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CONTENTS

Acknowledgments	5
Letter from the Editors	6
Encoding and Decoding Mathematics for The Natural Sciences: An Inferential Account Of The Applications of Mathematics and Its Reasonableness Luigi Candela <i>King's College London</i>	8
Memory In Modern Computers and The Brain: A Useful Definition for Discourse Brett Ross <i>University of Central Florida</i>	23
What's The Secret To Mental Training? A Methodological Criticism of Mindfulness Meditation Research Jacob Schwartz <i>Vassar College</i>	38
Refusing The Hail: Self-Mutilation, Agrammaticality, and The Politics of Body Readability Among East- African Migrants in Calais's 'Jungle' Liana Thomason <i>Bryn Mawr College</i>	52
A Review of Jane H. Hill, <i>The Everyday Language of White Racism</i> Jack Kenney and Tatiana Santiago <i>Vassar College</i>	68

A Review of Bryan W. Van Norden, <i>Taking Back Philosophy</i>	73
Polyphony J. S. Bruna <i>Vassar College</i>	
A Review of Joanna Zylińska, <i>Nonhuman Photography</i>	83
Kirk Patrick Testa <i>Vassar College</i>	
Beyond The Humanist Eye: In Conversation with Joanna Zylińska	80
Josephine Lovejoy and Kirk Patrick Testa <i>Vassar College</i>	
Call for Papers	102

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The *Vassar College Journal of Philosophy* is appreciative of the numerous individuals who contributed to the success of this year's edition. This issue of the *Journal* would not have been possible without the generous support of Vassar College president Elizabeth Bradley. The *Journal* is particularly grateful for the unwavering support and guidance of Professor Giovanna Borradori, our faculty advisor. We also would like to thank administrative assistant Angela Smith for her organization in planning our meetings and events, Professor Joanna Zylińska of Goldsmiths College for her interview and photographic contributions, and Nick Erichson for cover art and print layout. Finally, the *Journal* offers special thanks to all the undergraduates who submitted their thoughtful essays on the topic of "Codes and Secrets."

LETTER FROM THE EDITORS

Josephine Lovejoy and Kirk Patrick Testa

Editors-in-Chief

The Vassar College Journal of Philosophy was established to address the lack of platforms for the publication of exceptional undergraduate philosophy and critical theory. Now in its sixth year, the *Journal* has maintained its goal of producing an annual issue of accessible scholarly writing that spans a variety of academic disciplines and demonstrates the breadth of philosophical interpretations of a chosen topic. Reflecting the *Journal's* diversity, our Editorial Board is comprised of students pursuing a range of intellectual paths both within and outside of philosophy.

This year's theme of "Codes and Secrets" attracted essays from nearly all areas of philosophy, ranging from philosophy of information and philosophy of mathematics to questions of phenomenology, embodiment, and surveillance. The first two essays in this collection interpret the theme for its technological and mechanical relevance by exploring the puzzle of the applicability of mathematics to the natural sciences (Candela) and of memory in the brain and in computers (Ross). Appealing to philosopher Octávio Bueno's 'Inferential Conception' framework, Candela proposes a theory that resolves the idealization problem of fictionalism and realism, and successfully addresses the need for a mechanism by which mathematical theory can be applied to the material world. Ross embraces the challenge of formulating a cohesive theory of memory as one which encodes information in such a way that its usefulness is preserved over time. The latter two essays deploy the theme of "Codes and Secrets" as it relates to the human body, particularly how embodiment evades empirical coding (Schwartz) and how the political subject may preclude categorization and surveillance by bodily manipulation (Thomason). Schwartz examines how subjective experience and Buddhist doctrines of salvation actually prevent a thorough empirical study of mindfulness meditation. In the shadow of Derrida, Thomason analyzes the phenomenon of fingertip mutilation, enacted by migrants in the city of Calais, as a rejection of the surveillance state's humanitarian pretenses.

Each year, the *Journal* invites Members of its Editorial Board to

review contemporary works in philosophy that resonate with the annual theme. In their review of *The Everyday Language of White Racism* by Jane H. Hill, Jack Kenney and Tatiana Santiago relate “Codes and Secrets” to the ways in which coded language and linguistic ideologies subliminally perpetuate racism today. In her review of *Taking Back Philosophy*, Polyphony Bruna examines Vassar’s own Bryan Van Norden’s compelling call to decode the term ‘philosophy’ from its restrictive identification with the Western European tradition. Finally, Kirk Patrick Testa reviews *Nonhuman Photography* by artist, curator, and philosopher Joanna Zylińska. Drawing on an ample number of arguments in the philosophy of photography, Zylińska decouples the photographic medium from the humanist perspective and reconceptualizes it as but another example of the symbiotic relationship between humans and technology that always already encapsulates the digitality of being.

The *Journal* has maintained a tradition of hosting and interviewing a visiting scholar on campus each spring. This year, we were fortunate enough to engage and further expand upon the ideas presented in *Nonhuman Photography* by welcoming Joanna Zylińska, Professor of New Media and Communications at Goldsmiths College, University of London. We spoke to Zylińska not only about her work in *Nonhuman Photography* (2017) but also about the archive and the interplay between her photography practice, urban spaces, and politics. This rare opportunity for students to speak one-on-one with a distinguished scholar sparks the student-run ethos of the *Journal*.

We are humbled and inspired by the impressive submissions we received this year and the attention our authors gave to their thoughtful exploration of “Codes and Secrets.” Our intention with this theme was to publish a highly cohesive yet diverse collection of essays with contemporary significance. The creative interpretations of the theme articulated in the forthcoming essays accomplish precisely this goal: bearing witness to the unique contribution that philosophical thinking can provide to the understanding of the present moment.

Sincerely,
Josephine and Kirk Patrick

**ENCODING AND DECODING MATHEMATICS FOR
THE NATURAL SCIENCES:
AN INFERENTIAL ACCOUNT OF THE APPLICATION
OF MATHEMATICS AND ITS REASONABLENESS**

Luigi Candela
King's College London

Abstract. In this essay, I challenge the view that the applicability of mathematics to the natural sciences is “unreasonable.” Firstly, I do so by explaining why the success of applied mathematics can be considered enigmatic. I then consider realism, fictionalism and structuralism and their respective solutions to the puzzle to highlight that the mapping account and the ‘Inferential Conception’¹ constitute the best framework to tackle it. By analysing the steps of the ‘Inferential Conception’, I argue that mathematical concepts are closely entangled with experience and sense perception. Finally, I show that these ‘encode’ physical phenomena and that sound mathematical results can be ‘decoded’ to produce predictions and explanations.

Introduction

Mathematics plays an essential role in our scientific approach to the world, especially in providing explanations of physical phenomena. However, accounting for the applicability of pure mathematics to the sciences constitutes one of the most complex problems in philosophy of mathematics, which I will attempt to address in what follows.

