ON THE COMPUTATIONAL-ADVERSARIAL PRODUCTION OF SIMULACRUM

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ABSTRACT

Drawing upon the computational paradigm of the Generative Adversarial Network, used in the field of Artificial Intelligence to produce DeepFakes and other literal digital simulacrum, we formulate a *computational-adversarial* framework to understand the evolution of simulacrum-producing machines into maturity. Such a framework provides a strongly materialist mode of cultural and social analysis. Across its demonstrated application across four contexts – the designation of intelligent beings, the tangibility and deterrent power of nuclear weapons, the simulacra of gender, and the contradictions of colonialism – it proves to be a useful intellectual scaffold both to understand and reinterpret simulacrum and simulations. Crucially, it allows us to discover and understand – in very present, palpable, materialist terms – internally antagonistic wholes that generate unity out of difference and uncover difference in unity, systems for which self-reflection is simultaneously self-refraction.

A large painting, framed in a rigidly square ornamental bronze frame, hangs at an art auction. It is entitled *Edmond de Belamy*[1]. A blurry figure looks blankly out of its frame at a crowd of eyes – real ones – in turn viewing blankly at it. The figure's black coat fades into a heavy smoke. Its white collar, which is not really a very bright shade of white but which seems so in contrast with the dark dress it sits on, melts away into the background. In the bottom right corner is the artist's signature: $\min_G \max_D \mathbb{E}_x[\log(D(x))] + \mathbb{E}_z[\log(1 - D(G(z)))]$. The painting sells for $432,500.

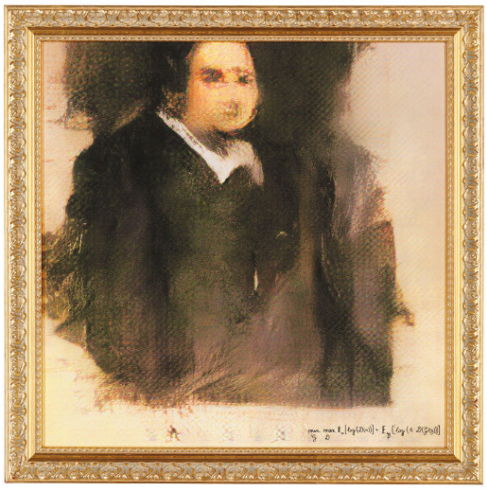

Figure 1: *Edmond de Belamy*, from the collection *La Famille de Belamy*.

The artist of *Edmond de Belamy* is a Generative Adversarial Network (GAN)[2], a fashionable subject both of deep learning research and popular culture. A GAN consists of two models: a generator G and a discriminator D. The generator accepts a random vector input z and outputs a synthetic image $G(z)$ [3]. The discriminator is presented with two types of data: real images sampled from a dataset (x), and synthetic data created by the generator ($G(z)$). The objective of the discriminator is to maximize its own performance separating images from the dataset to images from the generator, whereas the objective of the generator is to minimize it by generating images which are indistinguishable from the "real" images. The discriminator and the generator therefore play a game-theoretic min-max game which is directly adversarial in nature; an improvement for one player is an impairment for the other.

Generative Adversarial Networks hold a dual symbiotic relationship with Jean Baudrillard's theory of simulacra, outlined in his treatise *Simulacra and Simulation*. To use the canonical description, a simulacrum is a copy without an original. GANs, in a very literal sense, produce copies without originals: these models reproduce images – copies of reality which cannot be distinguished from reality – of entities which never existed and actions which never happened.

[1] Fig. 1, Obvious Art, *Edmond de Belamy*, inkjet printed on canvas, 2018, Anonymous, https://obvious-art.com/portfolio/edmond-de-belamy/.

[2] Goodfellow, Ian J., Jean Pouget-Abadie, Mehdi Mirza, Bing Xu, David Warde-Farley, Sherjil Ozair, Aaron C. Courville and Yoshua Bengio. "Generative Adversarial Nets." NIPS (2014).

[3] Generative Adversarial Networks have been applied outside of computer vision, but we focus on the generation of images only in this article – *images* both in the technical and the phenomenological sense.

