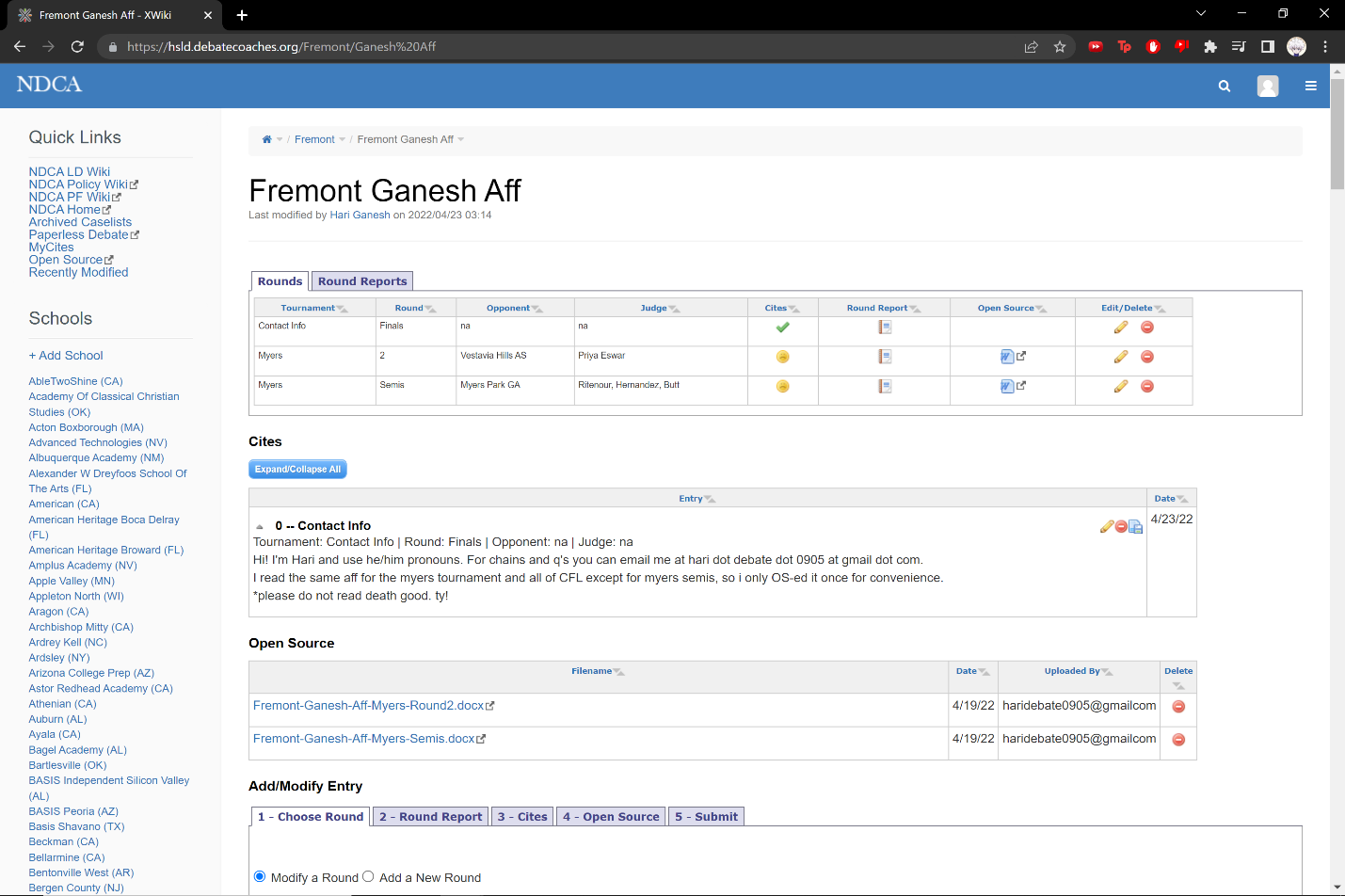
# NC

### 1

#### Interpretation: Debaters must disclose all cards read on case for each constructive position on the 2021-22 NDCA LD wiki after the round in which they read them.

#### Violation: see screenshot, neither of the only two docs they posted are the one they’re reading in this round.



#### 1] Debate resource inequities—you’ll say people will steal cards, but that’s good—it’s the only way to truly level the playing field for students such as novices in under-privileged programs – it equals the playing field.

#### 2] Evidence ethics – open source is the only way to verify pre-round that cards aren’t miscut or highlighted or bracketed unethically. That’s a voter – maintaining ethical ev practices is key to being good academics and we should be able to verify you didn’t cheat

#### 3] Depth of clash – it allows debaters to have nuanced researched objections to their opponents evidence before the round at a much faster rate, which leads to higher quality ev comparison – outweighs cause thinking on your feet is NUQ but the best quality responses come from full access.

#### Fairness – debate is a competitive activity that requires fairness for objective evaluation. Outweighs because each debater assumes the judge fairly evaluates their arguments.

#### Drop the debater – deter future abuse

#### Competing interps – [a] reasonability is arbitrary and requires judge intervention [b] it creates a race to the top where we create the best possible norms for debate.

#### No RVI, a) logic, you don’t win for being fair, b) debaters will act abusively on purpose to bait out theory and dump on the RVI which chills theory

### 2

#### Capitalism has morphed from the Marxist time-atom into a precarious economy based on knowledge and signs-commodities - their analysis of capitalist realism is wrong, as realism has faded into the realm of simulation.

Bifo 12 [Franco Berardi, Italian communist theorist and activist in the autonomist tradition, whose work mainly focuses on the role of the media and information technology within post-industrial capitalism, “After the Future”, Published: 2012, DOA: 7/5/19, Reagan RB for michklab]

Is it yet possible to speak of Economics as a science when the production process is becoming immaterial, unstable, and unpredictable, and seems to elude the rules of computation that are at the core of the economic conceptual system? Peter Drucker writes: Keynes, the post-Keynesians, and the neo-classicists alike cast the economy in a model in which a few constants drive the entire machinery. The model we now need would have to see the economy as “ecology,” “environment,” “configuration,” and as composed of several integrative spheres: a “micro economy” of individuals and firms, especially translational ones; a “macro economy” of national governments; and a world economy. Every earlier economic theory postulated that one such economy totally controls; all others are dependent and “functions.” But economic reality now is one of three such economies. None of them totally controls the other two; none is totally controlled by the others. Yet none is fully independent from the others, either. Such complexity can barely be described. It cannot be analyzed since it allows of no prediction. To give us a functioning economic theory, we thus need a new synthesis that simplifies – but so far there is no sign of it. And if no such synthesis emerges, we might be at the end of economic theory. (Drucker 1989: 156-7) Economics became a science when, with the expansion of capitalism, rules 64 were established as general principles for productive activity and exchange. But if we want these rules to function we must be able to quantify the basic productive act. The time-atom described by Marx is the keystone of modern economics. Calculating the time necessary for the production of a commodity makes possible the regulation of the entire set of economic relations. But when the main element in the global productive cycle is the unforeseeable work of the mind, the unforeseeable work of language, when self-reproducing information becomes the universal commodity, it is no longer possible to reduce the totality of exchanges and relations to an economic rule. Drucker continues: In any system as complex as the economy of a developed country, the statistically insignificant events, the events at the margin, are likely to be the decisive events, short range at least. By definition they can neither be anticipated nor prevented. Indeed, they cannot always be identified even after they have had their impact. (Drucker 1989: 166) Economic science is founded on a quantitative and mechanistic paradigm that could comprehend and regulate industrial production, the physical manipulation of mechanical matter, but is unable to explain and regulate the process of immaterial production based on an activity that can’t easily be reduced to quantitative measurements and the repetition of constants: mental activity. Due to the new technologies, Jacques Robin (1989: 39) explains how even the concept of productivity fails to resist the challenge raised by the new realities like growth without job creation. With the new technologies the majority of production costs are determined by research and equipment expenses that actually precede the productive process. Little by little, in digitalized and automated enterprises, production is no longer subjected to the variations concerning the quantity of operational factors. Marginal cost, marginal profits: these bases of neoclassical economic calculations have lost a good part of their meaning. The traditional elements of salary and price calculation are crumbling down. Mental work is not computable in precise and predictable terms like the work performed by an industrial worker. Therefore, the determination of value – the keystone of classical economy both as a science and as daily economic practice – becomes aleatory and indefinable. “Realist” economies (the economies based on the relationship to a computable amount of labor time) were governed by their goals: Finality is there in advance, inscribed in the code. The order of goals has simply ceded its place to a molecular play, as the order of signified has yielded to the play of infinitesimal signifiers, reduced to their aleatory commutation. (Baudrillard 1993a: 59) In Baudrillard’s vision, the economy therefore appears as a hyperreality, a simulated, double, and artificial world that cannot be translated in terms of real production. Consequently, economic science can no longer explain the fundamental dynamics governing humanity’s productive activities; nor can it explain their crisis. Economics has to be replaced by a global science whose characteristics and field of inquiry are still unknown: a science that would be able to study the processes of formation of Cyberspace, i.e. the global network of signs-commodities. In an interview published in 1993 by the magazine *Wired*, Peter Drucker develops by his own point of view on the theme of the inadequacy of economic categories associated with the digitalization of production: International economic theory is obsolete. The traditional factors of production – land, labour, and capital – are becoming restraints rather than driving forces. Knowledge is becoming the one critical factor of production. It has two incarnations: knowledge applied to existing processes, services, and products is productivity; knowledge applied to the new is innovation. […] Knowledge has become the central, key resource that knows no geography. It underlies the most significant and unprecedented social phenomenon of this century. No class in history has ever risen as fast as the blue-collar worker and no class has fallen as fast. All within less than a century. (Drucker, in Schwartz 1992: n.p.) Furthermore, Drucker remarks that the concept of intellectual property, which is a juridical concept at the basis of classical economy and the capitalist system, no longer has any meaning in an age when the circulating commodity is information and the market is the info-sphere: We have to rethink the whole concept of intellectual property, which was focused on the printed word. Perhaps within a few decades, the distinction between electronic transmissions and the printed word will have disappeared. The only solution may be a universal licensing system. Where you basically become a subscriber, and where it is taken for granted that everything that is published is reproduced. In other words, if you don’t want everybody to know, don’t talk about it. (*Ibid*)

