatures). While such thinking in this instance is correct and does warrant appropriate action (lower carbon emissions in order to deter climate change), black-box thinking affords a number of fallacies as the actual processes remain hidden inside the box. In this case a 2003 rebuttal article (McIntyre and McKitrick) posing the findings were a result of poor data handling was enough for policy makers to tap into, and skeptics to hold on to for years to come.

A black-box theory constructing ludology as simple inputs on a controller to corresponding outputs on a screen is discursively shown as an inadequate framing model for both videogames and epidemiology as technique is overemphasized over narrative for players in the first half of *Trauma Team*. Set at a small Portland-based hospital, users will try their best to master the Wii-related skills as they incarnate six interconnected but disparate team members; it will not be enough.

2. The Videogame Apparatus and Art

When considering their continuing role in society, detractors dismissed videogames for their seemingly capricious aspects of play when compared to that of established mediums (Ebert 2010). However, making oneself open to the specific experiences of the videogame-playing apparatus – notions of »spatiality, temporality, speed, graphics, audio, and procedural activity« (Jagoda 2013, 745) – one will find that it is not in spite of but because of these aspects that videogames possess theoretical insights. Contrasting the notion that videogames lack the dramatic necessity that other art mediums encompass, Fortugno (2009) proposes that the agency in videogame playing can be used *to create* the tension between expecta-

tion and inevitable outcome. Such a consideration warrants looking beyond a black-box model of thinking which focuses on »stabs in the dark« (Skrabanek 1994, 553) and to instead consider exactly how mechanisms work, and what those mechanisms mean. As Bogost (2010) contends, videogames are from the children's medium that is easily denigrated by parents, educators, and policymakers. Instead they possess a unique type of remediated persuasion and expression based on rule-based representations, a »procedural rhetoric« that is tied to the »core affordances of the computer« (ix).

The futility of black-box research in the medical field leads to aimless denouncements (e.g., linking coffee drinking to disease) since it is a common input leading to the output of various ailments. Indoctrinated into a system of proximate risk factology, when applied to the field of ludology, this can engender overemphasized dismissals of videogames such as those considering game playing as a primary factor in school shootings (McMichael 1999). Research has found that media interaction is much more complex than this magic-bullet theory contends. Using a case study of *Heavy Rain* (Quantic Dream 2010), Papale (2014) showcases how relationships with game characters are psychological processes both diverse and heterogeneous. Matching the potential of cinema in providing a vessel for identification in an imaginary signifier on screen (Metz 1982), gripping a controller and losing oneself in a new world through a playable character can make a stronger claim than film in encompassing further social dimensions including empathy, sympathy, and projection. A framing of players as passive textual recipients of values and behaviors is replaced with a more mature rendering that considers game space as an artwork brought to life with every action.

Beyond the ability to bring real-world concepts to light (e.g., medical concepts) – a strong task in itself – Cremin (2016) considers videogames as offering ontological insights. According to his work there is a self-referential realism in the medium, wherein certain game conventions work as simulacra in themselves, which in turn become a basis for constructions for the real. As such, the games provide space for transcendence of our symbolic world, and an ability to look beyond our established social conventions. As technology and graphics continue to expand, Pinchbeck (2007) sees game designers as actively toying with affordance configuration to manage effective and convincing ludo-diegesis for players as they engage with the texts of first-person games. On the other side of the spectrum, Frasca (2001) was able to recognize how videogames (even nascent ones) can make a powerful statement, simulating both personal and social lives, critiquing capitalism and consumerism. Compounding these two concepts, theorists such as Sloan (2015) find that videogames actively remediate and recontextualize past art forms, providing a »simulation of cultural memory that blurs historical reality with period modes of representation« (525).