I will begin this essay by explaining why the success of the application of mathematics to the natural sciences is so puzzling and clarify what I will take mathematical applications to be. I will then point out that two influential positions in philosophy of mathematics, realism and fictionalism, do not provide satisfactory solutions to the problem. By contrast, I will present the mapping account against a structuralist background as a potential elucidation of the puzzle. In particular, I will show that the ‘Inferential Conception’ solves the issues of idealisations in mathematical models. In conclusion, I will address three questions emerging from the analysis of the inferential conception in my attempt of making the success of the applicability of mathematics to the sciences more reasonable. The first response aims at stressing the links that mathematics has with the world of phenomena and at exhibiting the power that mathematics has of ‘encoding’ the world. The second response is an attempt to show that mathematical derivations owe their

solidity and effectiveness to the irrefutable character of the logical axioms and procedures that ground them; along the lines of Quine² (1951), I argue that the validity of such axioms is, in turn, justified by empirical facts about the world. The third response tackles the matter of interpreting mathematical results and ‘decoding’ mathematics to relate it back to empirical phenomena. I shall clarify that this essay does not look at the use of mathematical language to sciences and has as its main concern the use of mathematical entities in the prediction and explanation of physical phenomena.

What is so astounding about applied mathematics?

To begin, the “uncanny usefulness” of mathematical concepts in the natural sciences has been notably described as “unreasonable” by the physicist Eugene Wigner³. While his arguments remain rather obscure, the problems he posed resonate in the contemporary debate. In fact, it is still considered remarkable that our mathematical theories, which have subject matters apart from the physical world and outside of the causal spacetime, are relevant to empirical phenomena and the physical world⁴. As Pincock puts it: “it is as if we started talking about tables and chairs, and then moved to considering koalas and Eucalyptus trees, and finally returned to some verdict about tables and chairs”⁵. In his brevity, Pincock’s comments refer to the abstract nature of most mathematical entities, such integrals, geometrical shapes or even numbers themselves, which, despite their use in the empirical world, cannot be perceived.

In short, the puzzle about the applicability of mathematics stems from the abstract nature of the concepts (logical, yet unphysical) that are used in mathematics and their relations with the physical world which they successfully predict and describe.

For the purposes of this essay, I take mathematics to be applicable to the sciences in particular for its capability of (i) providing explanations and (ii) making predictions about physical phenomena⁶. An example of (i) is given by Baker⁷ with his case on the North American cicadas, that have life-cycles which are prime numbers (either 13 or 17 years). His key argument is that the explanation for this fact is provided by number theory. In fact, prime numbers such as 13 and

17 have their first successive multiples when they double, i.e. 26 and 34 respectively. Therefore, cicadas will be in the most vulnerable stages of their life-cycles only every 13 and 17 years and this is much rarer than if their life-cycles were of 4 or 6 years long. In such way, prime numbers minimise the possibility that any predator with similar life-cycles (say 9 or 10 years long) will coincide with the most vulnerable stages of the cicadas' life-cycle.

Furthermore, an example of (ii) comes from the Dutch physicist H.A. Lorentz⁸, who predicted the relativistic phenomena of length contractions with his 'Transformation Equations' long before any such phenomenon had ever been observed⁹. These emerged from the analysis of Maxwell's equations for Electromagnetic waves and successfully guided Lorentz in his prediction of relativistic effects long before any experiments on such phenomena had been made.

The shortcomings of realism and fictionalism

Once the puzzle and the meaning of 'applicability' have been illustrated, I will turn to how two among the most influential contemporary positions in the philosophy of mathematics attempt to tackle this problem.

Firstly, I shall consider realism, the view in which mathematical entities exist independently from our perception. The entities concerned here are mainly numbers, geometrical shapes, series and functions. Traditionally, mathematical realists, such as Quine, make their case by arguing that we ought to believe in the existence of mathematical entities due to the indispensable role they play in our best scientific theories¹⁰. Nevertheless, they seem to have two conflicting desiderata (i.e. characteristics which one would want to attach to for mathematical objects): (1) they want mathematical theories to be independent from any empirical reality, to maintain the necessity of mathematical truths, and (2) have a direct relation to the physical world. The incompatibility between these two desiderata is referred to as 'Dummett's dilemma'¹¹ and it results in an inconsistency which complicates a realist solution to the applicability problem.

Secondly, fictionalists such as Hartry Field¹² argue that mathematics is dispensable because our scientific theories (e.g.

Newtonian gravitation) can be expressed in entirely non-mathematical terms. According to fictionalists, any alleged mathematical explanation can be recast as a physical explanation. However, while giving an account for why mathematics finds its way into physical theories, i.e. as a way of simplifying calculations and statements about these theories, fictionalists cannot account for the active role that mathematics has in predicting novel phenomena, as in (ii)¹³. Furthermore, denying the existence of mathematical entities is a rather counter-intuitive way of tackling the mystery of the relation between such entities and the physical world, as it is equivalent to denying that, when solving mathematically formulated problems, we are dealing with anything at all.

Overall, these two positions do not seem to dispel the puzzle of the applicability of mathematics. In what follows, I attempt to show that the mapping account deriving from structuralism constitutes a better starting point to approach this question.

Structuralism and the mapping account

Structuralism arises from the idea that mathematics is the “science of patterns”¹⁴. According to the structuralist, mathematical concepts are positions (or nodes) within a set of relations, therefore they do not have features outside a certain specific structure. For example, the number 3 is just the three-position in the natural number structure; in this sense, there are many different objects that can instantiate the number 3.

Such characterisation of mathematics produces an original explanation for how we get to grasp mathematical objects. In fact, according to structuralism “when we are exposed to several instances of a pattern of certain kinds...we are by nature struck by the similarity of the instances—we see that they fit a pattern”¹⁵. Furthermore, we are able to abstract from any property of the system that is not relevant to the pattern itself.

In particular, such an epistemic account avoids Dummett’s dilemma. In fact, a structuralist can argue that mathematical patterns can also be instantiated by physical objects, because their epistemic origin is fundamentally empirical. Thus, structuralism conciliates the

abstract and universal character of mathematical structures with their physical instantiations, thereby satisfying both desiderata. Moreover, it provides the foundations for the so-called ‘mapping account’, which constitutes a first elucidation on the applicability puzzle, as I shall argue.

Following the characterisation offered by Bueno and Colyvan, the mapping account is the view that “the usefulness of mathematics is much like the usefulness of a city street map”.¹⁶ In this sense, mathematics constitutes a valid representation of the world, because it preserves certain relations between elements in the world and mathematical concepts. Say, for example, that point A is south of point B in the city, then point A will appear to be below point B on the map¹⁷. In a similar manner, mathematics preserves the structures of the world and it constitutes a simplified and idealised representation. Crucially, this is grounded on the assumption that there exists some mapping relating the world to all the mathematical structures in question. To see this, one should consider, for example, a projectile problem. The motion of a projectile is represented by a quadratic function which, despite its abstract character, clearly represents the shape and the behaviour of the projectile on the Cartesian plane. Such model preserves the relations between respective positions of the projectile and points on the mathematical plane.

A further argument in favour of structuralism comes from the neat distinction that exists between such a view and both fictionalism and realism. On the one hand, both fictionalism and realism are mainly concerned with the metaphysical nature of mathematical entities and, in particular, with their existence/non-existence. Under this light, both views lack some sufficiently sound account of how such entities interact with the natural world and empirical phenomena, precisely due to their primarily metaphysical focus. On the other hand, the most striking element of structuralism is that it does not debate the existence or non-existence of some entities outside the world of perception, at least not directly, and, by doing so, it side steps the problem of their interaction with the natural world. The core of structuralism arises precisely out of an account of how mathematical concepts take part in sense perception; it thereby concentrates on a wholly alternative

perspective on the problem of applicability. The result is therefore a more appealing and manageable task (as we shall see) in comparison to the more abstract arguments that realism and fictionalism seem to pursue, which resonate with metaphysics.