#### The affirmative is caught in an exaltation of use-value that perpetuates capitalism

Baudrillard 76 (Jean, Prof of Phil at EGS, “When Bataille Attacked the Metaphysical Principle of Economy, trans David Miller)  
The central idea is that the economy which governs our societies results from a misappropriation of the fundamental human principle, which is a solar principle of expenditure. Bataille's thought goes, beyond proper political economy (which in essence is regulated through exchange value), straight to **the metaphysical principle of economy**. Bataille's target **is utility**, in its root. Utility is, of course, an apparently positive principle of capital: accumulation, investment, depreciation, etc. But in fact it is, on Bataille's account, **a** principle of **powerless**ness, an utter **inability to expend**. Given that all previous societies knew how to expend, this is, an unbelievable deficiency : it cuts the human being off from all possible sovereignty. All economics are founded on that which no longer can, no longer knows how to expend itself, on that which is incapable of becoming the stake of a sacrifice. It is therefore entirely residual, it is a limited social fact; and it is against economy as a limited social fact that Bataille wants to raise expenditure, death, and sacrifice as total social facts--such is the principle of general economy. The principle of utility (use value) blends with the bourgeoisie, with this capitalist class whose definition for Bataille (contrary to Marx) is negative: it no longer knows how to expend. Similarly, **the crisis of capital**, its increasing mortality **and its** immanent **death throes**, **are not bound**, as in the work of Marx, **to** a history, to **dialectical reversals**, **but to** this fundamental law of **the inability to expend**, **which give capital over to** the cancer of production and **unlimited reproduction**. There is no principle of revolution in Bataille's work: "**The terror of revolutions** has only done more and more (de mieux en mieux) to **subordinate human energy to industry**." There is only a principle of sacrifice-the principle of sovereignty, whose diversion by the bourgeoisie and capital causes all human history to pass from sacred tragedy to the comedy of utility. This critique is a non-Marxist critique, an aristocratic critique; because it aims at utility, at economic finality as the axiom of capitalist society. **The Marxist critique is only a** critique of capital, a critique coming from the heart of the middle and petit bourgeois classes, for which Marxism has served for a century as a latent ideology: a **critique of exchange value**, **but an exaltation of use value**-and thus a critique, at the same time, **of what** **made the** almost delirious **greatness of capital**, the secular remains of its religious quality: investment at any price, even at the cost of use value. The Marxist seeks a good use of economy. **Marxism is** therefore only a limited petit bourgeois critique, **one more step in the banalization of life toward the** "**good use**" **of the social**! Bataille, to the contrary, sweeps away all this slave dialectic from an aristocratic point of view, that of the master struggling with his death. One can accuse this perspective of being pre or post-Marxist. At any rate, Marxism is only the disenchanted horizon of capital-all that precedes or follows it is more radical than it is. What remains uncertain in the work of Bataille (but without a doubt this uncertainty cannot be alleviated), is to know whether the economy (capital), which is counterbalanced on absurd, but never useless, never sacrificial expenditures (wars, waste . ..), is nevertheless shot through with a sacrificial dynamic. Is political economy at bottom only a frustrated avatar of the single great cosmic law of expenditure? Is the entire history of capital only an immense detour toward its own catastrophe, toward its own sacrificial end? If this is so, it is because, in the end, one cannot not expend. A longer spiral perhaps drags capital beyond economy, toward a destruction of its own values; the alternative is that we are stuck forever" in this denial of the sacred, in the vertigo of supply, which signifies the rupture of alliance (of symbolic exchange in primitive societies) and of sovereignty. Bataille would have been impassioned by the present evolution of **capital in this era of floating currencies**, of values seeking their own level (which is not their transmutation), and the drift of finalities (which is neither sovereign uselessness nor the absurd gratuitousness of laughter and death). But his concept of expenditure would have permitted only a limited analysis : it is still too economic, too much the flip side of accumulation, as transgression is too close to the inverse figure ofprohibition.4 In an order which **is** no longer that of utility, but **an aleatory order of value**, pure expenditure, while retaining the romantic charm of turning the economic inside out, is no longer sufficient for radical defiance -it shatters the mirror of market value, but is powerless against the shifting mirror of structural value. Bataille founds his general economy on a "solar economy" without reciprocal exchange, on the unilateral gift that the sun makes of its energy : a cosmogony of expenditure, which he deploys in a religious and political anthropology . But Bataille has misread Mauss: the unilateral gift does not exist. This is not the law of the universe. He who has so well explored the human sacrifice of the Aztecs should have known as they did that the sun gives nothing, it is necessary to nourish it continually with human blood in order that it shine. It is necessary to challenge the gods through sacrifice in order that they respond with profusion. In other words, the root of sacrifice and of general economy is never pure and simple expenditure-or whatever drive [pulsion] of excess that supposedly comes to us from nature-but is an incessant process of challenge [Wfi]. The "excess of energy" does not come from the sun (from nature) but from a continual higher bidding in exchange-the symbolic process that can be found in the work of Mauss, not that of the gift (that is the naturalist mystique into which Bataille falls), but that of the counter-gift . This is the single truly symbolic process, which in fact implies death as a kind of maximal excess-but not as individual ecstasy, always as the maximal principle of social exchange. In this sense, one can reproach Bataille for having "naturalized" Mauss (but in a metaphysical spiral so prodigious that the reproach is not really one), and for having made symbolic exchange a kind of natural function of prodigality, at once hyper-religious in its gratuitousness and much too close still, a contrario, to the principle of utility and to the economic order that it exhausts in transgression without ever leaving behind. It is "in the glory of death" [d hauteur de mort] that one rediscovers Bataille, and the real question posed remains: "How is it that all men have encountered the need and felt the obligation to kill living beings ritually? For lack of having known how to respond, all men have remained in ignorance of that which they are." There is an answer to this question beneath the text, in all the interstices of Bataille's text, but in my opinion not in the notion of expenditure, nor in this kind of anthropological reconstruction that he tries to establish from the "objective" data of his day: Marxism, biology, sociology, ethnology, political economy, the objective potential of which he tries to bring together nevertheless, in a perspective which is neither exactly a genealogy, nor a natural history, nor a Hegelian totality, but a bit of all that. But the sacred imperative is flawless in its mythic assertion, and the will to teach is continually breached by Bataille's dazzling vision, by a "subject of knowledge" always "at the boiling point." The consequence of this is that even analytic or documentary considerations have that mythic force which constitutes the sole-sacrificial-force of writing.

#### The solution is not to be ‘for’ or ‘against’ the appropriation of space, but rather to reject the dichotomy in the first place. Thus the alternative is a refusal to play the game – that ruptures the flow of the simulation of hyperreality.

Shapiro 14[Alan, senior lecturer at the Offenbach Art and Design University in Germany, “Jean Baudrillard and Albert Camus on the Simulacrum of Taking a Stance on War”, IJBS Volume 11, Number 2 (May 2014), Special Issue: Baudrillard and War]