3. The Videogame Apparatus and Theory

A »mechanistic approach« and »black-box thinking« have been described as two complementary theories to cancer epidemiology and disease, the former oriented in the biology of carcinogenesis, and the latter on behavioral risk correlates (Weed 1998). As the predominant theory of the time paradigmatically structures practice, diplomacy, and ideology, there has been contentious and volatile debate as to what concept to appropriate. This paper posits that the videogame *Trauma Team* offers invaluable insight as an art form as to what the correct answer might be. Such a notion builds from past research showcasing how the videogame-playing apparatus offers elucidation into complex theoretical fields: psychoanalysis and race.

Psychoanalysis

From seminal figures like Freud, Lacan, and Kristeva, the theoretical field of psychoanalysis is preoccupied with notions of the conscious versus the unconscious, the identification of self, and abjection. As horror videogame designers themselves have often been preoccupied with womb-like spaces, and monstrous mother figures within landscapes of vast gothic structures, Kirkland (2012) identified a pre-Oedipal state of being and consciousness for the game players. Participating in the games provides for them a »merging of subject and object,« (75) achieving a pleasurable sense of »wholeness and union,« (75) as their sense of self and other is eroded in play. With videogame histories' movement toward three-dimensional photorealistic depiction of human form in the design of videogame avatars, he further posits that there is a cybernetic interaction between player and machine in the uncanny dimensions of avatars and game spaces in survival videogames. Through close play and close reading of the game *Fatal Frame II* (Tecmo 2003), Hoeger and Huber consider the uncanny represented in the unique game-based aspects, one activated by the implementation of a »software based virtual environment in a fictive game-world« (152). The videogame apparatus allows users a way to confront and play with these theoretical notions in a unique way that other mediums do not.

Race

Rooted in lived experience, subjects of race are difficult to comprehend. Despite this notion, Brock (2011) found a vivid and disturbing representation of racial formation theory when enacting participant observation of the game *Resident Evil 5* (Capcom 2009). In an apparatus where players utilize mental imagery and social interactions in electronic spaces to make meaning, he depressingly saw privileged individuals explore and exploit new terrain through othering. This concept was

reiterated in research enacted by Schwarz (2006) as the virtual space creation and world building in an urban environment afforded in games such as *Grand Theft Auto: San Andreas* (Rockstart North 2005) are seen to elucidate theories of othering based upon how different populations come to conceptualize their place and role within a malleable diegesis. For participants like at-risk youth, game spaces of such irreverent violence and sexuality provide vivid glimpses as to how experience, knowledge, and ideology are constructed (De Vane and Squire, 2008).

4. Methodology

A complex and modern method to studying videogames is not simply mechanistic, or semiotic, but a holistic approach emphasizing these dual structures. Following Iversen's (2012) suggestion, this chapter will focus on the »interplay between the game's expressivity/mechanics, and how this may be actualized for a given player« (1) through critical discourse analysis. Pérez-Latorre, Oliver, and Besalú (2017) contend that it is necessary to have analytical models to understand the »expressive potential« of videogame design, and how the videogames work as texts to give shape »to certain values, behavioral patterns, and ideological visions« (586). As such, this paper will have a »social-semiotic« emphasis encompassing analysis of the narrative, the ludo-narrative, system gameplay, design-player dimensions, and how the game *Trauma Team* (Atlus Games 2010) may provide elucidation of medical theory through a gameplaying apparatus rather than trite mechanical actions of mindless participation.

5. Analysis

Trauma Team takes place at a sleepy hospital in Portland, Maine. To start, the player is free to choose from one of the six specialists to progress through incremental cases on a few select days at the hospital, or instead they can move chronologically between each character to progress chapter by chapter through the fateful time period leading up to the outbreak of an epidemic. The six interconnected avatars to choose from include a general surgeon, endoscopic surgeon, orthopedic surgeon, emergency medical technician (EMT), diagnostician, and forensic analyst. The player utilizes a motion-controlled Wiimote device, with an attached directionally based joystick (the Wii's »nunchuck«) to mime medical practices based upon their point-of-view avatar. Users grow accustomed to the background, pragmatics, and interface for each selected character in the first half of the game.