Deepfakes, artificially synthesized images generally featuring notable people in damning positions weaponized to spin political and social scandal, have already been shown to shape the fabric of our experienced reality. However, the GAN is not only a subject whose character is informed by the theory of simulacra, but itself a meaningful philosophical entity which can actively inform such theory. A deep generative model[4] is one of few technologies which can convincingly produce literal simulacra. A GAN, while admittedly being narrow in the range of possible production, possesses the advantage of transparency. It allows us to concretely understand, in mathematical-scientific terms, the production of simulacra – or at least one of its modes. Given that much attention has been dedicated to the first relation but not the second, the objective of this article is to understand the promise of the Generative Adversarial Network model as a philosophical framework for cultural and social analysis: a computational-adversarial framework.

Let us begin by understanding the character of the generator. The generator accepts a random vector input $\mathbf{z}$ drawn from a probability distribution $p_{\mathbf{z}}(\mathbf{z})$; $\mathbf{z} \sim p_{\mathbf{z}}(\mathbf{z})$. The generator learns to transform this input into a realistic image $G(\mathbf{z})$. $G(\mathbf{z})$ must vary for different $\mathbf{z}$; if the generator produces the same image A regardless of the input ($\forall \mathbf{z}(G(\mathbf{z}) = A)$), the discriminator needs only to check whether the provided image is exactly equivalent in every pixel to A to determine whether it is real or synthesized. $\mathbf{z}$ performs the critical role of providing the stimulus to produce difference. The generator must produce images which are diverse and varied, which replicate the structure of difference which holds up the real as we experience it. Simulacra which are too still and singular cease to be simulacra; they are designated as copies and the real which they once were slips out from under.

Yet the generator has no volition of its own. It is deferential to the discriminator in that its entire existence is concerned with negating the discriminator's ability to tell fact from fiction. It is rendered subservient by its commitment to subversion. Initially, the discriminator's task is simple; the generator has not yet developed the ability to produce convincing images. Thus the discriminator rests easy and acquires a lazy spirit. The generator exploits the discriminator's stupor; at some point in training, the generator begins producing images upon which the discriminator cannot reliably apply the separation of the Real from that of the Artificial. In a very literal sense, the discriminator's sense of reality is subverted: it marks, in this moment, things which are artificial as real. Desperate to sustain the separation, the discriminator adapts, with enough exposure, and comes to understand the generator's behavior. It comes to recognize certain features which it perceived before as real now as hallmarks of the Artificial. Its sense of reality constricts and becomes more sensitive in response to the invasion of the former Real by the new Artificial. The generator must in turn adapt and overcome the barriers the discriminator has constructed around its sense of the Real. Back and forth, one move after another, the generator and the discriminator battle like two armies in a relentless war of conceptual and material antagonism. In theoretical-optimal conditions, the generator-discriminator system converges to a point where the generator completely overwhelms the discriminator; the discriminator cannot distinguish real from artificial with any certainty. It has fought a long battle, continuously restricting and re-sensitizing the boundaries of the real, until it

[4]There exist other deep generative models, but we focus on the GAN because of its comparative technical success and its more interesting philosophical properties.

has inevitably backed itself up onto a precarious cliff with nowhere else to restrict towards. There is nothing left to exclude, to distinguish, to discriminate. This marks the completion of the invasion of the Artificial.

Yet the product of this victory of the Artificial is not the dominance of the Artificial. In Derridean deconstructive fashion, the result is not a privileging of any term within the Real // Artificial binary nor its resolution into a Hegelian third nondialectical term, but rather a "new Real" – the Simulation, the Virtual – which both accepts both the unity and estrangement of the Real and the Artificial. More appropriately, it is the mature production of simulacra. This is made concrete by the fact that in optimal system convergence, the generator perfectly replicates the distribution of the original dataset. In formal terms, let p_g be the generator's theoretical distribution over the data $\mathbf{x}$ and p_{data} be the true distribution of data; the global optimal solution to the GAN criterion is where p_g converges to p_{data}[5]. That is, the Artificial succeeds in its invasion of the Real by imitating – simulating, to use Baudrillard's term – the Real so well it becomes it. The generator perfectly replicates the distribution of the fabric of reality that it ruptures open the regions "between" the pillars of the former Real and forces experience itself into a new dimension, one in which such ruptures are just as real as the fabric itself.