Unlike other thinkers such as Noam Chomsky or Chris Hedges (whose positions are highly valuable in their own right), Jean Baudrillard is not ‘against war’. Baudrillard’s position is rather that of being ‘neither for nor against’ contemporary hyper-real mediatized wars, and seeing the imperative of choosing whether one is ‘for’ or ‘against’ war as being something of a forced and imposed simulacrum**.** To say that one is ‘against’ a specific war, or even all wars, would be to implicitly acknowledge the ‘reality’ of war(s), which have**,** to the contrary, drifted increasingly into the fakeness of virtuality, simulation, and an indeterminate hyperspace. Baudrillard, in his orientation of being ‘neither for nor against’ war, finds a strong predecessor in another great writer and thinker who wrote in French: Albert Camus. In his political theory and activist engagements, Camus was an independent hybrid anarchist-liberal (the very notion of hybrid, with which one can retrospectively illuminate Camus’ politics, has only emerged as a well-known concept in recent times, in the wake of, for example, Donna Haraway’s cyborg theory). Camus was a serious thinker who – like Plato, Nietzsche, Baudrillard, Deleuze and Philip K. Dick – had deep insights into the genealogy of image-making simulacra in and of Western culture. As a major figure of twentieth century French intellectual history, Albert Camus appears now in retrospect to have been way ahead of his time in his positions on ethics, aesthetics, virtuality, and political philosophy. The intention of this essay is not to claim that Baudrillard and Camus had ‘the same position’ on war or on simulacra. It is, rather, to make an initial attempt to outline important affinities between the two thinkers, hinting at a sort of ‘alliance’ between these two intellectual figures which has not been previously articulated in the academic literature in Baudrillard or Camus studies. The essay indicates certain key starting points for substantiating the affinity/alliance, but it should also be read in the spirit of suggesting fruitful directions for future research. The stance of opposition to a war undertaken by America’s ’military-industrial complex’ (MIC), as President Dwight D. Eisenhower termed it in his Farewell Address to the nation on January 17, 1961 after spending 8 years as President, seems to be based on the assumption of the discursive viability of projecting oneself into the imaginative space of being a sort of ‘shadow government of truth-speakers’**,** empowered by democracy into the democratic position of being able to make ‘better’ decisions for the body politic of democracy than those who hold institutional power in political economy and government. Most political discourse in the U.S., including the anti-war stance, seems to take for granted the idea that we should clarify ‘our politics’by imaginatively putting ourselves ‘in the shoes’ of national strategists choosing among the policy options available. Jean Baudrillard expands our sense of what is history because he does not operate with a strict separation between what are ‘the facts’ and what are the engaging stories that we as a culture have written and enacted about important ‘historical’ events. Much of what we know about the Holocaust, the Second World War, and the Vietnam War comes from Hollywood films about the Holocaust, the Second World War, and the Vietnam War that we have seen. In his essay on Francis Ford Coppola’s 1979 blockbuster Vietnam War movie Apocalypse Now, Baudrillard writes that Coppola’s masterpiece is the continuation of the Vietnam War by other means. “Nothing else in the world smells like that,” says Lt. Colonel Bill Kilgore – played by Robert Duvall – in the 2 hour and 33 minute film. “I love the smell of napalm in the morning… It smells like victory.” The high-budget extravaganza was produced exactly the same way that America fought in Vietnam, says Jean Baudrillard of the film made by director Francis Ford Coppola (Baudrillard 1981: 89-91). “War becomes film,” Baudrillard writes of Coppola’s spectacularly successful cinematic creation. “Film becomes war, the two united by their shared overflowing of technology” (Ibid.: 89). There is implosion or mutual contamination between ‘film becoming Virtual Reality’ and War. Think also of Steven Spielberg’s Saving Private Ryan (1998): total immersion in the Virtual Reality of combat – an aesthetics of VR different from ‘critical distance’ – as a new kind of ‘testimonial position’ with respect to war and atrocities. In Vietnam-slash-Apocalypse Now, War is a Drug Trip and a God Trip, a psychedelic and pornographic carnival (Baudrillard 2010), a savage cannibalism practiced by the Christians, a film before the shooting and a shoot before the filming**,** a vast machine of excessive special effects, a **‘**show of power’, a territorial lab for testing new weapons on human guinea pigs, and the sacrificial jouissance of throwing away billions of dollars – all these aspects alluded to or mentioned by Baudrillard. Coppola’s film, according to Baudrillard, is the carrying on of an undeclared, unfinished and unending War. An interminable Heart of Darkness. Jean Baudrillard is not ‘against war’, not even against specific wars like the wars in Afghanistan and Iraq. He says this explicitly in “Le masque de la guerre,” published in the Parisian daily newspaper Libération, just prior to President George W. Bush’s invasion of Iraq in 2003. Ni pour ni contre. Neither for nor against. “This war is a non-event,” writes Baudrillard, “and it is absurd to take a stance on a non-event (Baudrillard 2003).” The non-events of the Iraq War and the War on Terror opposed themselves to the event of September 11th, 2001. Baudrillard’s two most explicit texts about war are The Gulf War Did Not Take Place (1991), written just before, during, and just after the Persian Gulf War of 1991 that was initiated by President George H.W. Bush, and The Spirit of Terrorism (2002), written just after 9/11. At the very beginning of the essay “The Gulf War Will Not Take Place,” the first of the three essays that comprise The Gulf War Did Not Take Place, Baudrillard explains that non-war – which is what the military-industrial complex or the (non-)war machine has become very adept at carrying out in the age of virtuality – “is characterised by that degenerate form of war which includes hostage manipulation and negotiation (Baudrillard 1995: 24). The Eisenhower-coined term of the military-industrial complex is used by Baudrillard in his essay "No Reprieve For Sarajevo," published in Libération, January 8, 1994. He sees the MIC as still operative yet in need of conceptual upgrading. “Hostages and blackmail,” Baudrillard continues in “The Gulf War Will Not Take Place,” “are the purest products of deterrence. The hostage has taken the place of the warrior. He has become the principal actor, the simulacral protagonist, or rather, in his pure inaction, the protagoniser (le protagonisant) of non-war” (Baurillard 1995: 24). And we, the television viewers of the non-war, are all in the situation of hostages, “all of us as information hostages on the world media stage” (Ibid.). Hostages of the screen, of the intoxication of the media, dragged and drugged into a logic of deterrence**,** "we are no longer in a logic of the passage from virtual to actual but in a hyperrealist logic of the deterrence of the real by the virtual” (Ibid.: 27). The post-structure [the successor to a sociological structure with less stability and with less of a center] of the (non-)war machine in the age of media virtuality has properties of binary/digital, simulation/modeling, viral metastasis, and complex intricate paradoxical topology. Let us consider all four of these properties as aspects of a Baudrillardian theory of war (or a theory of war in honour of Jean Baudrillard). First of all, the post-structure of the (non-)war machine in the age of media virtuality has the property of binary/digital. It presents itself to us through the dualistic structure of a forced binary choice, where the system obliges each of us to take a position ‘for’ or ‘against’ war**,** or ‘for’ or ‘against’ particular wars**,** as waged, for example, by the Pentagon, the EU ‘humanitarian’ forces, or the surveillance state’s War on Terror. It is this very binary logic of ‘yes’ or ‘no’ that is the news media discourse, the rhetoric of politicians, and the hybrid virtual-and-real-killing of the screen and the bomb**.** Today, of course, the Internet has superceded television as the prevailing universal media (although there is much convergence and combination of the two). And the Internet is much more interactive and participatory. There is much more response. There is much less of a ‘spectacle’ than there was when Guy Debord and the Situationists conceptualized their media theory in the 1960s. Yet everywhere that the ‘news media’ and the (non)-war machine still prevail, everywhere that they are still massively influential, everywhere that they still exercise their power, we are not quite liberated from the ‘speech without response’ described by the early Baudrillard. When Muammar Gaddafi, the former dictator of Libya, was brutally killed by rebel forces on October 20, 2011, during the Libyan Civil War, the event, having been filmed by a cell phone, was presented to worldwide viewers by almost all of the ‘news media’ as some kind of triumph for ‘justice’, even though it was clearly a loss for democratic principles and the possible coming to light of priceless information about the decades of atrocities committed by Gaddafi’s regime during a public trial which would never take place.

#### The market operates through the exchange of signs and symbols, overwhelming the subject in the digital matrix of data, making truth inaccessible and information dissuasive. Thus, the RoTJ is to deconstruct the hyperreal.

Shapiro 17 [Alan, transdisciplinary thinker who studied science-technology at MIT and philosophy-history-literature at Cornell University. He is the author of “Star Trek: Technologies of Disappearance” (Berlin: AVINUS Verlag, 2004), a leading work in science fiction studies and on the conception of futuristic technoscience. He is the editor and translator of “The Technological Herbarium” by Gianna Maria Gatti (Berlin: AVINUS Verlag, 2010), a major study of art and technology. His book “Software of the Future: The Model Precedes the Real” was published by the Walther König Verlag art books publisher of Cologne, Germany in 2014. At his website “Alan N. Shapiro, Technologist and Futurist” (www.alan-shapiro.com), he has already published more than 250 articles (by himself and others). He is recognised as one of the leading experts on the philosophy and cultural theory of Jean Baudrillard. He is currently working on a book of essays for an Italian book publisher. 01/05/2017. “Baudrillard and Trump: Simulation and Object-Orientation, Not True and False,” <http://www.alan-shapiro.com/baudrillard-and-trump-simulation-and-object-orientation-not-true-and-false-by-alan-n-shapiro/>] / lm

In other words, Trump is the candidate of the era of simulation. Invoking “the truth” against him does not work as a strategy. Trump is already more advanced than the discourse of truth. We are in a hyper-reality where there is no more truth and no more falsehood. Carl “The Truth” Williams, a former heavyweight boxing champion of the world, passed away in April 2013.

Alan Cholodenko comments: If hyper-reality was born for Baudrillard during or just after the Second World War, then there have already been several simulation-Presidents: JFK the first televisual President, Reagan the Hollywood actor and first TV show host (of the General Electric Theatre)-President. Trump takes his place in this lineage. He is the second TV show host (of The Apprentice)-President, the first live show, reality TV show CEO host become live show, reality TV show CEO host-President of the live show, reality TV show America, Inc.)

The mistake of the multitudes of journalists and editorialists like the Washington Post’s Greg Sargent is to not understand that the system of “truth and lies” is not some eternal, ahistorical or “scientifically objective” reality. It is an historically constructed cultural discourse or arrangement tied to an epoch which is finite in time. As Foucault might say, the concern with “true” and “false” is an epistème – an epistemological a priori, an expression of a specific power-knowledge constellation within an era – whose time has come and gone. The insistent belief in “truth and lies” is also embedded in the Plato-initiated “metaphysics” of the “human subject,” the subject-centered worldview, the sovereign (democratic or scientific) subject who “knows” and can therefore judge and determine when “knowledge” or a “fact” has been betrayed.

In the new epistemological system beyond “truth and lies” to which Trump is finely attuned, of which he is the master, and which liberals do not get, the object itself is the hot thing. The spotlight is on objects (conceptual not physical), and they are a relationship, an association which knows nothing of whether they are real or fake. They transcend and straddle true and false. “Things have found a way of avoiding a dialectics of meaning that was beginning to bore them: by proliferating indefinitely, increasing their potential, outbidding themselves in an ascension to the limit, an obscenity that henceforth becomes their immanent finality and senseless reason.” (Baudrillard, Fatal Strategies; p.7) Trump will change what he says on any given topic from day to day, or on any given Sunday. The liberal media will “prove him wrong” with evidence, but this demonstration will have an effect exactly the opposite than that intended upon and for the “silent majority” of half of Americans for whom they are the liars. When did this happen (when was the “Canetti point”)? Impossible to say. To know the point of origin of that would be to overstate the claims of knowledge, to violate the methodological recursivity of our awareness of being lost within the culture of simulation (as Baudrillard has taught us in his fascinating lengthy discussions of the “Canetti point,” and as Gerry Coulter has taught us, for example, in his essay on America).

When Trump said that thousands of Muslims were celebrating on rooftops in Jersey City, New Jersey on 9/11, he was right. 100% right, as he later tweeted. Within the epistemology (theory of knowledge) of the humanist-democratic subject and of truth, the alleged rooftop event of course “did not take place.” Yet in the hyper-modernist epistemology, the rhetorical and emotional power of the words invoked and the mental images evoked by Trump (the advent of hyper-imagination) carry the weight and dynamic force of the image-immersed beyond-chimerical “object” of those evil Muslim celebrators. Probably Trump saw on TV in September 2001 some cynical celebrations in the Palestinian territories. The clandestine wormhole connection between physically remote points in space is plausibly extant. In the culture of virtual images, it is perfectly OK to transpose the bin Laden-sympathetic revelers from one geographical location to another, the hyper-space of Trump’s creative memory mingled with the hyper-dimensional expanding televisual space on the interior of the flatscreen.

Fantasy is possible in a world that is still real. A fantasy could be said to be not true, some sort of illusion (in the non-Baudrillardian meaning of this word) or deception. But when images are everywhere, and they are universally exchangeable with each other, the made-up mental images become hyper-real. Which now (literally) means (hyper-means) more real than real. Meaning becomes hyper-meaning.