6. The Characters

Erhard Muller – General Surgery

Known as CR-S01, Erhard Muller is a general surgeon. Having been imprisoned for biomedical terrorism, of which he has no memory, the skilled surgeon is called to perform a number of procedures in order to reduce his prison sentence. Renowned for his near perfect dexterity, the gameplay features a standard rule that if the patient's vitals drop to zero – negated when actions are delayed, incorrect, or inaccurate – you fail. Playing as CR-S01, players select from the tool palette by tilting the nunchuck joystick and utilize each tool by manipulation of the Wiimote. Devices include ultrasound, scalpel, antibiotics, syringe, forceps, and sutures. As CR-S01, users will be tasked with an eclectic mix of medical procedures: treating dilated cardiomyopathy (an enlarged and weakened left ventricle), Kaposi sarcoma (a cancer characterized by masses found in the skin or lymph nodes), extracting a steal beam in the abdomen, and aiding a patient hurt in a bombing. At the end of each procedure, Muller fatefully and exasperatingly declares »let this disease pass from this earth.«

Maria Torres – First Response

Brash and abrasive, Maria Torres is in charge of first response care – paramedics – at Resurgem. As Torres, the player must erratically switch between patients depending on which one is seen as less stable. As with surgery, the nunchuck joystick provides a set of tools to select: primarily antibiotic gel, forceps, syringe, and tape, along with absorbent gauze, intravenous therapy, bandage, splint, hydraulic cutter, scissors, tourniquet, and cardiopulmonary resuscitation (CPR) when needed. An additional tool, »talk,« is first introduced when Torres is treating patients at the collapse of a Ferris wheel. Hearing the quiet and indistinct murmurs of a patient, the player as Maria learns that they can listen to the patients as they describe the accident at hand.

Hank Freebird – Orthopedic Surgeon

A hulking, massive figure, Hank Freebird serves as an orthopedic surgeon at Resurgem. As Freebird, the focus for the playing participant is to minimize mistakes as signified by five hearts that decrease when they are made. The main procedure focuses on delicate tracing of incisions, the reconstruction of bone, and the creation and implementation of artificial marrow. The surgeon plays a part in treating Plumber's disease (a thyroid condition), removing an ependymoma of the spine, removing a hemangioblastoma (tumor of the and reconstruction of a spinal

cord of a patient whose skeletal structure is hardened due to metastasized lung cancer). To enact these treatments correctly, users must master use of the scalpel, laser cutter, drill, screwdriver, hammer, forceps, and staples.

Tomoe Tachibana – Endoscopic Surgeon

Often dressed in a geisha kimono, Tomoe Tachibana specializes in endoscopic treatment for the hospital. Working through treatments and ailments including an ulcer in the patient's gastric wall, removing bags of drugs before they open, treating a polyp that malignantly turned into a tumor, and treating tension pneumothorax and a ruptured bulla, participants move the endoscope through precise pushes forward or backward with the Wiimote, warranting the need to adjust the oscillation sensitivity, as incorrect movements will cause damage to the patient. When areas for treatment are reached, a set of tools including a stabilizer, snare, hemostatic forceps, drain, syringe, spray, scalpel, and forceps can be chosen through use of the nunchuck.