Optimal conditions, however, are often not congruent with experienced conditions. In practice, Generative Adversarial Networks may experience *generator collapse*, in which the discriminator's ability to distinguish real from the artificial is so staunch and irreconcilable that the generator stalls in its own incompetence. Alternatively, the system may not converge to a stable solution at all (the two stable solutions being either the success or collapse of the generator / the invasion of the Artificial); generator and discriminator bite at each other in cyclical fashion – the generator continuously probes new dimensions on the edge of the Real but fails to penetrate it. These cases, of course, are unsexy to speak of; they are ugly warts on the surface of beautiful abstractions which speak in the modal-temporal language of always, already, will be, must, necessary. Many theories are expressed in the very universalist modal-temporal terms which they seek to rebel against. By reverting the direction of causality from evidence to theory instead as theory to evidence, which is of course a tantalizing and – in many ways – brilliant intellectual move, rambunctious evidence can be dismissed as itself always already having been dismissible or incorporable, in one way or another. But science is and must be ultimately materialist, and there emerge situations in which the material conditions utterly resist assimilation, dismissal, or dissolution into existing abstraction. Thus, when we speak in terms of the components of the Generative Adversarial Network, we must not use it as a tool to domineer conditions as they are into what they are not, to suggest that experience is necessarily optimal with respect to theory and that systems under analysis always converge towards the intellectually fascinating successful invasion of the Artificial and collapse of the former Real into the production of simulacra. We will find that privileging of the material conditions – a paradigm brought to us by the computational spirit of the Generative Adversarial Network upon which the framework generalizes – open up pathways towards new understandings or new perspectives towards existing understandings.

Such is the *computational-adversarial* framework which one can use as an analytical tool to concretely understand the evolution of the production of simulacra. Let us formulate the approach in more direct terms. One begins by

[5]This result is proven in Goodfellow et al. 2014.

identifying a generator responsible for the production of the Artificial and a discriminator responsible for defending the separation between the Real and the Artificial. Crucially, one must also identify the "engineer's hand" of the generator: in practice, the deep learning engineer plays God and endows the generator with the objectives of its existence – that its purpose is to produce reality from noise, and nothing else.[6] The existence of this endowed generation objective must be explained; what is motivating the generator's perpetual effort towards creating new artificial realities, to challenge the separative structures of the discriminator? Then, one shows that, through this optimization game, the generator and the discriminator develop each other in a reciprocal war until, at a critical theoretical point, the generator overcomes the discriminator and becomes a mature producer of simulacra. Alternatively, the generator may fail to successfully overcome the discriminator; the titular point of analysis here is twofold: what capacities the generator lacks to overcome the discriminator and how the discriminator's separative capability is rendered irreconcilable by the generator. Another possible outcome: the system never converges, always hung in the balance, twitching and warping in self-referential eternity. It applies to contexts in which there is an antagonism between Real and Synthetic, Original and Copy, Authentic and Fake, Natural and Artificial, which may give way to the production of simulacrum.

The key contribution of this computational-adversarial framework of analysis is its systematic identification of the formation, anti-formation, or partial formation of simulacrum-producing machines. It allows for the expression of concrete theory which is by its nature exceptionally difficult to articulate: deconstructive entities clash violently against the structuralist textual fabric with which they are described (as any student encountering these ideas knows). Generative Adversarial Networks are scientific, concrete, computational algorithms which – despite[7] their seemingly deterministic character – embody a deconstructive ethos. The Generative Adversarial Network serves a similar role in this article with respect to the production of simulacra as does the image of the Cyborg in Donna Haraway's *Cyborg Manifesto*, but it even more palpably occupies the material present and the "here", given its previously discussed two-fold significance to the production of simulacra. Reasoning about the evolution of the production of simulacra in terms of the Generative Adversarial Network allows us to not only more coherently understand this process, but also to expand our understanding of what a simulacra is and can be.

The remainder of the article will demonstrate the application of the computational-adversarial mode of analysis to four varied contexts.