Nonetheless, this account has two main issues, which are overcome by the ‘Inferential Conception’, as we shall see. Firstly, the mathematical domain is richer than the empirical domain, hence there is no one-to-one correspondence between the world and its mathematical description. To see this, consider again a typical projectile problem, in which one must calculate where some projectile will land. Such a problem has (mathematically) two solutions because quadratic equations have two roots (by the fundamental theorem of algebra), and hence it would seem as if the projectile could land in two different places simultaneously. However, one of these solutions precedes the launch of the projectile, therefore there is only one physical solution.¹⁸ How can the mapping account explain this?

Secondly, mathematical models make extensive use of idealisations and simplifications; they refer to frictionless planets and continuous fluids, while nothing in the physical world corresponds to this. Therefore, there can be no physical structure to be mapped onto.¹⁹ Surely then, if the mapping account is to solve the applicability problem, some work must be done to address these two issues.

The ‘Inferential Conception’

The inferential conception is based on the idea that “the role of applied mathematics is inferential”, i.e. one can deduce facts about physical phenomena constituting novel predictions and mathematical explanation by embedding certain features of the world into a mathematical structure. To do so, one needs two mappings: an *immersion* map, to link the empirical set up to an appropriate mathematical structure, and an *interpretation* map, to bring back the mathematical results and import these into the physical system.²⁰ The key point of the process lies between the two mappings, in the *derivation* step, in which mathematicians make use of the formalism originated by the immersion map to derive mathematical consequences.²¹

In this way, the two above-mentioned matters are overcome

by the introduction of ‘partial mappings’²², appropriately used for the *immersion* and the *interpretation* steps. The former will take a partial mapping that accounts for the limitations of the empirical set-up. Similarly, the latter will take a partial mapping to relate the model back to the empirical world. Respectively, the partial mappings involved in the *interpretation* and in the *immersion* steps can accommodate idealisations and account for the absence of a one-to-one correspondence between mathematical structures and the empirical set-up by selecting the information that must be taken into account depending on the specific empirical circumstances²³.

In this way, the inferential conception provides a reassuring picture to account for the applicability of mathematics to science. Nevertheless, I believe that each step remains slightly mysterious in its own way. I have attempted to summarise the most obscure elements in the following three questions, one for each step. The responses to these should shed some light on why the application of mathematics to the natural sciences is successful, by stressing the cogent links that each step has with the empirical world.

‘Encoding’ and ‘decoding’ mathematics – Analysing the inferential conception

‘Encoding’ mathematics. How can our (ordinary) mathematical concepts arise out of the immersion step?

To address this question, one should note that our knowledge of elementary mathematical concepts arises out of experience.²⁴ For example, the perception of some object on its own is the epistemic equivalent of the mathematical concept of unit; our knowledge of the concept of addition originates from the perception of some *physical* regularity and from the activity of *gathering*. Similarly, multiplication has to do with *arranging* equal groups in equal rows. Steiner²⁵ suggests that these two operations involve “paradigmatic, indeed, prehistoric activities”, for it suffices to think that *gathering* and *arranging* are really the ways in which we are taught these operations.

In short, experience gives rise to our understanding of mathematical concepts and it constitutes its applied counterpart. An obvious objection would be that the origin of more abstract

mathematical concepts may be more difficult to justify through experience. Nevertheless, we understand them by building upon previously gained knowledge. Therefore, one can think of them rather as the result of mind-made modifications of previously obtained concepts. This point is clearly expressed by Grattan-Guinness²⁶ who argues that mathematics has been motivated by the natural sciences, hence connections between the physical world and the theoretical world are based upon rational links (those that I call modifications). He also demonstrates that mathematical notions are “ubiquitous in mathematics and in the actual world”, and, to make his case, he presents the readers with a table of analogies and ubiquitous concepts²⁷.

This exhibits that mathematics is capable of ‘encoding’ the world of phenomena into its own normalised language, which is adaptable to the laws of logic, as I will go on to argue.

What accounts for the validity of the derivation step?

The issue regarding the *derivation step* is rather compelling, for it seems odd that physical systems mirror our mathematical formalism and follow the same logical patterns that ground it. In such settings, however, it is key to remember Quine’s argument in his ground-breaking “Two Dogmas of Empiricism”²⁸, which proposes to abandon the distinction between analytic and synthetic statements, thereby making the point that our logical axioms also arise out of our empirical perception of the world. I take analytic statements to be justifiable entirely a-priori, while synthetic statements have empirical justifications.

To see this, consider the case of the principle of non-contradiction (as an example of an a-priori statement): if we had found something that could be at one time both itself and its opposite we would not be able to hold that “A and not-A” is always false. This confirms that even the most cogent, supposedly logical statements we take as true are really justified because all empirical facts we have about the world have never proved them false. Hence, such statements really are ultimately empirically justified and are, therefore, synthetic.

Beyond the principle of non-contradiction, all our logical axioms lie at the core of our knowledge and constitute its very foundations as

well as at the core of mathematics, even though nothing, in principle, excludes the possibility that experience will disprove them and make our present system of knowledge wholly useless. This idea is at the core of Quine's metaphor of the 'web of belief'²⁹, in which he argues for his holistic and pragmatic conception of knowledge and describes logic as "the very texture of our web of belief"³⁰ while still being susceptible to modifications in the light of new empirical evidence³¹. In accordance to this, I believe that the validity of the *derivation* step is grounded on the truth of our logical axioms, which in turn constitute the most fundamental aspects of our experience. It is therefore not so surprising that physical phenomena follow certain logical patterns which have not been refuted to date on the basis of empirical evidence.

Crucially, the use of consequential reasoning in mathematics allows us to reach conclusions that would not be immediately verifiable experimentally, for example, due to the limitations of our current experimental techniques. Mathematical codifications of empirical phenomena can go beyond the limits of experiments. In such a way, mathematical derivations belong to a less empirical realm and their abstractness accounts for the often surprising conclusions that they can reach. Explanations and predictions following from mathematical derivations are, hence, seemingly wondrous and uncanny. Nonetheless, the empirical groundings of the laws of logic give us a sense of how such procedures really have a tight link to the observational world and, therefore, of how mathematical explanations and predictions do not arise out of pure abstraction.

'Decoding' mathematics. How can the interpretation step be used to account for the explanatory and predictive powers of mathematics?

Crucially, the *derivation* step makes use of idealisations and simplifications resulting from the *immersion* map, that makes the empirical set-up manageable through mathematical formalism. Thus, the *derivation* step only produces 'minimal' models describing more than one specific phenomena precisely in virtue of their generalities, simplifications and idealisations. In response to the question above and in line with Batterman and Rice³², I hold that minimal models add to the explanatory power of mathematics, for they explain why "the

myriad details that distinguish a class of phenomena are connected and related”.³³

To see this with an example, consider again the simple case of a projectile problem. In such model, the *immersion* map produces a relation between the trajectory of the projectile in three dimensions and a quadratic function in one variable. The *derivation* step allows us to consider the motion of the projectile and predict where it is going to land and at what speed it will do so, given a certain initial velocity. Moreover, the same model can be applied to the motion of bodies subject to acceleration and initial velocities by varying the initial conditions and the expressions of the forces interacting within the system, due to its generalities. By so doing, it is possible to trace links and connections between different classes of phenomena, which are thereby understood in terms of simpler and more general terms.