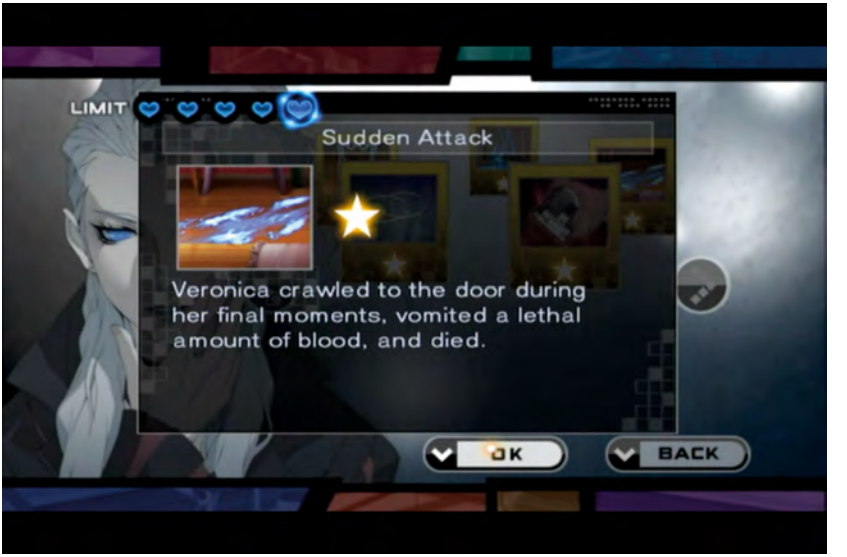
Gabriel Cunningham – Diagnostics

Always shown with a cigarette tucked in his mouth, even in the shower, Dr. Cunningham is a veteran team member who focuses on diagnosing ailments, and diseases of patients. To display a process that intermittently takes place in a doctor's head, the game introduces the RONI (Rapid Operation Network Intelligence) System. The robot provides the ability for symptoms and related diseases to be defined and displayed digitally, where they can be systematically catalogued until there is a match. As Dr. Cunningham, one can talk to their patients for information, as best they can, as well as order diagnostic tests and labs. This is done until he is able to provide a diagnosis, comparing and contrasting standard data with the patient's data in order to categorize anomalies.

Naomi Kimishima – Forensic Psychologist

A former surgeon, Naomi Kimishima now works as a forensic psychologist. Her protocol consists of piecing together evidence to create cards of data. She acquires evidence through her assistant who runs lab tests, through interviews with different suspects, and importantly through investigation of different crime scenes (see fig. 1). In the end, all of the pieces of data are chosen pragmatically, and sequentially, to tell a story of what caused a person's death; as Naomi says before she tells the final case story, »the dead shall speak.«

Fig. 1: Gameplay screenshot. Naomi categorizing evidence to deduce a solution in Trauma Team



7. Facing the Rosalia Virus

Taken in and of itself, the gameplay for *Trauma Team* is ambitious, and noteworthy. The videogame offers players a plethora of practical medical initiatives, steps, and procedures to enact in relation to a wide range of ailments. Still, some may find room for criticism. From a black-box perspective, this is simple performativity in the form of a derivative set of inputs and outputs matched on screen, with no real sense of practical theory, or scale. One could even chastise the game as simply providing procedural inputs without actual matching correspondence. As with a series of roughly made zigzags being the equivalent to medical stitching, one could denounce the videogame as childish play or, at worst, misinformation.

But it is important to note that the preceding description is only a rudimentary picture of the game itself, and the notion of play is not as simple as it seems. Purposely left out in the description are remediated interludes provided in comic-book form throughout the campaign and epitomized in the second half of *Trauma Team* as members work together to solve an epidemic. Coupled with a mimesis of medical practice and procedures, the game comes to dialogically and rhetorically consider predominant medical theory and practice. This is taken to an even further effect by the initial choice of the game, as the scattered chapter progres-

sion provides changes in perspective and scope of which humans are not granted in their everyday lives.

While oriented into a traditional paradigm of thinking in the instructions and tutorials, it is this paradigm which inadvertently fails them. This predominant and hegemonic paradigm of modern epidemiology is situated by four tenets:

1) a preoccupation with proximate risk factors; 2) a focus on individual-level versus population-level influences on health; 3) a typically modular (time-windowed) view of how individuals undergo changes in risk status (i.e., a life-stage vs. a life-course model of risk acquisition); and 4) the, as yet, unfamiliar challenge of scenario-based forecasting of health consequences of future, large-scale social and environmental changes (McMichael 1999, 887).