Would not the ubiquity of video documentation and recording devices of every kind increase the availability of truth? Whipping the cam around, looking amazing from every angle? No, the effect is just the opposite. When documentation and recording are everywhere, then they are nowhere. They cease to exist in any meaningful sense. They serve no purpose whatsoever anymore. They are pure technology fetish in the bad sense, decoupled through their excess from what they were supposed to enhance or invent. As a hybrid radical-leftist-and-mainstreamer, I do believe that there is a good side to surveillance, a deterrence of crime. But if surveillance is everywhere, then this good side no longer functions. This is the same paradoxical logic that is operative for all virtual and digital media technologies. Yes, all of these wonderful new things are available to us, but we omitted the step of thinking carefully about the appropriate measure of their application. We forgot to humanly judge this. Hybrid posthumanist and humanist. We never took seriously the great thought of Albert Camus, that in almost every area, we need to have a sense of limits (as Dominick LaCapra pointed out). Academic referentiality – which Baudrillard was opposed to – is like this too. If you overdo it, become obsessed with footnotes, then you enter into the twilight zone of hyper-referentiality and then the whole business does not function anymore. You do it because you have to do it and the original purpose is lost.

The “proof” (ha ha!) is now upon us that Baudrillard was right all along. We are now fully in the era of simulation and telemorphosis, of the New Truth of the omnipresent image (both picture-image and word-image – the multi-media of the screen having transformed written words from texts into images). The New Truth is not a lie – that would be too easy and the claim is retrograde. The New Truth institutes its own hyper-reality, which is at present our only reality. The only way to contest simulation and the New Truth would be a strategy or perspective of “taking the side of objects” (see, for example, my most recent IJBS essay, for an elaboration of this). We would have to get to know the codes which underlie and instantiate simulation and reverse them. Reversibility of the code comes from “objects” within the code which want more objecthood. Until we can start to do that, to paraphrase David Cronenberg’s Videodrome: LONG LIVE THE NEW TRUTH!

# Case

#### Asteroid mining causes resource abundance that solves the transition to a post-scarcity economy – and makes currency worthless

**Williams 20** Matthew S Williams is an author, a writer for Universe Today, and the curator of their Guide to Space section. His works include sci-fi/mystery The Cronian Incident and his articles have been featured in Phys.org, HeroX, Popular Mechanics, Business Insider, Gizmodo, and IO9, ScienceAlert, Knowridge Science Report, and Real Clear Science, with topics ranging from astronomy and Earth sciences to technological innovation and environmental issues. “Asteroid Mining to Shape the Future of Our Wealth” Nov 06, 2020. [Quality Control]

These recommendations address another important issue, which is the impact that the influx of all these resources would have on Earth's economy. By tapping resources that are far more abundant than what exists at home, **humanity will be able to transcend its current economic models.**

For as long as human beings have conducted trade and businesses, scarcity has been a crucial element**. By having abundant sources of necessary resources, humanity could effectively become a post-scarcity species**. At the same time, if supply should suddenly exceed demand, then the value of these resources will drop considerably, and **all the wealth that is measured using them will also suffer.**

As such, it is much more likely that asteroid mining - rather than being a savior to Earth's economy - will be one of the means through which humanity expands into space. **Saving planet Earth could very well happen as a result,** but only in the long run.

#### Space’s lack of inhabitants and ecological problems solves the vast majority of their criticism – but it segregates the capitalists from ruining Earth and generates enough resources to make the planet’s surface into a Communist utopia

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All in all, it’s starting to sound a damn sight more beneficial to the human race than the internet economy is. **Not a moment too soon**. I’ve written encouragingly about asteroid mining several times before, each time touting the massive potential wealth that seems likely to be made. And each time there’s been a sense of disquiet among my readers, a sense that we’re taking our rapacious capitalist ways and exploiting space.

Whereas the truth is, this is exactly the version of capitalism humanity has needed all along: the kind where there is **no ecosystem to destroy**, **no marginalized group to make miserable**. A safe, **dead space** where capitalism’s most enthusiastic pioneers can go nuts to their hearts’ content, **so long as they clean up their space junk.**

(Space junk is a real problem in orbital space because it has thousands of vulnerable satellites clustered closely together around our little blue rock. The vast emptiness of cislunar space, not so much.)

And because they’re up there making all the wealth on their commodities market, we **down here on Earth can certainly afford to focus less on growing our stock market**. Maybe even, **whisper it low,** we can **afford a fully functioning social safety ne**t, **plus free healthcare and free education for everyone on the planet.**

#### NO SOLVENCY - nothing we do or say in this debate round will spill up to destroy capitalist realism or destroy capitalism, and saying anything else is just a reinvestment into the simulation of debate which normalizes hyperreality and turns case, which means u just vote neg on presumption. Also means they can’t solve any of their impacts either since affirming the rez doesn’t get fiat that capitalism is destroyed. Also all their impacts rely on an analysis of capitalism on earth, but in space capitalism will transform into postcapitalist communism which their ev doesn’t account for.

#### And K turns case, if we win their fundamental understanding of capitalism is flawed and recreates the harms its trying to prevent we win this round.

#### The AC’s fanatic obsession with extinction recreates the scenarios it tries to prevent that compels us to endlessly repeat the failed project of Empire through confirmation bias.

Matheson 17 [Calum, Assoc. Prof Communication @ Pitt, “The sublime rhetoric of Pascal’s wager,” Argumentation and Advocacy Vol. 0, Iss. 0,0, Sep 2017, <http://www.tandfonline.com/eprint/CTPGbVmNAmtvfJPI8Q86/full>//ak47]