Yet, the full generalities of minimal models must undergo a process of ‘desimplification’³⁴, also falling within the *interpretation* step, to account for explanations and novel predictions. The goal of this process is to place “back into the theory what has been deliberately left out”³⁵, i.e. to enrich the model with the details constituting the empirical phenomena. This is essential to the predictive powers of mathematics and its applicability. In the projectile example, this concerns picking out the physical solution and disregarding the unphysical one.

I suggest that this process is best understood in terms of ‘asymptotic reasoning’³⁶. This form of reasoning is based on taking limits and performing asymptotic analysis to identify the domain intervals in which the regularities break down. This allows one to observe the singularities of the models and therefore deduce what causes the regularities elsewhere, outside the interval³⁷. Singularities are discontinuities in the mathematical model that highlight limit cases, i.e. conditions in which some phenomenon will display a particular behaviour. When minimal models get supplemented by boundary conditions, these become limited in their domain of validity, so discontinuities emerge. These describe the behaviour of the particular phenomenon that is being studied.

In the very simple example of the projectile problem, the boundary condition that is introduced to preserve the physical

significance of the model is that the projectile cannot fall before it was thrown. Through asymptotic reasoning (i.e. reasoning about the discontinuities that this causes) one is therefore compelled to disregard one of the two solutions. Another clear example of this is provided by Batterman³⁸, who shows that the asymptotic investigations can predict and explain why rainbows always present the same patterns of intensities and spacing of their bows even though the wind will be different and the raindrop can vary in shapes and sizes. This is made possible through the analysis of the discontinuity in the mathematical model describing the behaviour of light in rainbows. By means of asymptotic reasoning, therefore, minimal models can be interpreted and analysed in terms of their singularities and produce explanations and predictions.

On these grounds, the *interpretation* step consists in ‘decoding’ mathematically obtained results to relate them back to the world of phenomena. ‘Desimplification’ and asymptotic reasoning constitute, in my opinion, two viable ways of making seemingly abstract results come to terms with the empirical setting in which the *immersion* step took place and empirical phenomena were previously ‘encoded’. ‘Decoding’ mathematics is, ultimately, what produces explanations and predictions.

Conclusion

I have looked at the problem of the applicability of mathematics to the natural sciences and shown that both realism and fictionalism fail in tackling this issue. I have then considered structuralism to describe the mapping account and presented the inferential conception as a potential solution to the issues of idealisations in mathematical models. Finally, I have looked at the steps of the inferential conception to address its most mysterious aspects. In particular, I have explained the origin of the analogies between mathematics and the world in the *immersion* step, argued for the validity of the *derivation* step and discussed how minimal models and asymptotic reasoning are used as explanatory and predictive means in the *interpretation* step. Therefore, I have shown that mathematics constitutes a way of ‘encoding’ the world’s phenomena

and that its derivations, through reliable logical means, often reach conclusions that can go beyond what is experimentally visible. In the process of ‘decoding’ mathematics one can retrieve the characteristics of the empirical setting in which the *immersion* step took place to obtain explanations and predictions. As a result of these last three points, the “miracle of the appropriateness of the language of mathematics for the formulation of the laws of physics”³⁹ should appear less miraculous and, conversely, more reasonable.

Notes

- ¹ Otávio Bueno, “An Inferential Conception of the Application of Mathematics,” *Noûs* 45, no. 2 (June 2011): 345-374.
- ² Quine, Willard, “Two Dogmas of Empiricism,” *The Philosophical Review* no. 60 (1951): 20-43.
- ³ Eugene Wigner, “The Unreasonable Effectiveness of Mathematics in the Natural Sciences,” *Communications on Pure and Applied Mathematics* no. 13 (1960): 1-14.
- ⁴ Robert Batterman, “On the Explanatory Role of Mathematics in Empirical Science,” *The British Journal of Philosophy of Science* 61 (2010): 1-25
- ⁵ Christopher Pincock, “A New Perspective on the Problem of Applying Mathematics,” *Philosophia Mathematica* 3, vol. 12 (2004): 135-161.
- ⁶ For reasons of word count, I am not able to argue for why this is the case.
- ⁷ Alan Baker, “Are there Genuine Mathematical Explanations of Physical Phenomena?,” *Mind* 114 (2005): 223-238.
- ⁸ Mark Colyvan, *An Introduction to Philosophy of Mathematics* (Cambridge: Cambridge University Press, 2012).
- ⁹ Otávio Bueno, “An Inferential Conception of the Application of Mathematics,” *Noûs* 45, no. 2 (June 2011): 350.
- ¹⁰ Mark Colyvan, *An Introduction to Philosophy of Mathematics*.
- ¹¹ Pincock, Christopher, “A New Perspective on the Problem of Applying Mathematics,” *Philosophia Mathematica* 3, vol. 12 (2004):

141.

- ¹² Hartry Field, *Science without Numbers* (Oxford: Oxford University Press, 1980).
- ¹³ Mark Colyvan, "The Miracle of Applied Mathematics." *Synthese* 127 (June 2001): 273.
- ¹⁴ Michael Resnik, "Mathematics as a Science of Patterns: Ontology and Reference," *Noûs* 15, no. 4 (1981): 529-550.
- ¹⁵ Ibid.
- ¹⁶ Otávio Bueno, *ibid.*, 346.
- ¹⁷ Robert Batterman, "On the Explanatory Role of Mathematics in Empirical Science," *The British Journal of Philosophy of Science* 61 (2010): 8.
- ¹⁸ Otávio Bueno, *ibid.*, 349.
- ¹⁹ Robert Batterman, *ibid.*, 10.
- ²⁰ *Ibid.*, 13.
- ²¹ Otávio Bueno, *ibid.*, 353.
- ²² (*ibid.*, 358)
- ²³ (*ibid.*, 356)
- ²⁴ Mark Steiner *The Applicability of Mathematics as a Philosophical Problem*. (Cambridge: Harvard University Press: 1998), 27.
- ²⁵ (*ibid.*, 29)
- ²⁶ Ivor Grattan-Guinness, "Solving Wigner's Mystery: The Reasonable (Though Perhaps Limited) Effectiveness of Mathematics in the Natural Sciences," *Mathematical Intelligencer* 30 (2008): 7.
- ²⁷ *ibid.*, 10.
- ²⁸ Willard Quine, "Two Dogmas of Empiricism," *The Philosophical Review* 60 (1951): 20-43.
- ²⁹ Willard Quine, *The Web of Belief* (New York: Random House: 1971).
- ³⁰ *ibid.*, 41.
- ³¹ *ibid.* (1951).
- ³² Robert Batterman, "Minimal Model Explanations," *Philosophy of Science* 81 (2014): 349-376.

³³ *ibid.*, 373.

³⁴ Grattan-Guinness, 2008, 13.

³⁵ *ibid.*, 14.

³⁶ Paolo Mancosu, “Explanation in Mathematic,” In *Stanford Encyclopedia of Philosophy*, retrieved on 21/04/18 from <https://plato.stanford.edu/entries/mathematics-explanation/>.

³⁷ Robert Batterman, “On the Explanatory Role of Mathematics in Empirical Science.” *The British Journal of Philosophy of Science* 61 (2010): 20.

³⁸ Robert Batterman, *The Devil in the Details: Asymptotic Reasoning in Explanation, Reduction and Emergence* (Oxford: Oxford University Press: 2002), chapter 6.

³⁹ Eugene Wigner, “The Unreasonable Effectiveness of Mathematics in the Natural Sciences,” *Communications on Pure and Applied Mathematics* 13 (1960): 14.