The skeletal frame of the paradigm is one of biomedical individualism. Considering social determinants of disease to be secondary, if not insignificant, the dogma emphasizes the biological determinants of disease amendable to intervention through the health care system, views populations as simply the sum of individuals, and population patterns of disease as simply reflective of individual cases (Krieger 1994). In accordance with this doctrine, for each patient encountered the player is thrust into a deterministic series of inputs and corresponding outputs to enact through precision and memorization within a time sensitive arena. There are many places to fail, and constant pitfalls. To succeed in the game, the designers leave little room for ambiguity, and the game follows, by design, a binary distinction of right versus wrong, on or off, correct or incorrect (Wark 2009). Like a gas, the dogma seeps into the skin and fades into the personalities of various characters. It is only in the second half of the game that the characters come to directly support each other. Although the mechanical aspects of the game do not change, the character is given help, support, and context to their tasks. The gameplay segments are given a chance to breathe as the characters communicate throughout their task. The individual characters and the players themselves are able to put pieces of a jigsaw puzzle together, instead of being stuck in their own boxes. Until then, they all struggle to make sense of life and their role as medical practitioners.

Maria is impetuous, and angry. From her point of view, there is only enough time to think about the task at hand as she switches between treating different patients (see fig. 2).

Fig. 2: Gameplay screenshot. Maria's chaotic point of view in Trauma Team.

The first time a patient speaks to her, Maria is perplexed as to what the vocal interference is; it is not regarded as general and established knowledge that the paramedic should listen to what the patients have to say to her. When strange occurrences like a moving bruise do occur, there is no set protocol for how to advance for the player, no tool to select or use. The patient vitals do not stall during these occurrences, so when she is assisting Hank Freebird in the removal of a spinal ependymoma she contends that »everything is fine now,« since the task at hand is completed and case closed. She has no room for human error, or nuance. »Everyone is so useless,« she says in chapter eight, about other paramedics, and other people. As she states to Tomoe, even if she wanted to, Maria doesn't know how to ask people for help.

Oriented within the predominant paradigm through years of work and education, veteran diagnostician Gabriel is also dogmatic in his way of thinking. He is reluctant to use the RONI system when his chief presents it, confident in his own abilities to diagnose symptoms despite the artificial intelligence having the ability to respond to a quadrillion instructions per second. Although cases are marked as solved (as Gabriel), the players' solution is marked with mistakes and inadequacies. His own dogmatism is so strong that he, at first, even refuses to look into the treatment plan and status of his own estranged son. The RONI system regards, and has established academic research (Alkureishi et al. 2016), that his distraction thinking about a previous case may have led to mistakes in diagnosing a current

patient – and yet the next level comes, either as Gabriel or instead as another character who sees him after or before a case.

The predominant scientific theory and paradigm orienting the doctors is not inconsequential. Theories help doctors to structure their ideas, providing lenses to explain casual connections »between specified phenomena within and across specified domains« (Krieger 2001, 668). But there are those who have been those seduced or »misled« by »the standard interpretations of the nature of science,« (Susser and Susser 1996, 675) particularly in the search for universal laws. This would be the ultimate failure of Albert Sartre, and the catalyst to the Rosalia Virus. The adoptive father of Muller, Sartre also took in Rosalia Rosselini from a nearby orphanage to live with him. A medical professional who taught CR-S01 all that he knew, Sartre found Rosalia to be a natural host to a volatile virus so aggressive that, if reverse engineered, it had the possibility to cure every disease in existence. Sartre's quixotic and dangerous quest was what led to the Cumberland College Incident, a pseudo terrorist attack erroneously blamed on CRS-01. Retold in flashback, Sartre apologized to his adoptive son, asking for forgiveness for the pain he had caused in being »enticed by the Devil.« Absconding to Mexico to continue his research, his quest was eventually proven impossible. Engendered by the madness that the Rosalia Virus caused him, Sartre shot and killed his Rosalia in order to put an end to the destruction.