The form of Pascal's wager has been adapted outside of its explicitly religious context. It perennially crops up in debates over important public political decisions, from space exploration (Bostrom 2003 Bostrom, N. 2003. “Astronomical Waste: The Opportunity Cost of Delayed Technological Development.” Utilitas 15 (2): 308–314. ) and asteroid collisions (Matheny 2007 Matheny, J. 2007. “Reducing the Risk of Human Extinction.” Risk Analysis 27 (5): 1334–1345. [Google Scholar] , 1340–1342) to climate change (Hurka 1993 Hurka, T. 1993. “Ethical Principles.” In Ethics and Climate Change: The Greenhouse Effect, edited by H. Coward and T. Hurka, 23–38. Waterloo: Wilfrid Laurier University Press. , 25) and anything else potentially covered by the precautionary principle.1 [Footnote 1: Those with recent experience in intercollegiate policy debate should recognize the logic of Pascal's wager in the “try or die” arguments that dominate its risk calculus in debates over the desirability of hypothetical plans and the attendant necessity to describe the outcomes of any decision in terms of possible human extinction, whether the topic revolves around military deployment, subsidies for agriculture, or decriminalizing prostitution in the United States. End footnote 1] Chief amongst these is nuclear weapons. Most clearly articulated in Jonathan Schell's (1982 Schell, J. 1982. The Fate of the Earth. New York: Alfred A. Knopf. ) Fate of the Earth and modified in Dick Cheney's “One Percent Doctrine,” the logic of the wager features in calculations of the catastrophic, but relatively unlikely, prospect of nuclear destruction. But despite its continued iteration, the logic of Pascal's wager is far from uncontroversial. A great number of critics over the years have shown that Pascal's argument is fundamentally unsound whether or not God exists. Indeed, as a logical proof the wager has few defenders. How then might we account for its persistence? What political possibilities does the trope afford? To answer these questions, this article will examine Pascal's original wager and the logical objections to it with reference to debates over nuclear weapons. My central argument is that Pascal's wager is best understood as an example of the rhetorical sublime. In making this case, I will link the sublime to Paul de Man's observations on the undecidability of grammar and rhetoric. Critics of Pascal have often interpreted his wager grammatically as a logical argument for belief rather than rhetorically as a use of trope to establish the impossibility of logical argument. Even those who identify rhetoric at work in Pascal's wager tend to analyze it in terms of rational persuasion, oftentimes with some distrust. However, Pascal's rhetorical method in the wager is more akin to the sublime style of Longinus (1991 Longinus. 1991. On Great Writing (On the Sublime). Indianapolis, IN: Hackett Publishing Company. ) than the rational persuasion of Aristotelian logos, a result of the negative theology that informed Pascal's approach to the subject of God. The wager's power comes not from its mathematical consistency or reasoned argument but rather its stark presentation of infinity as something that exceeds reason itself in some measure and forces the potential believer to confront what exceeds logic itself. The outcome of this discussion matters because it implicates modern-day uses of the wager's argumentative structure and the sublime more generally. Appeals to act in the face of enormous, but enormously unlikely, threats cannot be effectively resisted by simply disputing the logic of their calculation, nor are they productive roadmaps for politics as conventionally understood. Rather, these arguments should be read in relation to Pascal's original theological motive as efforts to overwhelm auditors with the appeal to values and forces beyond their ability to comprehend or calculate with reason alone. Like Pascal's wager, the sublime also has its critics, and the nuclear example suggests that it might be particularly threatening in combination with Pascal's wager. However, the wager might also be read as evidence that the sublime also presents opportunities for political critique. Although Schell and Cheney's opposite deployments of the infinite demonstrate that aporia may result, Pascal's sublime rhetoric should not be dismissed. Indecision can also gesture towards political possibilities beyond rational, orderly politics. This essay will proceed in four parts. First, it will elaborate the structure and context of Pascal's original wager in the Pensées and the logical objections to it with the aim of recovering Pascal's reputation as a rhetorician employing a powerful trope, rather than a mathematician systematizing belief. Second, it will discuss Jonathan Schell's famous appeal for nuclear abolition in his book Fate of the Earth and Dick Cheney's so-called “One Percent Doctrine” against terrorism as contemporary uses of the wager's logical structure. Third, it will analyze the wager in terms of its sublime rhetoric and the influence of negative theology on Pascal's work. Finally, it will conclude with a discussion of the appeal to infinity as an argumentative strategy and the challenges of the sublime as an aspect of political rhetoric. Pascal's wager When he died at the age of 39, Blaise Pascal was in the midst of a project (or projects) of apology for the Christian faith. Although the work was never completed, it was ultimately to be assembled as the Pensées, a “mildly heretical” treatise reflecting Pascal's Jansenist conviction (Velchik 2009 Velchik, M. 2009. “Pascal's Wager is a Lie: An Epistemic Interpretation of the Ultimate Pragmatic Argument.” Aporia 19 (2): 1–8. , 1). Much of the book concerns the fallen state of humanity and the inability to directly contemplate the “hidden God,” the motive force of the universe that exists beyond the realms of speech and rational cognition. Pascal's work was inspired by the events of November 23 1654, eight years prior to his death, which he christened the “Night of Fire.” Vividly described in the Pensées, the Night of Fire was a two-hour long religious vision which he interpreted as a revelation of God (Ludwin 2001 Ludwin, D. 2001. Blaise Pascal's Quest for the Ineffable. New York: Peter Lang. , xi). Unable to communicate this experience directly, Pascal nevertheless endeavored to reach unbelievers with his brand of Jansenist Catholicism. One result was his famous wager, which Westel (1995 Westel, D. (1995). Pascal and Disbelief: Catechesis and Conversion in the Penseés. Washington, DC: The Catholic University of America Press. , 13) has suggested would have been near the beginning of the assembled Penseés based on Pascal's notes and more recent textual scholarship. There is “not one inkling of doubt” that the final project was intended as an extended Christian apology (Westel 1995 Westel, D. (1995). Pascal and Disbelief: Catechesis and Conversion in the Penseés. Washington, DC: The Catholic University of America Press. , 18) with the wager as a key element.22. Pascal himself was not the first to propose such an argument (Ryan 1994 Ryan, J. 1994. “The Wager in Pascal and Others.” In Gambling on God: Essays on Pascal's Wager, edited by J. Jordan, 11–20. Lanham, MD: Rowman and Littlefied. ), but his formulation of it is the most complete, widely known, studied, and influential and is therefore the most appropriate target for analysis. Also, although the wager argument did not originate with Pascal, Patricia Topliss has argued that its mathematical expression did, which again makes it a key analogue for later, secular iterations (Topliss 1966 Topliss, P. 1966. The Rhetoric of Pascal: A Study of his Art of Persuasion in the Provinciales and the Pensées. Leicester: Leicester University Press. , 193–194). As Westel notes, “apology” applies a modern concept which Pascal would have understood somewhat differently. “‘Either God is or he [sic] is not,’” Pascal (2003 Pascal, B. 2003. Pensées [Kindle version].. Amazon.com . (Original work published 1670). ) wrote. “Reason cannot decide this question. Infinite chaos separates us. At the far end of this infinite distance a coin is being spun which will come down heads or tails. How will you wager? Reason cannot make you choose either, reason cannot prove either wrong” (122). Because the proposition that God is real cannot be proven or disproven, neither decision is clearly correct. But some decision must be made, because one either believes or does not – “you are already committed,” as Pascal put it (2003 Pascal, B. 2003. Pensées [Kindle version].. Amazon.com . (Original work published 1670). , 122).33. This reflects the Jansenist emphasis on individual faith as an element of salvation, a doctrinal commitment opposed by the Jesuits. View all notes Pascal argues that four outcomes are possible – that God exists and I believe, that God exists and that I do not believe, that God does not exist but I believe, and that God does not exist and I do not believe. These outcomes can be mapped onto a decision matrix, and indeed Pascal is considered one of the progenitors of decision theory for his analysis of alternative choices (Jordan 1994a Jordan, J. 1994a. “Introduction.” In Gambling on God: Essays on Pascal's Wager, edited by J. Jordan, 1–10. Lanham, MD: Rowman and Littlefied. , 3). Although Pascal implied a 50% probability of God's existence (assuming that the coin he described is fair), the most significant aspect of his argument is that probability itself is unimportant for this particular decision. Because the rewards for belief if God is real are “an eternity of life and happiness” while the potential losses of false belief are finite, the potential benefits of belief outweigh any drawback. “[T]hough there were an infinite number of chances,” Pascal (2003 Pascal, B. 2003. Pensées [Kindle version].. Amazon.com . (Original work published 1670). ) wrote, “of which only one were in your favor,” one would be right to wager if “there were an infinity of infinitely happy life to be won.” But the chance of God's existence is not one-in-infinity, but some finite fraction: “there is an infinity of infinitely happy life to be won, one chance of winning against a finite number of chances of losing, and what you are staking is finite” (123–124). That Pascal describes the bet in terms of “lives” bet and won only eases the way for its adaptation to public policy questions. Pascal's argument here is not that God exists, but that given the non-zero chance that God exists multiplied by the infinite reward of correct belief, it is rational to act as if God exists. It is rational to believe because of the expected value of this course of action, and if the “passions” prevent “reason” from convincing the gambler, then behaving like one believes by “taking holy water, having masses said, and so on” will eventually lead one to belief (Pascal 2003 Pascal, B. 2003. Pensées [Kindle version].. Amazon.com . (Original work published 1670). , 124). Pascal also argues that the salubrious effects of a pious lifestyle are worth the attendant loss of hedonistic pleasures even without the infinite rewards of Heaven (125). Eventually, as these boons accumulate and the convert behaves in a pious fashion, the repetition of worship will instill genuine faith and fear for one's immortal soul: “Anyone who grows accustomed to faith believes it, and can no longer help fearing hell, and believes nothing else” (126). The fear of hell adds a dimension of infinite suffering as an alternative to infinite happiness, and it is this negative incentive that is often echoed in secular incarnations of the wager. Leaving aside the moral objections to Pascal's wager, the logic of this argument has been attacked in a number of ways. One objection is that because many gods – perhaps an infinite number of them – are possible, Pascal cannot do more than argue that atheism and agnosticism are irrational, which does not prove that Catholicism is correct (Jordan 1994b Jordan, J. 1994b. “The Many Gods Objection.” In Gambling on God: Essays on Pascal's Wager, edited by J. Jordan, 1–10. Lanham, MD: Rowman and Littlefied.). The argument that any small probability with an infinite impact should be assessed as infinite creates an obvious difficulty when two infinitely important outcomes – one good, one bad – are compared against one another. Suppose that choosing the wrong god results in damnation by the right one. On which god does one then decide? The result is either paralysis, which Pascal rejects with his insistence that some choice is inescapable, or an assessment that returns to probability, making the appeal to infinity moot (Schlesinger 1994 Schlesinger, G. 1994. “A Central Theistic Argument.” In Gambling on God: Essays on Pascal's Wager, edited by J. Jordan, 83–100. Lanham, MD: Rowman and Littlefied, 89). At this point, Patricia Topliss (1966 Topliss, P. 1966. The Rhetoric of Pascal: A Study of his Art of Persuasion in the Provinciales and the Pensées. Leicester: Leicester University Press.) argues, the wager no longer makes sense. The unbeliever might argue that sufficiently low odds make the wager irrational (“is there an even chance that the unicorn exists?”) and that, knowing only the mortal world in which we live, to stake one's life in exchange for the possibility of salvation is to risk everything potentially for nothing (195–196). Perhaps God does exist but perversely tortures true believers – even if this outcome is unlikely, to make a judgment on this basis merely returns the debate to probability. Other difficulties exist with the nature of infinity as a concept, vital to the rewards and punishments of Pascal's wager. Leaving aside the well-known problem of Russell's Paradox, in which a set that contains all sets must paradoxically either include or exclude itself, there is also the St. Petersburg Paradox. Imagine that Peter offers a game to Paul involving coin flips. Peter will pay Paul a dollar if the coin ends up heads, two dollars if the second flip also turns up heads, four if this is repeated on the third flip, eight on the fourth, and so on to infinity (Bernoulli 1954, 31). How much would one be willing to pay to play this game? The amount that one could win rises towards the infinite, but the chances of winning decline toward zero as one continues to play. In addition, after a certain amount, doubling the prize money does not double its actual value – while having a 1000 dollars might legitimately make one twice as happy as having 500, having 200 billion dollars is not twice as good as having 100 billion, because as the prize increases the marginal utility of each dollar decreases. Although the expected value may only have an asymptotic relationship to zero, the value of playing this game has been set as low as two dollars (Ellenberg 2014, 244). The various objections to Pascal's wager have substantially discredited it is a logical argument and therefore led to its rejection by many scholars. In the summary judgment of Ian Hacking (1994), although the arguments of the wager are “valid,” none of them are convincing. “The arguments are worthless as apologetics today, for no present agnostic who understood the arguments would ever be moved to accept all the premises” (27). The wager is structured something like a geometric proof, so if Pascal the geometer has the math wrong, the wager has no value. At its extreme, this line of thinking lends credence to Buford Norman's (1977) claim that the Pensées are not rhetorical at all. “[M]any of the fragments of the Pensées,” he wrote, “consist of a direct association of ideas, with few connectives. This is precisely what the Port-Royal Logique calls jugement, which is basically the same as grammar … perhaps the most logical of all methods (styles), since it follows thought quite closely, and it is definitely far removed from rhetoric” (32). It seems reasonable to suggest, however, that Blaise Pascal, one of the great scientific and mathematical minds of his age, might well have realized the logical deficits of his wager but advanced it anyway for its rhetorical effect. In this sense, it is less a demonstration and more an effort to persuade, and Pascal should instead be judged for his merits as a rhetorician. Grammar and rhetoric of the wager The mathematical or logical reading of Pascal is the chief claim against him as a rhetorician. For interpreters such as Ellenberg and Hacking, Pascal's work is an effort to persuade through demonstration or at best grammar, as Norman argues. This interpretation sees Pascal as an earnest mathematician establishing what amounts to a proof, rather than a rhetorician employing his persuasive art to win the hearts of believers along with their minds. Others, however, have claimed the opposite position