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MEMORY IN MODERN COMPUTERS AND THE BRAIN: A USEFUL DEFINITION FOR DISCOURSE

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Abstract. I analyze the term ‘memory’ in the context of both the brain and modern computers. Referring to computation and information theory, I define memory to be a mechanism that preserves information through time while maintaining its usefulness as an object to be computed. I turn to Piccinini and Scarantino to define computation, then refer to Gallistel and King for their interpretation of information theory. I explain how these terms apply to the brain and modern computers and how this supports my definition. I defend the theoretical foundation of my definition and the classification of memory as a mechanism.

Memory is a fundamental feature of both the brain and modern computers; however, it is often unclear whether ‘memory’ is used the same in both contexts. What is apparent, though, is the efficacy of algorithmic computation, which drives the digital computers that mark the modern era. Computational theory’s practical power and historical role in discourse regarding memory¹ suggest that a computationally-focused approach to memory can provide useful insights into its general nature. As such, I will spend some time discussing information and computation before moving on to memory. To define ‘computation,’ I will examine the work of Piccinini and Scarantino², who propose it to be the processing of objects according to rules. To show how computation allows for useful decisions about the world to be made, I will refer to Gallistel and King’s³ interpretation of Shannon’s classic information theory: the reduction in uncertainty regarding the properties of an object. Drawing from this same text, I will then discuss some of the properties necessary for effective information processing and generic computation that describe modern computers and that I believe may describe brains as well.

Armed with these claims and terms, I will defend the following definition of memory: Memory is a mechanism that carries information forward in time, preserved in a fashion that maintains its usefulness as an object to be computed for the computational system to which the memory is said to belong. The ability of this definition to address memory as it is discussed in both the context of the brain and that of

the modern computer will be examined. Finally, I will support my use of computation as a descriptive tool.

Defining Computation and Information

I define information first, for, as I discuss, computation doesn't necessarily need to involve information, but it can be more useful when it does. C. R. Gallistel, a Distinguished Professor Emeritus in Behavioral and Systems Neuroscience / Cognitive Psychology at Rutgers University, and Adam Philip King, an Associate Professor of Mathematics at Fairfield University, relate the definition of information first put forth by Claude Shannon in 1948 during his time as an engineer at Bell Labs. Information originates from a source, undergoes a process that 'encodes' the information into a 'signal,' and travels to a receiver that 'decodes' the signal to derive a 'message' from it.⁴ The amount of information contained by the signal is determined not only by the signal, but by the receiver as well.

Suppose an unseen coin is flipped and you are told, as a hint, that it might be heads or tails. You most likely already knew that and are wondering if this is really a hint at all. This highlights two important criteria for evaluating a signal's informational content. First, a signal must be selected from a possible set of signals. How much information has been transmitted regarding an object depends on how the range of possible object states has been affected. The hint you received does not affect the range of possible outcomes from the coin flip, and thus holds no information. Second, the relative probability of the possible states under consideration plays an important role in evaluating the quantity of information transmitted. A coin is not a truly two-dimensional object. There is a small possibility that it has landed on its side. The hint you received actually has some informational content, it is just small because the eliminated state is unlikely.

Note that Shannon's definition of information does not restrict the types of objects and states that it describes. It may be something as quantitative as numerical data. Likewise, it may be something difficult to quantify numerically, such as the emotions of another. The key point is that there is a spectrum of possible properties and that the signal reduces their domain. When I discuss representation, which is the

grammar or ‘syntax’ of information that is used to interpret it, it pays to keep in mind that the transferring of information does not necessitate the interpretation of the representation, just its preservation. In fact, a syntax that can represent a wide variety of messages in a concise manner rarely does so in an easily interpretable form.

Computation invokes many concepts similar to information. In fact, as Piccinini and Scarantino point out, computation and information processing are often mistakenly held to be synonyms.⁵ I will utilize general computation as Piccinini and Scarantino define it, “We use ‘generic computation’ to designate the processing of vehicles according to rules that are sensitive to certain vehicle properties and, specifically, to differences between different portions of the vehicles.”⁶ In the case that these vehicles are signals containing information, information processing *is* a form of computation as just defined; however, not all computation involves the processing of information. There is nothing in the definition *requiring* the vehicles to be signals containing information. This is because the informational content of a signal ultimately depends on the message that the receiver derives from it. Consider an electronic billboard that is programmed to flash the words ‘Road work ahead’ when a car drives past. The billboard’s display is the vehicle, and it is processed according to a simple rule—if there is a car present, display the message. If a literate English-speaker drives passed this billboard, they will read the message and be informed of the presence of road work ahead. In this case, the billboard’s computation processes information; however, to someone who is illiterate or a non-English-speaker, the flashed words are meaningless. As such, the signal holds no informational content for them. The computation performed by the billboard is identical in both cases, but the informational content of the signal varies based on the ability of the signal’s receiver to derive a message from it. Piccinini and Scarantino arrive at this same conclusion.⁷

This definition of computation is clearly quite broad. It is so broad, in fact, that some philosophers believe that everything performs computation, a view known as ‘Pancomputationalism.’⁸ It may be true that one could pick arbitrary physical phenomena and find a function that the phenomena computes. But if everything computes, then why

introduce the concept? Recall that a computation is only sensitive to *certain* properties of objects, not necessarily all of them. A function that determines whether or not a neuron fires may only be sensitive to the firing/not-firing properties of other neurons. Any additional physical phenomena are irrelevant to the computation at hand. Pancomputationalism highlights the need for a computational system describing something practical to have some finite range of properties (or messages) that determine the results of the computation. In other words, its properties must have informational content.

One may take issue with my earlier use of the word ‘describe.’ It raises the question of whether the brain actually is a computer, or if it is simply useful to model it as such. In making this distinction, it pays to remember that even a concept that describes something without fully explaining it can be extremely powerful for practical purposes. Metal-Oxide Field-Effect Transistor’s (MOSFETs), the driving technology of modern digital computers⁹, are sometimes described as performing a specific type of computation, called digital computation. Digital computation is generic computation with the additional restriction that its objects are combinations of ‘digits,’ which are symbols from a finite alphabet;¹⁰ however, MOSFETs are not truly binary ‘ON’ or ‘OFF’ devices. The width of a conducting channel between two points is controlled in a non-discrete manner by an external voltage. The study of MOSFET physics is concerned with thermodynamics and electromagnetism, both of which are characterized by their use of continuous and probabilistic methods to explain interaction-dominant processes. Yet, digital computation requires discrete states. Practically, it would be impossibly cumbersome for a designer to consider whether the output of one MOSFET out of billions is at four volts or five. This is because, on a macro-level, the rest of the computer is designed to respond identically to an infinitely granular variation in voltage.¹¹ The digital computation the MOSFET is described as performing is, for all intents and purposes, only sensitive to whether or not the output voltage is in some ‘ON’ or ‘OFF’ range. In other words, *the physical phenomena that explain the behavior of modern computers do not explain them as performing digital computations*. However, modern computers can be programmed precisely and predicted accurately by assuming that they do. Similarly,

the usefulness of a definition of memory that is based on the brain using computation is not reliant on computation providing an actual explanation of the brain's behavior. The important factor is that the brain is a system that *can be described as computational* in a way that models its behavior and allows for accurate predictions to be made about it. I believe that, much like MOSFETs, there may exist an explanation of the brain's behavior that does not need to refer to computation, but that, much like the use of digital computation to model MOSFETS, this will not hinder the usefulness of describing the brain as utilizing computation. Note that Gallistel and King differ from me in their views on this subject. They think that the human brain must perform digital computation, as defined above, and utilize a digital read/write memory.¹² Whether or not the brain computes digitally, the power of digital computation highlights important features that can be used to describe the brain's apparent complexity.