Theoretical scientists find it imperative that the universalism of physical science makes room for paradox, to be »complemented« by the often unacknowledged ecologism of the biological sciences. Despite the fact that some of the laws may hold across our planet for species and the evolutionary processes that produced them, it stands that no biological entity, above the level of molecules, can conform entirely to universal laws. While beginning with a theory of biomedical individualism, the player and team comes to see things differently, act differently, and solve the epidemic. This is done through such an eco-epidemiological model, one which moves from the micro to the macro, with an emphasis on social relations. But there is liability in simply adding »biology« to »social« analyses, or »social factors« to »biological.« It is similarly unethical to investigate a microcosmic scale while keeping the black boxes above that scale closed, or vice versa (Weed 1998). Those entrenched in the ecosocial framework can begin to envision a more systematic integrated approach of science, one capable of generating new hypotheses once hidden. As Tomoe states as she works to make time to operate on a sick cat during the impending epidemic, »To ignore the small while fighting giants is against honor.« It is in the treatment of the cat that the team is led closer to their solution. They are invited to consider how population health is generated by social conditions necessarily engaging with biological processes at every spatiotemporal scale, whether from subcellular to global, or nanoseconds to millenniums. It is a fractal image, which deliberately fosters analysis of not only current but changing

population patterns from cell to society (Krieger 2001). In order to transcend the various pitfalls of contemporary disease treatment, words take on different emphasis under the theory. This includes embodiment – wherein no aspect of biology can be understood absent from knowledge of history, individual and societal ways of living, cumulative interplay between exposure, susceptibility, and resistance, and pathways of knowledge about embodiment in relation to institutions, households, and individuals (Susser and Susser 1996).

Made even harder to implement, the medical field is categorized by further and further role ambiguities; public health corporations now comprised of countless different specialists, some without medical training (e.g., military, academics, economists), and many facing incommensurable ideologies (Susser and Susser 1996). Through interwoven perspectives, one is granted both justification and visualization for this theory within this Wii game. The ecological theory is subtly woven into the plot, provided in backgrounds of shots if one is looking in the right places, in the score of the music if one is listening closely, and through the intricate perspectives of different characters whose rule-based mechanisms come face to face with the paradoxical truth of disease and epidemiology in a case that has mirrored real-world epidemics.

Essential is the perspective granted from Hank Freebird. Although massive in size, even moonlighting as a crime fighter on the side, Hank is a kind and gentle person. He treats each of his patients with the utmost respect, diligently helping a woman in the game overcome her debilitating suicidal thoughts. But Freebird's faith in humanity is tested throughout his chapters. He goes so far as to save a man who shot his former patient and current girlfriend, if only to show him that life is wonderful. Hank has a deep and profound respect for and focus on nature. He individually cares for the plants in front of the hospital on which the butterflies land: »perennials that bloom orange, red, and yellow flowers,« as he tells one of his patients (see fig. 3).

Daughter to the head of a powerful clan, Tomoe Tachibana deserted the syndicate in order to follow a path of »honor« in medicine. She utilizes her endoscope, tactfully and softly, so as to never do any unnecessary harm to the human body: »gently as the drifting waters.« In her work, she helps others around her in a way that encompasses a complicated ecology. During the bus accident Tomoe thinks ingeniously in the way that she can help, using her thin endoscope to snake through the rubble and create a plan for how they may rescue the people. She helps Maria understand how friendships not a detriment, but a component of society. When Maria works exasperatingly, she works to teach her that there is nothing shameful or weak in cooperating with others. Maria heeds her words that »as long as we're alive, we can rely on others to lend us their strength.« Just as Tomoe helped her partner grow, Tomoe gets saved by her teammates after she is forbidden to leave when visiting home.

Fig. 3: Gameplay screenshot. Hank admires the flowers by the hospital in Trauma Team.