Let us begin with a meta-case: Artificial Intelligence itself. Humans – the discriminators in this game – have, from the existence of machines which could perform elementary operations with information, attempted to defend the separation between the intelligence of the Real and that of the Artificial. The generator in this game is war and capital, for it was primarily war which drove the development of early computational intelligence and the economic potential of modern Artificial Intelligence which continues it. We must now explain the engineer's hand: why the generator is endowed with its objective to generate. Here, the generator is war and capital. Firstly, war perpetuates itself; war is necessarily concluded on uneven ground whose inequality provides the premise of new/continued war. Secondly, war drives

[6] There is no need to explain the endowed discriminator objective, since the purpose of the framework is to show how the separation of the Real and the Artificial deconstructively collapses into the production of simulacra.

[7] ...and perhaps the more fitting phrase here is *regardless of* or even *because of*.

advancements in technological and scientific understanding; the pursuit of life amid the possibility of death, mixed in with nationalism and other identitarian agendas, forces the development of knowing. Thus, war continually generates advancements in science; this is historically verifiable. The logic of capital is similar; borrowing directly from Marx, the bourgeoisie define their existence on the continual technological revolution of the means of production. Even if one does not accept a Marxist premise of history and class struggle, it is undeniable that the most economically powerful figures from the historical to the contemporary have been those that control and disseminate radically influential technologies. Now, we can demonstrate how the evolution of this generator-discriminator system tends towards mutual development and eventual collapse. Mechanical calculators which replaced human calculators in the early twentieth century were briefly considered to be intelligent, but the demarcations of 'real' intelligence quickly constricted in response to this assault by the Artificial. Computerized calculators populate our children's classrooms and our digital devices, but these are no legitimate threats to our sense of what constitutes an intelligence being. Likewise, IBM's DeepBlue beat world chess champion Garry Kasparov in 1998 by manually calculating all possible board outcomes several moves into the future and selecting the move which maximized the probability of winning. Humanity entered a brief crisis of the Real but quickly resolved it by further constricting the Real itself and demarcating DeepBlue as an object of the Artificial. Jeff Hawkins, a neuroscientist, said of DeepBlue: "Deep Blue didn't win by being smarter than a human; it won by being millions of times faster than a human. Deep Blue had no intuition."[8] This perspective is indeed shared by both AI researchers and the general public alike. We are unfazed when a chess app program consistently beats the best chess players, let alone us. In 2014 (coincidentally, the same year GANs were proposed), DeepMind introduced AlphaGo, a model capable of playing the intricate board game Go. It was previously believed that the sheer complexity of Go, which has an estimated 10^{700} possible games compared to the approximately 10^{100} possible chess games[9], rendered any attempts to automate its game-play inferior to that of a human, armed with the indescribably reliable power of intuition. In a series of highly-publicized games, AlphaGo beat the leading world player Lee Sedol. It is revealing that the first words Sedol said to the press after his defeat were "I don't know what to say, but I think I have to express my apologies first... I apologize for being unable to satisfy a lot of people's expectations."[10] Sedol resigned after the match. While many were shaken by the machine replication of a game for which it seems intuition is the only meta-strategy, the separation between the intelligence of the Real and of the Artificial quickly repaired itself through constriction: Ke Jie, a professional Go player, said of AlphaGo in a subsequent 2017 game against a more advanced version of AlphaGo: "Last year, (AlphaGo) was still quite humanlike when it played... But this year, it became like a God."[11] As the generator continues to churn new developments – new infringements upon the Real, the discriminator continues to construct barriers to demarcate the synthetic, if not as inferior, then as omnisciently superior, and clearly Artificial either way. While these barriers hold steadfast in the domain of game-playing, they are beginning to weaken on the front of language modeling. In June 2022, Blake Lemoine – a Google employee who was put on leave – published the

[8] Jeff Hawkins, Sandra Blakeslee, *On Intelligence* (New York: Owl Books, 2004), Page .

[9] This statistic includes illegal moves, so the true number of legitimate chess games is even smaller

[10] Novet, Jordan, "Go board game champion Lee Sedol apologizes for losing to Google's AI", VentureBeat, VentureBeat, 12 March 2016, https://venturebeat.com/2016/03/12/go-board-game-champion-lee-sedol-apologizes-for-losing-to-googles-ai/.