Armed with an understanding of information and computation, I will now discuss why these are both present and necessary in the brain. The need for computation in the brain is apparent in many ways. One of these is the implicit nature of many of the conclusions the brain is required to make.¹³ Consider the recognition of an image containing text as illustrated in Figure 1. The optic nerve transmits visual stimuli to the brain, but it does not interpret the text's meaning. This is the role of a different portion of the brain. In this process there are signals (visual stimuli) that come from a set of possible messages (one image is distinguishable from another), which must be processed in accordance to a set of rules that are sensitive to the signal's properties (the shape of the image is that of a word, and the word has meaning independent from the image). Here we have all the characteristics of computation being used to process information.

An important point to address is that of representation. In my discussion of information, I spoke of it as being encoded. In other words, it's represented within a certain syntactic structure. This encoding is what allows for reliable interpretation of the signal's contents. Modern computers contain a type of software, called a 'driver.' Each driver tells the computer how to interface with a certain type of peripheral device, such as a mouse or external hard drive.

Despite the fact that both of these devices can communicate via a universal serial bus (USB) connection, the computer must use a very

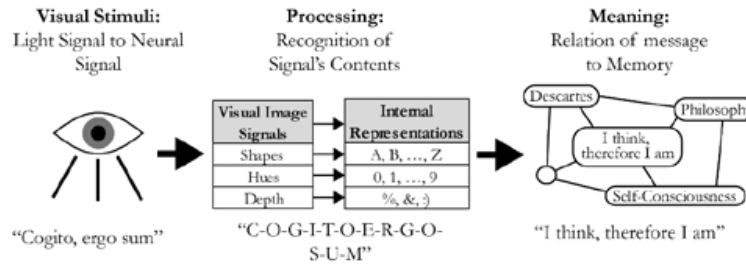


FIGURE 1. Reading text as computation processing information

different set of rules when interfacing with a mouse than with a hard drive. Similarly, there must be some syntactic structure that the brain uses to determine how it processes its signals. The most basic implementation of this would be a look-up table; however, the sheer variety of possible sensory inputs make this infeasible. A much simpler device than the brain is the TI-84 calculator. The largest number it can represent is approximately 10^{100} . If it was forced to have a look-up table, with each entry denoting the representation of one value, the number of entries would exceed the number of atoms in the known universe. If even the humble TI-84 requires a robust syntax capable of compact representation, it follows that the brain must also have a syntax capable of addressing the tremendous variety of messages it encounters.¹⁴ Such a syntax is unlikely to preserve information in an easily decipherable way, which helps explain why our ability to observe brain activity has not yielded an immediately apparent explanation of its behavior. Having discussed computation, information, and representation, as well as what they mean in both the contexts of modern computers and the brain, I will now move on to address how these ideas relate to memory and the role memory plays in the aforementioned contexts.

The Necessity and Role of Memory

The property that distinguishes memory from other information-carrying signals in a brain or computer is its persistence through time. The role it plays should fit in with both the precise

definition of memory I am proposing in this paper, as well as our looser, everyday ideas about what memory might be. A fundamental requirement for a signal to be informative (i.e., the signal is information) is that it is selected from a set of possible messages. There must be some way for this domain of possible messages to be established. When the layman enters an airliner cockpit, the array of dials and knobs are quite mysterious. To a trained pilot, each item denotes a meaningful piece of information. They know if an instrument's reading is alarming or typical. They know this because of their prior experience—information which was presented to them in the past and has persisted. In other words, their memory. Memory is the mechanism that establishes the informational content of new signals.

Memory plays the same role in a digital computer. Without memory, a computer's only information regarding its past is that which is implicitly contained within its current state. As a result, whatever computation it performs must capture every aspect of the computer's current state in order to determine the next state. Computers are often called upon to perform complex tasks that are combinations of a few basic functions.¹⁵ Without a compact method for storing and preserving the results of past steps, any practical computation requires an absurdly large number of bits to define its state. Each instruction in a computer's program would have to shepherd hordes of bits. Suppose an instruction were as simple as providing a 1 (ON) or 0 (OFF) for each pixel in a display. To control every pixel of a typical 1080p resolution display, such an instruction would require *two million* bits. For comparison, modern CPUs typically use a humble sixty-four bits for their instructions. For a computational system to deal with these sorts of situations, we need a system that has accessibility to the information contained in previous states as well as current—we need memory.¹⁶

How does memory, as I have described it, tackle this issue? For a binary word (a combination of bits) consisting of N bits, there are 2^N possible messages. When a digital computer accesses memory and retrieves a binary word, a single message from a finite set is received and thus the computer has been informed. The key point is that this is done without repeating the initial computation that resulted in the

memory's message. Without the ability to call upon this persistent information, a digital computer would be as cumbersome as a pilot that has to be retrained for dial-reading every time. In both the brain and in digital computers, memory serves the role of preserving information and establishing the possible set of messages from which new signals arise. This is a vital mechanism for carrying out all but the most basic tasks.¹⁷ From these discussions we see that both brains and modern computers process information, and they require a mechanism to carry this information forward in time. This fits in with the definition of memory that I have proposed, and the practical examples given show that this definition is compatible with pre-existing notions of what memory is in both contexts.

Computational Usefulness of Memory

The final claim of my definition of memory to be discussed requires that the signal encoded by the memory is preserved and represented in a fashion that maintains its computational usefulness in the computational system it belongs to. For if a signal is not encoded and processed in a consistent manner, the message derived by its recipient will not be accurate. For example, the numeric quantity six should be consistently denoted by '6', never '3' or '4'. This stipulation helps tackle the vagueness of our definition of generic computation and prevents it from falling into the trap of Pancomputationalism.

As I have discussed earlier, a computation is sensitive to some properties of an object but not necessarily all. When this computation handles information, the rules of its sensitivity must match up to the syntax in which the information is represented. This concept is what allows one to determine what is and is not part of the memory of a computational system. With the exception of fringe physics phenomena, there is no such thing as "action at a distance."¹⁸ There must be some physical link between the physical medium of a signal and the computational system it is informing. Even long-distance communication networks, such as those that facilitate internet access and cellular phone communications, utilize physical phenomena such as light or sound waves. A digital computer has a range of memory addresses that it has physical access to and searching outside of them

causes an error. The signal it finds at a non-memory location might be intended for a different purpose, or there might not even be a physical signal present. Either way, if the sought signal is not represented in accordance with the syntax of the memory it is trying to find, it is not a part of the digital computer's memory. Similarly, we understand a human mind to be an island—one cannot remember the memories of others, and the failing of one's memory functionality is tied to damage in certain areas of one's brain. Having addressed the theoretical context of my definition and how its various claims fit in in both the brain and modern computer, I will now describe and respond to several critiques that might be brought against it.

Addressing Concerns Regarding My Definition.