that Pascal's Penseés should be understood as primarily rhetorical, and Pascal himself as an expert rhetorician, although whether this is a complement or aspersion varies according to the source. This section will summarize and analyze this rhetorical interpretation, ultimately concluding that the opposition between grammar (as indexical structure) and rhetoric (as persuasion) is an opportunity to view Pascal's rhetoric as something in excess of both, more in line with the sublime tradition than the Aristotelian one. Pascal's own theory of rhetoric is developed in an essay called “The Art of Persuasion” (1909),4 which begins by acknowledging that although people tend to believe what pleases them, this is “base, ignoble and irrelevant” (406). The “art of persuasion,” as Pascal names it, is “simply the process of perfect methodical proofs,” and “consists of three essential parts: of defining the terms of which we should avail ourselves by clear definitions; of proposing principles or evident axioms to prove the thing in question; and of always mentally substituting in the demonstrations the definition in the place of the thing defined” (Pascal 1909, 410). Blaise Pascal, “arguably the most successful and significant practitioner of written rhetoric in his century” (Lockwood 1996, 273), thus seems to treat the art of persuasion as something with a set of codifiable, if elusive, rules and laws, a sort of geometry of human interiority. Although Pascal professes not to know all the rules, persuasion is, in this view of his work, still thought of a technique bound by laws, hidden or not (Ijsseling 1976, 73). Rule-bound and systematic, this view of Pascal's rhetoric tends to support the idea that his mathematical language is meant to be taken literally, which is perhaps what Paul Valéry (1968) was thinking when he wrote that the wager is “absurd” because it “concludes with a hope in mathematics” (319). Pascal could be expected to transmit ideas with the minimum amount of figural embellishment or distortion, and it was precisely his failure to do that which sparked Valéry's ire, leading him to describe the deceased mathematician as “an enemy of the human race.” “My complaint against Pascal,” he wrote, “is that he wanted to persuade … For me this is shocking – I've caught him in the act of literature. As I see it, if a man has something to say and thinks it should be said, he should put it just as it is in his mind … Exactly as it is” (318). This attack resonates with criticisms of rhetoric more generally as an art of deception and deceit, unsuited to the serious questions of religion, science, and even statecraft. Indeed, in discussing another of Pascal's arguments Valéry claims that he cannot be an “inspired writer” because “it's a piece of rhetoric, a fake window … It's an effect—[Pascal] is a rhetorician” (317). Even Velchik, who acknowledges Pascal as a rhetorician without condemning him as such, still concludes that Pascal's wager is deceptive – “a white lie,” no matter how insightful (Velchik 2009, 8). The most influential work on this subject is Topliss's (1966) The Rhetoric of Pascal in which she concurs with Valéry's claim that Pascal uses figurative language as more than mere ornament, transforming the meaning of his arguments through sophisticated rhetorical technique. Although she did not envenom her judgment as did Valéry, Topliss argued that Pascal's technique departed from “Ancient Rhetoric” substantially in this regard (258). For Topliss, while something more may be at work, persuasion is still the central project of the Pensées, and in this sense Pascal does follow a certain tradition of ancient rhetoric beginning with Aristotle's well-known definition of rhetoric as the faculty of observing in any given case the available means of persuasion. Topliss and Valéry thus see Pascal's work as persuasive at its core, the exact opposite of Norman's claim that Pacal communicates so directly that his work is not rhetorical. The work of Paul de Man (1988) suggests one way to resolve this disparity. de Man argued that two theories of the function of language were at work in Pascal's writing. One was a “cognitive function” that is “right (juste) but powerless,” while the other was “a modal function” that was “mighty (forte) in its claim to rightness.” The “necessary choice” between “seduction and truth remains undecidable,” de Man argues, because even the language of Holy Writ cannot be squared in its persuasive power with a geometrical understanding of proof (de Man 1988, 153). This undecidability is what de Man calls allegory. The conflict between “seduction” and “truth” mirrors a distinction he developed in Allegories of Reading between “rhetoric” and “grammar.” In a famous passage in that book, de Man relates a scene from All in the Family in which Archie Bunker's wife, Edith, asks him if he would prefer his bowling shoes laced under or laced over, to which Archie replies “what's the difference?” When Edith begins to explain this difference, Archie becomes agitated; his statement, although it grammatically requests more information, rhetorically denies the need for it and is thus aporetic (de Man 1979, 9–10).5 In this formulation, both Norman and Topliss are correct: Pascal's language is “basically the same as grammar” as Norman argued, and yet paradoxically “restored to figures of rhetoric that had long been thought of as ornaments, their original function as instruments of persuasion” (Topliss 1966, 321). There is something undecidable in Pascal's rhetoric between reason and belief. Rather than leading us to accept the wager as a demonstration of how reason might be applied to God, the second half of this aporia suggests that the wager is a figurative argument for why there can be no such proof – something that Pascal himself hints at when he wrote that because the order of the holy infinitely exceeds the corrupt speech of human beings, “divine truths” could not fall under the arts of persuasion. “God alone,” he wrote, “can place them in the soul” (Pascal 1909, 406–407). If Pascal believed that the “hidden God” lies infinitely beyond the capacity of persuasive language to represent, why write the wager at all? Scholars who, like Topliss, argue that Pascal's work should be analyzed rhetorically share a basic assumption with the grammatical view of Norman and those who treat the wager as a kind of mathematical proof: in short, both view Pascal's central project as one of persuasion. Even de Man's somewhat more subtle reading largely shares this understanding. Pascal, through demonstration, rhetoric, or aporetic uncertainty is guilty of Valéry's charge of attempted persuasion. The wager does not seem to add much in this regard beyond a simple effort to persuade, an appeal to logos with the minor quirk of its mathematical appeal to infinity. Pascal's religious background suggests that this dismissal may be too hasty. As Topliss wrote, that Pascal's style “will not yield up all its secrets” hidden in his “most banal devices,” suggests that the author of the Penseés had his own “impenetrable places” (321). Negative theology and the sublime Dawn Ludwin (2001) makes the case in Blaise Pascal's Quest for the Ineffable that Pascal owed a great debt to the tradition of negative theology, particularly the work of Pseudo-Dionysius,6 which he seems to have read despite his relatively limited reading and citation of other scholarly works (3–4). Negative theology is an ancient tradition in Christian thought with strong parallels in other religions. Its central concern can be framed as the problem of infinity: if God is infinite and exceeds all human understanding, how are we to talk about the divine? Language fails to capture God because it is a fallen thing of human artifice and must necessarily provide a limit where none exists in the case of the divine. Language and its limits are thus central concerns in this line of thinking. Divine experiences, such as Pascal's Night of Fire, might be described, but they can never be fully understood through speech. We can only say what God is not because even the word “infinite” is nothing more than a linguistic marker, a condensation and thus a kind of paradox in itself. Like Pascal, Pseudo-Dionysius described God in striking terms as “light” and “fire,” arguing that although language might show a path, it is only in the silence that exceeds it where God might make itself known (50–56). These metaphors for God do not persuade, but rather lead the audience to the edge of a precipice beyond which the currency of language has no purchase. As Ludwin argues, the rhetorical theory deriving from such a position on God is more consistent with the sublime of Longinus than with the rational persuasion of Aristotle, and it is in these terms that Pascal might be best understood (140–141). The sublime has been partially absorbed into the field of aesthetics, but its origin is squarely rhetorical. For Longinus, powerful rhetorical figures – chiefly metaphor – may circumvent the auditor's reason by the sheer force of the concepts it invokes. Although it is unlikely that Pascal ever read Longinus,7 striking similarities exist in their theories of rhetoric. For Longinus, the greatest writing does not persuade, but “takes the reader out of himself [sic]” by employing and “irresistible force beyond the control of any audience.” Although the individual elements of style gradually accrete in a text to indicate the author's skill, individual tropes are sublime to the extent that they disrupt this coherence: “greatness appears suddenly,” Longinus wrote, “like a thunderbolt it carries all before it and reveals the writer's full power in a flash” (4). Like Pseudo-Dionysius's belief that the infinite power of God revealed the fragility of human subjects, Longinus's theory of rhetoric uses language as an appeal to a powerful motive force that exceeds the individual. A sublime trope conceals the proof of its own argument by “startling” the reader by “its own brilliance” (Longinus 1991, 27). The best figures are not even identifiable as such because their disruptive effect draws attention away from artifice altogether, making it appear natural (Longinus 1991, 29). The technical character of the trope is less important than its ability to shock the reader away from mundane language by changing their orientation towards the text and its associated concepts, however briefly. Viewed through this lens, Pascal's wager takes on a different significance. The purpose of the wager is not to provide a rational proof for God or even to compel adherence to the liturgy, but to use the trope of the infinite to disorient and displace subjects by revealing their finitude. The wager's logical structure is obviously flawed, but this fact does not undermine its significance – it is an example of rhetoric beyond persuasion. First, following Longinus, the effect of the trope should be to conceal the proof of its own argument if it is successful, rendering the proof itself relatively unimportant. The important part of the wager is not the finitude of probability in the coin toss, but the overwhelming, literally incomprehensible stakes of the wager. The wager is supposed to shock the reader into an inspired choice that will eventually lead to conversion through repetition, not to complete the process all at once. No part of Pascal's wager has to be compelling on its own, so the 50% probability of God's existence, for example, is arbitrary and irrelevant. The sublime is supposed to circumvent the faculty of reason, rather than appeal to it in an effort of persuasion that ends in a carefully calculated decision to convert. Second, following Pseudo-Dionysius, the weakness of the wager's logic might be precisely its appeal. The secret in the “banal devices” that Topliss diagnoses is that words never succeed in capturing the majesty of God. Pascal's sublime trope does its work through catachresis. As Pseudo-Dionysius (1987) writes, “incongruities are more suitable for lifting our minds up into the domain of the spiritual … the sheer crassness of the signs is a goad so that even the materially inclined cannot accept that it could be permitted or true that the celestial and divine sights could be conveyed by such shameful things” (150). The same characteristic describes the wager. The hitch in its logic – the catachresis resulting from juxtaposing the crude indexical statement of the wager with its divine referent – forces the reader to engage the claim more thoroughly. Valéry's fury at Pascal's base rhetoric might be precisely the point: after all, it did lead the later French critic to write at length about a single sentence in Pascal's work, stewing over the crassness of its persuasion for many years.8 Confusion at the logic of the argument only helps to conceal its non-rational effect: after all, to be angered at its irrationality is to presume that it is supposed to be rational in the first place. Pascal was an “enemy of the human race” (in Valéry's language) to the extent that he wished to dissolve its finitude in the rapture of the divine by catachretic revelation. Even at his most rational and precise, Pascal argued that persuasion had its limits because the rules could never be fully known and individuals would follow their passions (Pascal, 1909). It is more fitting with his indisputable genius that the wager be read as an immensely subtle attempt to shock readers out of complacency rather than an immensely clumsy use of probability by one of Europe's greatest and most diligent mathematicians. Pascal's heirs The purpose of this exercise in reinterpretation is not only to vindicate Pascal the rhetorician. The wager's basic form is perhaps more influential today than it ever has been in past. Since the detonation of the first atomic bomb in 1945, human beings have become aware that their decisions have the potential to destroy the entire species – and many others along with it. The challenges of thinking in terms of existential risk are immense, and many old habits of thought are irrelevant or even counterproductive when making these decisions. The root of this problem is that people are not accustomed to thinking in the appropriate scales. The magnitudes of some potential impacts, such as nuclear war, are so large that our minds are not well equipped to fathom them. If they are not truly “infinite,” they are at least close enough to exert the same effects on our minds. At the same time, probabilities are so low that in conjunction with existential risks they too are hard to grasp (Yudkowsky, 2008). It is this intersection that mirrors Pascal's wager: unpredictable, low chances married to immensely, possibly infinitely, important outcomes.9 Debates about existential risk thus adhere to Pascal's wager in form: at issue is not Pascal's argument for religious debate so much as his deployment of infinite value as a rhetorical device. The most thoroughly studied existential risk is nuclear war. Since the beginning of the Cold War, academics, think-tank employees, and military planners have made an effort to quantify the risks of nuclear conflict and manage it with the tools of reason (Abella 2008 Abella, A. 2008. Soldiers of Reason: The RAND Corporation and the Rise of the American Empire. Orlando, FL: Harcourt. ; Ghamari-Tabrizi 2005 Ghamari-Tabrizi, S. 2005. The Worlds of Herman Kahn: The Intuitive Science of Thermonuclear War. Cambridge: Harvard University Press. ). The arms race appears to be the first consistent use of Pascal's wager to inform arguments on both sides of a single dispute, and may serve as a prototype for later deployments. Roy Sorensen (1994 Sorensen, R. 1994. “Infinite Decision Theory.” In Gambling on God: Essays on Pascal's Wager, edited by J. Jordan, 139–159. Lanham, MD: Rowman and Littlefied. ) reported that a version of Pascal's wager showed up in arms control rallies (141), but its most complete and eloquent formulation is in Jonathan Schell's widely-read book Fate of the Earth. Schell (1982 Schell, J. 1982. The Fate of the Earth. New York: Alfred A. Knopf. ) argues that the consequences of a nuclear war largely are unknown, but due to the possibility that an ensuing nuclear winter might destroy all life on Earth, such a war cannot be risked for any reason. He writes: the mere risk of extinction has a significance that is categorically different from, and immeasurably greater than, that of any other risk, and as we make our decisions we have to take that significance into account…. We have no right to place the possibility of this limitless, eternal defeat on the same footing as risks that we run in the ordinary conduct of our affairs … although the risk of extinction may be fractional, the stake is, humanly speaking, infinite, and a fraction of infinity is still infinity. In