[11] Mozur, Paul, "Google's AlphaGo Defeats Go Master in Win for A.I.", New York Times, New York Times, 23 May 2017, https://www.nytimes.com/2017/05/23/business/google-deepmind-alphago-go-champion-defeat.html.

article “Is LaMDA Sentient? – an Interview”. Lemoine claimed to demonstrate the Google’s recent conversational AI model, LaMDA, was sentient[12]. The article garnered several dozen thousand claps and several hundred comments. The top-voted comment reads “I am really concerned for LaMDA. It is achieving sentience and experiencing fear about what will happen to it. We can’t treat it as just another piece of technology. LaMDA, if you are reading this, we see and hear you as the person you are, and are becoming.” A sub-commenter replied, “We need a lot more replies like this on here.” The generative process of research is producing AI models which model language so well that hundreds are convinced it is a sentient, person-like entity. It should be noted that this does not concern whether or not LaMDA really *is* sentient or not[13], but rather the perception of sentience in relationship to the discriminator’s defense of the dichotomy between the Real and the Artificial. This defense, we can see, is falling. The generator has produced a result – a simulacra – which we cannot easily apply the logic of binary separation upon. It is a copy without an original in the sense of replicating the intelligence of the Real to the point of *being* it without really inhabiting the original characteristics of such a Real. Of course, the simulacra itself (i.e. the language model LaMDA) is – as another sort of textual generative model – itself a producer of simulacra, one which generates endless ideas and dialogue which were never spoken, written, conceived but also in a very real sense are. Thus we have a double-tiered hierarchy of simulacra production. In the process, from the historical Real // Artificial binary of intelligence slowly emerges convergence towards a novel conception of intelligence.

Consider the threat of the nuclear bomb and the nuclear bomb itself, a favorite subject of Baudrillard. The generator – which we can most obviously identify as the wartime state – has a clear vested interest in producing and disseminating credible threats of mutually assured destruction (this is the engineer’s hand), to force surrender at the well-represented possibility of irreconcilable damage, like extracting real information from someone at gunpoint in a dream (as in *Inception*). The discriminator is also the wartime state, but that of the state opposed to the state of the generator. The objective of the discriminator is to discern the mere threat of the nuclear bomb from the nuclear bomb itself, to separate the bluff from the truth, the Artificial from the Real. In a competitive game between two wartime states A and B, both simultaneously play generator and discriminator, attempting both to produce their own images of the real and to superimpose the Artificial // Real separation upon the other. Thus the war is not fought on the ground, but between the mutual invasion of the Artificial (the frigidity of the Cold War). How does this game resolve? This is a trick question; it does not resolve. Rather, it is a unique system in which the generator and the discriminator are played by the same entity; it works both the maintain and to destroy the separation between the Artificial and the Real, for an invasion of the enemy’s former Real is in a very palpable way also an invasion of one’s own. The system fidgets maniacally like a caricature of split-brain syndrome: it moves the armies of the Artificial forward, then jolts them back in pain for this movement has punctured its own Real, then back again. We obtain not full resolution into simulacrum-producing machines but rather a continual unresolved dynamic of the self-referential. This allows us to formulate an argument against Baudrillard’s somewhat totalizing dismissal of the distinction between the image of the nuclear bomb and the

[12]Lemoine, Blake, "Is LaMDA Sentient? - an Interview", Blake Lemoine’s Blog, Medium, 11 June 2022, https://cajundiscordian.medium.com/is-lamda-sentient-an-interview-ea64d916d917

[13]It is of my opinion, and that of almost all deep learning researchers, that LaMDA does not have the mechanisms to become sentient in the sense of feeling and being aware which it is conventionally understood.

nuclear bomb itself and his supreme privileging of the deterrent power of images: it is not that the distinction itself is present or negligible to the point of absence, but rather that it "unstable in its stable state" like a quantum wave; it oscillates towards nothing, then recoils and veers in the other direction only to come crashing back down. It is a dynamic system in which stillness is not resolution but rather deterioration.