My definition of memory is contingent on the notion that the brain can in fact be described as performing computation. I am not suggesting that computation is actually the mechanism by which the brain achieves the phenomena we recognize as memory. Rather, computation provides a convenient framework for a conceptual understanding of memory that can be consistently applied to the brain and modern computers. Just as a digitally computational treatment of MOSFETS is useful at a macroscopic level, a computational description of memory can provide insight without confining itself to any particular theory of cognition. So even if, as Roger Penrose believes, computation alone is unable to produce consciousness, there may still be utility in using computation to describe memory. Still, there is a need to support the use of computation as a descriptive tool.

There is a long and storied history of memory metaphors.¹⁹ Many of these now seem outdated in light of further technological advancement. That said, unlike clay tablets or conveyor belts, computational theory is not an invention; it is a set of formalized principles that are independent of any particular physical realization.²⁰ Computational theory becoming obsolete would be more akin to the obsolescence of calculus than that of the cellular phone. Working with computation is working with mature mathematics, not a transient technology. This generality and resilience against technological advancement makes it more suitable for use as a descriptive tool.

The use of computation also facilitates the use of representations, which provide a platform for examining the ability of the brain to learn and predict without taking physical action. Brains are capable of predicting very complex causal chains based on their underlying explanations. I can look at a wiring diagram and tell what will open a certain contact without interacting with the real circuit. This implies some internal mechanism for simulating events and evaluating them according to a syntax. Brains are also capable of learning to perform physical tasks without physically doing them. If I read an article on how to solder a wire before attempting it for first time, I will certainly do better than if I had tried with no prior study. While the brain improves motor skills by performing physical acts, there is clearly a mechanism for developing such skills without physical action. A sensible framework for discussing these features of the brain is the presence of internal representations and a set of rules by which to evaluate them. This framework is conveniently supplied by computation.

A tremendous deal of research and effort has gone into mapping and studying brain activity, but no discernible method of representation has been forthcoming. One may take this to be evidence against the suitability of representations and computation in describing memory; however, if one considers the characteristics of good representations, it quickly becomes unsurprising that determining the brain's syntax has been an unfruitful endeavor. Gallistel and King explain that the more efficient and robust an encoding scheme is, the less it resembles its message.²¹ The sheer variety of stimuli the brain is presented with suggests that its syntax would be extraordinarily complex, far more so than binary. Additionally, recall that it is not necessary for these representations to be discrete *or* numerical in nature. They might not even be expressible in terms of language. The brain has been produced by natural selection, not a highly-organized team of computer scientists. As such, there is no reason to believe that any criteria other than effectiveness for survival and reproduction has played a role in its development. There has been no force in natural selection pushing the brain's representations to be legible to outside observers. With all this in mind, it is no surprise that evidence of a syntax in the brain has

proven elusive. This difficulty is not necessarily evidence against the usefulness of representationally-based descriptions. With these factors under consideration, it is apparent that the theoretical foundations of my definition are sensible. Having established this, I will move on to clarify a point regarding the first portion of my definition.

One may argue that I have mis-classified memory by calling it a ‘mechanism.’ Perhaps it is really a physical property that an object may possess. After all, there is a distinct component of the computer called the memory that is separate from others. Removing the physical object removes a corresponding portion of memory from the system. So, the memory is a property of the object. The damaging or removal of certain portions of the brain can result in an inability to recall memories or form new ones. If these things are true, then why isn’t memory a physical property of an object?

Care must be taken to avoid conflating the effects of a phenomenon with the objects it acts upon. Electric field can still be present in a vacuum, even though there are no particles present to demonstrate its effects. The acceleration of a charge in an electric field is due to an interaction between the charge and the object creating the electric field. If those two objects are removed from proximity to one another, there is no acceleration. Thus, the force accelerating the charge is not a property of the object, like its electric charge is, but rather is a mechanism that explains how objects interact. Memory, as it has been referred to in this paper, is always defined in terms of the interaction between objects. Recall that computation is the processing of objects according to rules. These rules are external to the objects and define their behavior, much like Coulomb’s law defines the interaction of electric charges. I can take a chunk of the brain region responsible for memory or a chip of random access memory (RAM,) but without a knowledge of the syntax used to originally store the memory, I would be unable to reconstruct the message. In fact, I could arbitrarily choose a syntax and get any message I desired. Thus, memory must be a mechanism, not a property. Having proposed my definition, explained its underlying theory, discussed its meaning, and defended it against objection, I will now summarize and present my conclusions.

Conclusion

In this paper, I discussed Shannonistic information as described by Gallistel and King.²² A signal contains information if it contains a message distinguishable from a possible set. The quantity of information contained is determined by how much it reduces uncertainty in the properties of its subject. I referred to generic computation as presented by Piccinini and Scarantino, defining it as the processing of objects according to rules sensitive to certain properties of those objects.²³ Given the broad nature of this definition, I noted that computational systems should be distinguished from one another based on what properties they're sensitive to. If the objects being processed are signals with informational content, then the computational system processes information. Both the brain and modern computers can be described as such systems. It is not necessary for computation to actually explain the brain's behavior for it to be a practical model. I showed that while the physical mechanism of modern computers is not actually discrete, digital computation is still a very powerful and effective model for analysis.

It would be impossible for either system to achieve their complex behavior without memory as I have defined it. It plays a key role in establishing the possible set of messages as well as their relative probabilities—determining the informational content of new signals. The rules according to which these messages are interpreted are their syntax. If the syntax used by the computational system to decode the signals is different from that used to encode them, then the resulting information will be inaccurate. In addition to proper syntax, the computational system must have a physical mechanism by which to access the physical signal. There can be no action at a distance. By these discussions, I established that the brain and digital computers are computational systems that process information, and they must have a mechanism for carrying this information forward in time. My definition of memory serves this role, and the restrictions placed upon its preservation and accessibility prevent the definition from being too broad.

I showed that my definition of memory is rooted in well-

defined and established fields that have been previously applied to practical phenomena with great effect. I also addressed several criticisms regarding the applicability of these fields to the brain and the suitability of treating memory as a mechanism rather than as a property of objects. The definition satisfies a role I established to be necessary in both brains and digital computers, and it coincides with one's intuitive knowledge of what memory is. As a result, I find it to be an accurate and useful definition. I conclude that memory is a mechanism that carries information forward in time, being both represented and preserved according to the syntax of the computational system to which it is said to belong.²⁴

Notes

- ¹ Gallistel, Charles R., and Adam Philip King, *Memory and the Computational Brain: Why Cognitive Science Will Transform Neuroscience* (Chichester: Wiley-Blackwell, 2010), 1.
- ² Piccinini, Gualtiero, and Andrea Scarantino, "Information Processing, Computation, and Cognition," *Journal of Biological Physics* 37, no. 1 (January 2011): 1-38. doi:<http://dx.doi.org/10.1007/s10867-010-9195-3>.
- ³ Gallistel, Charles R., and Adam Philip King, *Memory and the Computational Brain: Why Cognitive Science Will Transform Neuroscience*.
- ⁴ Gallistel, Charles R., and Adam Philip King, *Memory and the Computational Brain: Why Cognitive Science Will Transform Neuroscience*, 2.
- ⁵ Piccinini, Gualtiero, and Andrea Scarantino, "Information Processing, Computation, and Cognition," 3.
- ⁶ Piccinini, Gualtiero, and Andrea Scarantino, "Information Processing, Computation, and Cognition," 10.
- ⁷ Piccinini, Gualtiero, and Andrea Scarantino, "Information Processing, Computation, and Cognition," 34.
- ⁸ Piccinini, Gualtiero, and Andrea Scarantino, "Information Processing, Computation, and Cognition," 5.
- ⁹ Neamen, Donald A, *Microelectronics: Circuit Analysis and Design*, 1143.
- ¹⁰ Piccinini, Gualtiero, and Andrea Scarantino, "Information Processing, Computation, and Cognition," 7.