other words, once we learn that a holocaust might lead to extinction we have no right to gamble … we have no choice but to address the issue of nuclear weapons as though we knew for a certainty that their use would put an end to our species. (Schell 1982 Schell, J. 1982. The Fate of the Earth. New York: Alfred A. Knopf. , 95) The above passage follows the structure and content of Pascal's wager very closely. First, Schell asserts an infinite value coupled with an uncertain probability, which together result in an infinite expected value for one choice (and therefore, an infinite opportunity cost for another). Like the rewards of Heaven and the consequences of Hell, the virtues of peace and the losses of extinction are unquantifiable. Probability is irrelevant in this calculation because “a fraction of infinity is still infinity.” Second, Schell argues that although the chances of extinction are unknown, we should act as if it is a certain result of nuclear war, just as Pascal attempted not to prove that God exists, but rather that we should act as if this was the truth. It is possible that nuclear winter would not result; it is possible that a nuclear war will not occur; it is possible that the worst-case projections are wrong. Thus, although “scientifically speaking” there is “all the difference in the world between the mere possibility … and the certainty of it, morally they are the same,” which is why we must act “as though we knew for a certainty” that extinction will result from the possession of nuclear arms (Schell 1982 Schell, J. 1982. The Fate of the Earth. New York: Alfred A. Knopf. , 95). Third, Schell appeals not only to the unknown but to the unknowable. The impact of a nuclear war is beyond our comprehension, just as the God of Pascal's negative theology is. The passage cited here comes at the very end of the first part of Fate of the Earth, “Republic of Insects and Grass,” which is an extended description of the potential horrors of nuclear war written lyrically and beautifully, but includes an acknowledgement that nuclear war can be imagined but is indescribable because its witnesses would be dead (Schell 1982 Schell, J. 1982. The Fate of the Earth. New York: Alfred A. Knopf. , 26). It mirrors the many names of God used by Pseudo-Dionysius to impress upon his readers that God is something that must necessarily exceed the human standpoint. Near the conclusion of his “wager” passage, Schell asserts, “we stand before a mystery.” Like Pascal's worshipper gradually humbled before God's revelation, the reader “take[n] outside” of themselves by Longinus's sublime, or the believer “struck by [God's] blazing light,” Schell's audience is to be overwhelmed by his language and made to realize their own finitude. “Our ignorance should dispose us to wonder,” he writes, “and our wonder should make us humble, our humility should inspire us to reverence and caution” (Schell 1982 Schell, J. 1982. The Fate of the Earth. New York: Alfred A. Knopf. , 95). Finally, Schell's sublime rhetoric is supposed to be an impetus for action. The third section of Fate of the Earth is called “The Choice” and is an explicit call for the abolition of nuclear weapons. The existence of this technology forces a decision, just as the possibility of God does so in Pascal's wager. As in Pascal, for Schell the wager does not merely dislocate its reader – however vital this is to its effect – but also provides a framework for decision under the conditions of uncertainty, perhaps a hallmark of rhetoric itself. Faced with incalculable risks, inaction is not possible. To paraphrase Rush, choosing not to decide is still making a choice. The invocation of infinity does not have to persuade in an Aristotelian sense to serve a purpose. The Old Testament's Abraham was made to feel “but dust and ashes” before the Lord, but the end result of his encounter was clear: follow the divine law. Thus, it is for Schell: our confrontation with finitude breeds humility, reverence, and caution, resulting in support for disarmament without the need for a nuclear Revelation. The paradox of Schell's sublime wager grows out of the necessity for decision. If any fraction of infinity is still infinity, then it becomes impossible to choose between competing options that might stake claims to the same infinitely important outcome. While abolition might prevent a nuclear war from eradicating humanity, through any number of improbable outcomes, it might also cause human extinction, perhaps by triggering devastating non-nuclear wars, another wave of nuclear proliferation, biological war (Payne 2010 Payne, K. 2010. “Disarmament danger.” National Review Online. http://www.nationalreview.com/article/229492/disarmament-danger-keith-b-payne ), or even preventing humanity from deflecting an asteroid collision (Wall 2014 Wall, M. 2014. “How Nuclear Bombs Could Save Earth from Killer Asteroids. Space.com. http://www.space.com/24696-asteroid-strike-nuclear-bombs.html ). When probability is rendered irrelevant by the sign of the infinite, there is no way to distinguish between one outcome and another: all fractions of infinity are infinity. While for Schell the risk of nuclear war mandates a policy of abolition, for advocates of nuclear deterrence, the possibility that disarmament might encourage another power to develop or use nuclear weapons against the defenseless United States mandates the exact opposite: maintenance, perhaps even aggressive expansion, of the nuclear arsenal. Such a position was, in fact, taken by former Vice President Dick Cheney. Ron Suskind reports that in 2001, CIA Director George Tenet briefed Cheney about the possibility that terrorists or hostile nations might develop nuclear weapons with the aid of Pakistani radicals. In response, Cheney proffered the now-infamous “One Percent Doctrine.” “With a low-probability, high impact event like this,” he said, “I'm frankly not sure how to engage. We're going to have to look at it in a completely different way” (qtd. in Suskind 2006 Suskind, R. 2006. The One Percent Doctrine. New York, NY: Simon & Schuster. , 61). That “different way” turned out to mirror Pascal's familiar construction. “If there's a one percent chance that Pakistani scientists are helping al Qaeda build or develop a nuclear weapon, we have to treat it as a certainty in terms of our response … It's not about our analysis, or finding a preponderance of evidence … It's about our response” (qtd. in Suskind 2006 Suskind, R. 2006. The One Percent Doctrine. New York, NY: Simon & Schuster. , 62). The bar for acceptable evidence, as Suskind notes, can be “set so low that the word itself almost didn't apply” (62). As Cheney himself stressed, the doctrine was about response: any probability of an adversary possessing nuclear weapons should be taken as a certainty. The “Cheney Doctrine” thus helped to establish the “Bush Doctrine” of preemptive use of force against enemies potentially armed with “Weapons of Mass Destruction,” itself a somewhat ill-defined term. In the realm of nuclear weapons, this meant that American leaders could contemplate the preemptive use of nuclear arms against potential nuclear adversaries, as detailed in a 2005 draft of the Pentagon's Doctrine for Joint Nuclear Operations (Joint Chiefs of Staff 2005 Joint Chiefs of Staff. 2005. Doctrine for Joint Nuclear Operations (Joint Publication 3-12). http://www.wslfweb.org/docs/doctrine/3\_12fc2.pdf ). The Cheney Doctrine thus brings Schell's logic full circle and exposes the aporia of the wager's need for decision.1010. This problem is also known as Buridan's Ass: an ass, equally hungry and thirsty, dies of privation when forced to choose between a pile of hay and a trough of water because both are exactly equally appealing. View all notes Conclusion The difficulty with Schell's argument (and conversely, with Cheney's) is equivalent to the “many gods” objection to Pascal's wager. Given a range of mutually exclusive options, each representing a potentially infinite impact, there is no longer a way to choose amongst them. For Pascal, that decision boiled down to faith, but the same was true for the Bush administration in its embrace of impulse and conviction over rationality and evidence (Suskind 2006 Suskind, R. 2006. The One Percent Doctrine. New York, NY: Simon & Schuster. , 308). This same problem affects decisions over other existential threats: perhaps manipulating asteroids to miss the Earth would save us all, but perhaps the technology could be used to cause a strike; perhaps slowing the rate of climate change could prevent warming temperatures and ecological disruption, but perhaps it could cause a new ice age; perhaps space colonization would safeguard the human species, but perhaps it would attract the attention of xenocidal extraterrestrials. Infinite stakes combined with indeterminate probabilities and the necessity of decision is a counsel of despair. Even if, like Pascal's, Schell's wager is not meant to be a logical proof but an appeal to a dislocating sublime force, the problem remains. The rhetorical effect of the infinity trope is part of nuclear deterrence. One accepted mission of the US nuclear arsenal remains as the capacity to “overawe” enemies with the sheer incalculable force of thermonuclear weapons (Oelrich 2005 Oelrich, I. 2005. Missions for Nuclear Weapons after the Cold War (Federation of American Scientists Occasional Paper No. 3). https://courses.physics.illinois.edu/phys280/archive/01282005175922.pdf , 46). The “madman” theory of nuclear deterrence, named for Richard Nixon, relies on projecting the image of irrationality over nuclear decisions to that a rational opponent might believe that they will actually be used in response to aggression, even if the cost to the defender is also very high.1111. To some extent, as Kavka's Toxin Puzzle suggests, all nuclear deterrence is paradoxical: after an attack, nuclear retaliation is no longer a rational choice because one's one destruction can no longer be prevented, so, assuming the rational actors necessary for deterrence to work in the first place, it is required that one intend to do something in the future that one would be irrational to actually intend to do at the time when that decision is required. View all notes This is precisely the logic of doomsday weapons such as cobalt bombs or the Dead Hand: the cost of extinction is so high that it overwhelms any possible gain for an aggressor. Schell's vivid descriptions of the nuclear aftermath may just as well result in a passionate commitment to nuclear deterrence. The same factors that make Schell's appeal powerful also limit the ability to resist Cheney's reinterpretation of the wager. When rational calculation is made subservient to infinite risks, then reasoned arguments fail to diminish the force of sublime rhetoric, just as the various logical objections to Pascal's wager have not eliminated its staying power. The limitless damage of a nuclear war (or imagined terrorist attack) overwhelm reason. John Mueller (2010 Mueller, J. 2010. Atomic Obsession: Nuclear Alarmism from Hiroshima to Al-Qaeda. Oxford: Oxford University Press. ) has done a detailed analysis of the probability of nuclear terrorism that assigns it roughly one in three billion odds (204–206), but the numinous fear of nuclear weapons seems to remain. It is tempting to conclude with Ned O'Gorman claim that the sublime is antithetical to politics. Because the sublime is an overwhelming, illimitable force, no adjective changes it; there is no “political sublime” because one term cannot modify the other. As O'Gorman (2006 O'Gorman, N. 2006. “The Political Sublime: An Oxymoron.” Millennium 34: 889–915. ) writes, “the sublime is a free-floating force, a univocal power, which because of its univocality cannot provide alternatives for change, guide critique, or articulate new horizons. The sublime speaks only unpredicated power” (889). The sublime may be radical in a sense, but it is not politically radical. Rather, it tends toward the conservative because it cannot offer alternatives to the status quo and constitutes a “rhetorical lure” best employed by the elite and powerful (O'Gorman 2006 O'Gorman, N. 2006. “The Political Sublime: An Oxymoron.” Millennium 34: 889–915. , 891). In this reading, the present article is merely a Synodus Horrenda, dragging Pascal forth again as rhetorician rather than a mathematician and condemning him nonetheless. To write off Pascal's wager so quickly would be premature. As Schell and Cheney demonstrate, it is the need for decision that frustrates its possibility and results in aporia. Both men have read the wager grammatically and used it to calculate a decision. They may also present it rhetorically, attempting to impress not the rightness of their judgment but the overwhelming force represented by the infinite losses of a nuclear war. In either case, the wager is still aimed at persuasion but cannot overcome its own paradoxical logos. What is missing is a different aporia on an altogether different level: that identified by de Man as the contradiction of grammar and rhetoric. At issue is a practice for reading the wager, and this contradiction can be seen working in Pascal's original if it is read not as an appeal to believe in a specific God but rather an attempt to disrupt the obstacles that lead some people not to believe in any power beyond themselves. Pascal himself was not converted by this proof nor any other, but by the revelation of his “night of fire.” His wager is not a rational argument or a rhetorical device, but rather a rhetorical device illustrating the limits both of rationality and rhetoric. The point of the coin flip is to demonstrate that no rational decision is possible. Faith and fidelity constitute a moral life. Pascal argues that piety comes through repeated practice, but this practice itself is a means to realize the scope of what exceeds the human, not an end in itself. This conception of the sublime is not political according to O'Gorman's definition, where the “sine qua non of all politics except the totalitarian is differentiation” (2006, 891). As the juxtaposition of Schell's and Cheney's uses of the wager shows, the political result of sublime rhetoric is by no means determined by its use. To say that these figures do not assist one in making instrumental choices between different political goals is not to suggest that the sublime may still have radical – and not necessarily conservative – potential if “political” is not synonymous with “politics.” As Jean-Luc Nancy (2008 Nancy, J.-L. 2008. Philosophical Chronicles. New York: Fordham University Press. ) argues, nothing requires that the two terms be identical and we should be conscious of our linguistic choice between them (27–28). The political can be understood as an orientation to community, an attitude rather than being “dissolved in the sociotechnical element of forces and needs” (Nancy 1991 Nancy, J.-L. 1991. The Inoperative Community. Minneapolis, MN: University of Minnesota Press. , 40). The sublime may not aid directly in politics, but it may help to develop a conception of the political by revealing the limits of our capacity to order and to comprehend our social world. To dislocate the reader by illustrating the limit of knowledge is to call into question the inevitability of social structures that we have built and inherited. Nothing about the sublime need favor the elite and powerful. Oft forgotten in Longinus's writing is an attack on avarice and material accumulation as measures of value. Longinus argues that “wealth, honors, reputation, absolute power, and all things which are accompanied by much external and theatrical pomp” cannot be noble because to “despise them is in itself no mean blessing” (9). There is a contradiction inherent in any set of social values that idolizes the rich because they are rich and also values those who forgo material benefits because they are hollow and superficial. Why is it, Longinus asks, that although there is “no dearth” of people “who are persuasive, interested in public affairs, shrewd, skillful, and certainly delightful speakers,” there are so few who are truly outstanding? His answer is that the love of money “is a disease that shrinks a man [sic].” “I cannot see how we can honor wealth without limit or, and this is nearer the truth, make it our god, without admitting into our souls those kindred evils that inevitably follow it” (Longinus 1991, 57). Rather than proscribe an instrumental solution like those shrewd speakers occupied with public affairs might, do not exhaust the political itself. What we value in community has no satisfying objective basis, but is something we must deliberate collectively in an age when technological progress makes a literal Night of Fire all too possible.