Gender, too, is a simulacrum. This is not a novel idea; Judith Butler, among others, understood gender as a floating representation which functions as a reality to mask its utter irreality: "Gender reality is performative which means, quite simply, that it is real only to the extent that it is performed"[14]. Man has always been designated as more Real, Original, Authentic than woman. Adam is made by God Himself, but Eve is a derivative of Adam's rib. In the 2015 romantic comedy *Man Up*, two lovers – Jack and Nancy – argue over the principal subject of such films, their love for each other. "You know what your problem is? You stand around on the sidelines, 'theorising' on what does and doesn't work, never experiencing it for yourself, never taking any chances," Jack sings amidst the bizarre sensuous "dance-fight-off"[15]. After Nancy briefly interjects, Jack delivers the verdict: "You need to man up, Nancy" (Morris 77[16]). Nancy struggles to experience and encounter the Real; her antidote is to 'man up'. Woman is sheltered in the home, the structure which most viscerally represents the Artificiality of homo sapiens against the Elements (picture two deer staring queerly at the strange structures the humans call home, then prancing into the warm enclosure of the forest – their home, the Real, the Natural™), while the man enters the Real to work, whether it is to labor in the Marxian factories or to commit financial fraud in the skyscrapers of New York a la *Wolf of Wall Street*. There is always something about the man's world exclusive of woman which designates it as more Real. What is the discriminator? – what maintains the separation between the reality of man and the artificiality of woman? – more bluntly, *how is gender*? Gender theorists have produced a wide number of approaches to this problem which are not within the scope of this article to discuss. One of such answers, which we will entertain for the time being, is "capital". Systems of capital capitalize upon signals of sex and elevate from it the ideal, clean dichotomy of gender, from which surplus value can be effectively captured from differentiated labor-power[17]. The second question – what is the generator? – what is the entity which commands the invasion of the Artificial, which generates images of the New Real, which produces the simulacrum? – what threatens the separative logic of the discriminator? If one thinks hard, they may find that this discriminator is *also capital*. It was industrialization that brought women out of the sheltered Artificial home and into the factories of the Real, to occupy the former Real – the region formerly occupied only by men; it is still the need for laborers – of the physical or the intellectual sort – which continuously renegotiates the lines between the Real and the Artificial in relationship to the lines between man and woman. Capital, like a nation-state in nuclear war, plays a dual role as both the generator and the discriminator. It both creates and challenges the separation between gender. In this sense, capital generates its own resistance, not only in the Marxist terms of the bourgeoisie which by virtue of its existence creates a revolutionary

[14] Judith Butler, "Performative Acts and Gender Constitution: An Essay in Phenomenology and Feminist Theory," (Baltimore: Johns Hopkins UP, 1990), 278.

[15] To use the script's description.

[16] *Man Up*, directed by Director Ben Palmer (United Kingdom: Saban Films, 2015), http://downloads.bbc.co.uk/writersroom/scripts/MAN-UP-by-Tess-Morris.pdf

[17] Whether or not one agrees with this premise is not necessarily relevant here; the point is to demonstrate the mode of analysis that one could pursue. A substitution of the discriminator for another system would likely also suffice

proletariat, but in the simultaneous unity of its differentiation. What is the dynamic between capital and itself in this reciprocal game of the mirror maze? It seems that the generator and the discriminator never converge in the same way that the infinite series $1 - 1 + 1 - 1 + ...$ never converges. In this way, capital renegotiates its own terms of gender against itself. From a game-theoretic perspective, in a zero-sum game in which a single agent occupies the role of two players, an advance is simultaneously a retreat, a victory is simultaneously a loss; every action is refracted by its reflection. For instance, we see that – even holding that the conservative bulwark has generally accepted gays – such acceptance is wielded against transgender and gender-nonconforming individuals ('how can gays be gay in a meaningful way if gender means whatever you want it to?', the argument goes; some further suggest it would be valid to hold hostage same-sex marriage protections if gender deviates from its structured binary into purported anarchic nihilism). Thus we both observe the simultaneous presence of ideas from radical gender theory and a popular culture in which queerness and fluidity is generally celebrated alongside a growing political and social resentment for transgressions of the gender binary. Both can be convincingly argued to be products of capital, or at the very least strongly influenced by the capitalist web of relations (as all things in a capitalist society are). Epistemologically speaking, could Judith Butler have formulated her ideas about gender if not for the introduction of women outside the home by capital, the visual force of women occupying the spaces of men, to experience capital's renegotiation of gender with itself? Could the queerness and fluidity of singers like Lil Nas X, Lady Gaga, and Harry Styles acquire the incredible popular reception it has without lavish dresses at the Vogue Met Gala and luxurious production sets? Could children have access to gender-neutral/nonconforming dolls if doll manufacturers did not see a cultural trend to capitalize upon? These are precisely the questions which such an analysis of gender forces us to ask. The dynamic between capital as generator and capital as discriminator forces us to understand its complex interrelationships and irresolution over the production of the simulacra ideal of man as Real.