The veteran diagnostician Dr. Cummingham learns progressively to open his horizons and change his way of thinking. He is dismayed when he cannot provide a patient a more definitive answer to her troubles, as her symptoms paradoxically do not match any disease. This, of course, is counterintuitive to gaming logic that poses a solution to any given problem for the participant. He destroys his office in a rage, distraught that, according to the medical theory and doctrine that they were following, he also cannot do anything for his son. The RONI system, screen broken and lying on the ground, retorts to the desperate doctor: »All people die, so medicine is ultimately pointless.«

Each of Naomi's crime scenes seem to have set answers according to a black-box paradigm, dictating a chain of events based upon proximate exposure principles – e.g., a packet of drugs at a crime scene leading toward a drug overdose as cause of death. In time she is able to deconstruct the basic clues and schematics pointing to a particular causation and substitute in a solution that truly encapsulates a complex, intertwined, eco-social world. This includes, for instance, someone using a timer on a ceiling fan and hydroxide to start a fire remotely. The crime was solved through a seemingly insignificant button – an item that, no matter how small, still included markings on a microscopic level that led to an answer. In another case, instead of a kidnapping, a girl is locked away in her room by her own parents when she has a strange mental breakdown. But despite her own ingenious way of thinking to solve these crimes, Naomi had all but written off her own life

when she was diagnosed with one year to live from a disease from a past game in *Trauma Team's* predecessor *Trauma Center: Second Opinion* (Atlus Games 2006).

The plaguing of the Rosalia Virus pugnaciously forces all of the team members to consider the paradigm through which they construct their work and lives, and ways of seeing. First and foremost is Maria, the impetuous and provincial-minded first-response actor. The case of the Rosalia virus leads her to fatefully visit the orphanage where she grew up. Despite a commitment to expel emotional relationships from her life, the catalyst and key to the epidemic was a young friend of hers. Rosalia had intermittently sent Maria caring letters after she had been adopted by Sartre. The letters didn't have to be sent, nor did Maria have to keep them. One peculiar letter, of which CRS-01 identified, had to have been from Mexico due to the particular flowers adorning the background in an accompanying photo.

Such a volatile illness, as observed by the diagnostician Gabriel when treating a politician and soldier, would at the military's wishes be destroyed and quarantined, rather than being understood. Instead of searching for elucidation, the military wished for the eradication of this black box. The militaries' own lack of understanding was what led to CRS-01 being convicted of bioterrorism and sentenced for 250 years. The Center for Disease Control and Prevention (CDC) within the diegetic world is said to be inept and uninformed during the outbreak, showcasing an incommensurability between perspectives, further marked by mass specialization and bureaucracy.

Pivotal to their eventual success, for lack of a better term when many died who did not need to, is the synergistic way of thinking when the trauma team members converse with each other and support each other in their different practices. The game vibrantly showcases the notion of socialization deemed to be critical to the eco-social mode, as without intense socialization and learning, links between values of public health and specialized disciplines perpetually dissolve and erode (Susser and Susser 1996). As Cole and Crichton (2006) have found, human factors including communication and interpersonal relations have an effect on a team's performance, despite how clinically skilled the disparate members may be. In Chapter 38, »Friends,« all of the trauma team members fatefully stand in the same room together (see fig. 4). Through conversation they analyze their downfalls, the ways they have been looking at things. All of the individual strange cases that they have confronted, or been forced to ignore or disregard, begin to make sense for them in a larger picture as they work and think together. In the game, socialization synergistically creates elements that were impossible to defer as the sum of their parts.

Fig. 4: The first time the team members all gather in the same room to create a treatment plan in Trauma Team.

Gabriel Cunningham once depressingly wished he could »choose his own patients,« as he butted heads with a terse politician. It is this politician who refuses the military's demand and allows Gabriel the ability to escape and return to the hospital. The social is what sets the path for the biological to flourish or wilt (Kreiger 1994, 899).