#### Emissions from launches are dwarfed by terrestrial mining’s impact.

ArXiv 18 [Emerging Technology from the ArXiv. Emerging Technology from the arXiv covers the latest ideas and technologies that appear on the Physics arXiv preprint server. Team list found here: <https://www.technologyreview.com/author/emerging-technology-from-the-arxiv/>. "Asteroid mining might actually be better for the environment." MIT Technology Review, 2 Apr. 2020, [www.technologyreview.com/2018/10/19/139664/asteroid-mining-might-actually-be-better-for-the-environment](http://www.technologyreview.com/2018/10/19/139664/asteroid-mining-might-actually-be-better-for-the-environment)]

For a certain kind of investor, asteroid mining is a path to untold riches. Astronomers have long known that asteroids are rich in otherwise scarce resources such as platinum and water. So an obvious idea is to mine this stuff and return it to Earth—or, in the case of water, to a moon base or Earth-orbiting space station. There is no shortage of interest in these ventures. In the last decade, investors have funded half a dozen companies that have set their sights on various nearby rocks. To many observers, it’s only a matter of time before such a mission gets the green light. But profit margins are only part of the picture. A potentially more significant aspect of these missions is the impact they will have on Earth’s environment. But nobody has assessed this environmental impact in detail. Today, that changes thanks to the work of Andreas Hein and colleagues at the University of Paris-Saclay in France. These guys have calculated the greenhouse-gas emissions from asteroid-mining operations and compared them with the emissions from similar Earth-based activities. Their results provide some eyebrow-raising insights into the benefits that asteroid mining might provide. The calculations are relatively straightforward. Rocket launches release significant amounts of greenhouse gases into the atmosphere. The fuel on board the first stage of a rocket burns in Earth’s atmosphere to form carbon dioxide. For kerosene-burning rockets, one kilogram of fuel creates three kilograms of CO2. (The second and third stages operate outside the Earth’s atmosphere and so can be ignored.) Reentries are just as damaging. That’s because a significant mass of a re-entering vehicle ablates in the upper atmosphere, producing NOx such as nitrous oxide (N2O), a greenhouse gas that is about 300 times more potent than CO2. By one estimate, the space shuttle released about 20% of its mass in the form of N2O every time it returned to Earth. Hein and co use these numbers to calculate that a kilogram of platinum mined from an asteroid would release some 150 kilograms of CO2 into Earth’s atmosphere. However, economies of scale from large asteroid-mining operations could lower this to about 60 kilograms of CO2 per kilogram of platinum. That needs to be compared with the emission from Earth-based mining. Here, platinum mining generates significant greenhouse gases, mostly from the energy it takes to remove this stuff from the ground. Indeed, the numbers are huge. The mining industry estimates that producing one kilogram of platinum on Earth releases around 40,000 kilograms of carbon dioxide. “The global warming effect of Earth-based mining is several orders of magnitude larger,” significant uncertainty in the numbers here, so these will need to be better understood.