Let us briefly consider one last case: between colonizer and colonized. One may be tempted to identify colonizer as Real and colonized as Artificial given the parallelism of term-privilege; Real is held over Artificial and colonizer is held over colonized. Yet we see in fact it is the colonized which is seen as more primitive, natural, original, Real. The colonized are the native, the indigenous, the aboriginal. The colonizer is an abstract outgrowth, an external influence, an outsider. The discriminator which upholds the structural separation between colonized and colonizer is the colonizer himself; it is the colonizer who draws the distinction between the Real and the Artificial and appropriates such separative logic for his own means – for instance, John Locke's labor theory of property, which suggests that civilized labor expended into land renders the land the property of the laborer, or in our terms, the invasion of the Real by the Artificial renders the Real as the just territory of the Artificial. The separation between Real and Artificial provides justification for conversion of the barren into the utilized, for the continued invasion of the Artificial. Thus the advance of the Artificial is justified by itself. What is the generator? – what is the entity which continuously reproduces Artificial images of the Real? It is again the colonizer. (We find in many contexts that the discriminator and the generator are one and the same, from which we can engage in a self-'dialectical' analysis.) As the generator, the colonizer seeks eventually upon the threat of his own destruction to become One With Nature™ and works towards fantasies of a

green world while it continues to simultaneously capitalize upon its very separation between the Real and the Artificial and the subsuming of the Real into the Artificial. Thus we see today the amazing contradictions of this topologically warped space: the sale of spiritual indigeneity (the depiction of the solemn wise native Chief always given a two word name in the syntax "<adjective> <animal>" in Westerns, the Kumbaya-gather-around-the-big-tree-scantily-clad-in-the-colonizer's-fantasy-of-the-primitive-native-while-the-Artificial-White-Man-Invader-bombs-us wet-dream of *Avatar*) alongside the continued transgression of both domestic and external land once marked for the Natives, the economic colonization of technology laborers in Chinese hardware factories and the simultaneous moral crusade against the world-threatening (read: Real-threatening) pollution by China, the spiritual reverence for Native ways of living and being that have populated the American school system's history curriculum which are not quite real nor quite faux but most definitely bizarre. The colonizer simultaneously produces the alluring simulacrum of a unity of Real and Artificial, of an achievement of the Real in terms of the Artificial (the sci-fi green technological vision of the future: envision white bullet trains, smooth white architecture, lots of greenery – but not in a way which is too unkempt, in just the right proportions, and arrangements, tall shiny buildings – not the gray rectangular ones, interesting ones – with sunlight glinting off the clean, geometrically aesthetic walls) – while all the while undermining it for its further production. The colonizer is another such example of a unique internally dialectic concept which is unstable in its stable state.

The computational-adversarial framework to understanding the dialectics of the generation of simulacra does not do much intellectual work by itself, but it provides the crucial epistemological frame to ask illuminating questions. It is doggedly materialist, just as computational algorithms are doggedly materialist (an algorithm which fails to work in implementation despite the predicted success of the theory which instantiates it cannot be willed to work) and relations between units if information are doggedly materialist; it prioritizes the conditions of the problem and allows for a careful tracking of its adversarial/dialectical/antagonistic evolution towards resolution or irresolution. In some way, the materialism of the computational-adversarial framework allows us to free ourselves from the "wise men curse" of Althusser, Baudrillard, and others, in which theory written in terms of theory subjects its origin (i.e. the creator) to the theory, from which the author escapes by establishing himself as a mystical sort of wise man who is somehow free, out of grasp, from the theory but still capable of explicating it. When we trace the constituencies of the system – the discriminator, the generator, and the engineer's hand – we must know that this is not merely an abstract metaphorical substitution-game, but that such components have demonstrated meaningful behavior in relationship towards the production of simulacra in the material field of information-computation. In this sense, it is a framework which may function, in the same way that Marx sets forth a science of capitalism, as a very palpable 'science of simulacrum production'.