Faced with paradox, but also the necessity to work on a treatment, the team begins to follow a petty reductionism against the virus. It is necessary to follow through with their designated tasks at hand, but also pivotal to ensure their perspectives are open as not to obscure »the contextual structure of enveloping systems« (Susser and Susser 1996, 676). Select team members stayed at the hospital, continually working the best they can and know how to save patients or delay the disease. At the same time, Naomi and CRS-01 fly toward Mexico to uphold a localized and complex epidemiological perspective, following monarch butterflies to the scene of Rosalia's death.

Through the lens of biomedical individualism, Rosalia is an abomination, a rotting corpse that needs to be forgotten. But in the eco-epidemiological model, Rosalia is an angel of death and lost desire, never put to rest as she is carried across countries in the molecules on butterfly wings. To Maria she is an old friend, one of the few she has had. Just as Naomi comes down with the illness, she and CRS-01 return with an antidote from the last place others would have looked. It came from an orphan halfway across the country, just like the little orphan that Naomi had at first not fully noticed, loved, or accepted as she skirted through the frames of cutscenes. At the end of the story, she adopts her.

8. Conclusion

The structure of play in *Trauma Team* presents a subtle orientation for the player toward a different way of disease conceptualization and medical treatment. Atlus Games uses traditional structure of gameplay, inputs, and matching outputs to provide a base-level experience of »playing« doctor/surgeon. But beyond that, as the game progresses this series of mechanical mimesis is opened up, questioned, and transcended. Rather than the game in and of itself simply being about matching mechanical inputs, the game makes one question these movements, the system they are indoctrinated into, and what they have been told to pay attention to. They are told to follow specific rules in order to solve a level, but they reach dead ends. As a paramedic, they work to save all patients in a fast-paced progression that makes them unable or unwilling to question moving bruises. As a diagnostician, they systemically do everything to diagnose a bewildered and anxious patient, running each and every test possible, only to find that there is no answer. As an endoscopic surgeon, they take time to regard how they are happy to be with their coworkers, and as an orthopedic surgeon, they make time to care for the flowers that adorn the hospital lawn. One may disregard this as superfluous. The simple solution, as it stands, is that medicine is more complicated than what is thought. It is these little scenes, and the pauses in and between gameplay, that construct dramatic necessity and urgency for the player. As the second section of the game begins, a civilian walks off a train and blood pours from their face before they collapse. Each small, seemingly immaterial encounter, discussion, comic book frame, must be reconsidered. »No one suspects the butterfly,« says a participant on a YouTube game walkthrough (Karin's Channel 2013). This is despite the fact that a butterfly is the first shot of the game, and floral imagery paints different scenes. It is because people are thinking of the »normal ways of transmissions,« someone aptly responds a year later.

The game provides a vivid dialogue on real-world epidemics and disease treatments, with the narrative plot touching upon such real-world cases as the Marburg and Ebola viruses. Players are brought into the various roles and given a vast number of viewpoints, beyond one set of human eyes, on the ways in which an epidemic occurs. This provides the opportunity to consider and transcend the blatant missteps that caused such diseases to subsist, including treatment plans, misdiagnosis, incommensurability, and failures in communication. In time *Trauma Team* comes to highlight ontological theory of gameplaying as a whole. From an outsider's black-box lens, most videogames are simply about beating a game, inputting the correct buttons on a control until a screen outputs »You Won.« As the player of this game will hopefully come to realize, after their hours of playing and countless glances of reflections of themselves through the black mirror as they turn on or off the game, the things they consider the truth about their lives and the

world may be shrouded – locked in a black box. From the perspective of a butterfly in the diegesis, what is winning?

Ludography

FATAL FRAME II (Tecmo 2003, Tecmo)
GRAND THEFT AUTO: SAN ANDREAS (Rockstar Games 2005, Rockstar North)
HEAVY RAIN (Sony Computer Entertainment 2010, Quantic Dream)
RESIDENT EVIL 5 (Capcom 2009, Capcom)
TRAUMA TEAM (Atlus 2010, Atlus)
TRAUMA TEAM: SECOND OPINION (Atlus 2006, Atlus)

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