- ¹¹ Neamen, Donald A, *Microelectronics: Circuit Analysis and Design*, 4th ed, (New York, NY: McGraw-Hill, 2010), 125.
- ¹² Gallistel, Charles R., and Adam Philip King, *Memory and the Computational Brain: Why Cognitive Science Will Transform Neuroscience*, 1.
- ¹³ Gallistel, Charles R., and Adam Philip King, *Memory and the Computational Brain: Why Cognitive Science Will Transform Neuroscience*, 59.
- ¹⁴ Gallistel, Charles R., and Adam Philip King, *Memory and the Computational Brain: Why Cognitive Science Will Transform Neuroscience*, 109.
- ¹⁵ Gallistel, Charles R., and Adam Philip King, *Memory and the Computational Brain: Why Cognitive Science Will Transform Neuroscience*, 131.
- ¹⁶ Gallistel, Charles R., and Adam Philip King, *Memory and the Computational Brain: Why Cognitive Science Will Transform Neuroscience*, 131.
- ¹⁷ Gallistel, Charles R., and Adam Philip King, *Memory and the Computational Brain: Why Cognitive Science Will Transform Neuroscience*, 131.
- ¹⁸ Gallistel, Charles R., and Adam Philip King, *Memory and the Computational Brain: Why Cognitive Science Will Transform Neuroscience*, 127.
- ¹⁹ Roediger, H. L., III, "Memory metaphors in cognitive psychology," *Memory & Cognition*, 8(3) (1980), 231-246. doi:10.3758/bf03197611
- ²⁰ Gallistel, Charles R., and Adam Philip King, *Memory and the Computational Brain: Why Cognitive Science Will Transform Neuroscience*, 105.
- ²¹ Gallistel, Charles R., and Adam Philip King, *Memory and the Computational Brain: Why Cognitive Science Will Transform Neuroscience*. 4.
- ²² Gallistel, Charles R., and Adam Philip King, *Memory and the Computational Brain: Why Cognitive Science Will Transform Neuroscience*. 2.
- ²³ Piccinini, Gualtiero, and Andrea Scarantino, "Information

Processing, Computation, and Cognition,” 10.

²⁴ The author gratefully acknowledges Dr. Luis Favela for his guidance and feedback as well as the publication’s reviewers for their suggestions.

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**WHAT'S THE SECRET TO MENTAL TRAINING? A
METHODOLOGICAL CRITICISM OF MINDFULNESS
MEDITATION RESEARCH**

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Abstract. A survey of the research on “mindfulness” meditation for therapeutic purposes reveals a largely positive outlook from the scientific community. While the practice has potential, this paper will argue that its limitations have been insufficiently scrutinized. It will begin by investigating the term “mindfulness” and explain how secrets surrounding the term propagate many methodological problems with mindfulness research. It will expand on this criticism with two related claims: first, that mindfulness meditation’s subjective mechanisms cause difficulties for the empirical methods of scientific research, and second, that meditation’s origins in Buddhist soteriology unduly influence the scientific community’s orientation towards the practice.

Eastern spiritual practices experienced a reawakening in the West towards the end of the twentieth century, with many pointing to Jon Kabat-Zinn’s introduction of the “Mindfulness-Based Stress Reduction” (MBSR) program at the University of Massachusetts’s Medical Center as the watershed moment.¹ Since then, a flurry of psychotherapy and psychology research has emerged to defend the efficacy of these practices for therapeutic purposes. The scientific animus has concentrated largely on the concept of “mindfulness,” a somewhat vague and elastic term most plausibly derived from the Pāli² word “*sati*”.³ Certain mindfulness-based programs have demonstrated potential for mitigating depressive relapses,⁴ improving executive functioning and attentional abilities,⁵ reducing stress and anxiety,⁶ and even lessening the variety of negative symptoms associated with schizophrenia.⁷ However, the initially promising results and attractive novelty of mindfulness have caused some to overlook glaring methodological issues that accompany much of mindfulness research. This paper will address these rather neglected problems by first clarifying “mindfulness” as a term and a practice. The following argument will identify a set of unexplained “secrets” in the meaning and mechanisms of mindfulness as centrally problematic. It will conclude by proposing that both the limitations of empirical science and certain unreasonable

attachments to Buddhist soteriology perpetuate these problems.

Despite the wide diversity of contemplative techniques often associated with “mindfulness meditation,” describing one basic meditative procedure might help unfamiliar readers better understand what is often entailed by the practice. In sitting meditation, the meditator maintains an upright posture, either in a chair or cross-legged on the floor, and attempts to focus on a particular somatic sensation, frequently that of the breath against the nostrils.⁸ An experienced guide often delivers additional instructions in the background, reminding the meditator to retain their focus on the chosen sensation and gently abandon any discursive thoughts that arise. As one set of researchers explains: “whenever attention wanders from the breath to inevitable thoughts and feelings that arise, the [meditator] will simply take notice of them and then let them go as attention is returned to the breath.”⁹ The goal of this process is the cultivation of the cognitive and emotional state of “mindfulness.” For now, mindfulness can be broadly understood as a kind of fixed attention on or awareness of one’s current cognitive and physical state, but even this general definition encounters serious problems which will be investigated later.

Although mindfulness meditation emerges from a primarily Buddhist context, its use in the West is dominated by a number of secular programs and techniques. Those referenced in this paper include Mindfulness-Based Stress Reduction (MBSR), Mindfulness-Based Cognitive Therapy (MBCT), and Integrated Body-Mind Training (IBMT). MBSR’s format comprises an 8-week long course with all-day retreats, during which meditators participate in activities like the sitting meditation described above.¹⁰ Some specific activities include the body scan meditation – where instead of focusing only on a single somatic sensation like the breath, the meditator’s focus gradually shifts throughout the body from the feet to the head – and yoga – which contains a blend of breathing and stretching exercises. MBCT is an adaptation of MBSR that incorporates cognitive-therapy based psychoeducation, such as teacher-led discussion sessions.¹¹ IBMT involves a shorter, narrower approach, where instead of full-day retreats meditators only spend anywhere from twenty minutes to a few hours meditating daily. IBMT also has a few minor technical variations from

the other two, like less emphasis on abandoning discursive thoughts and more emphasis on the feelings of certain external somatic sensations.¹²

Of course, even if each program has distinct advantages and disadvantages, all of them consider the cultivation of mindfulness as their central aim. But what *exactly* is mindfulness, and what is so valuable about cultivating it? This paper will continue by arguing that the *meaning* and *mechanisms* of mindfulness are concealed from researchers by (1) the limitations of empirical science and (2) researchers' own improper engagement with the Buddhist source material. These points are invariably intertwined, though throughout the following discussion I will attempt to make explicit which point is being addressed where. I will start by addressing the ostensibly secretive *meaning* of mindfulness.

An assortment of comparable characterizations of mindfulness have been offered by researchers, from something as simple as "focusing on the sensations of body/breath while maintaining a relaxed state of mind"¹³ to more technical interpretations: "Mindfulness meditation involves a systematic training of attention and self-control with an attitude of acceptance and openness to internal and external experiences."¹⁴ Kabat Zinn's "operational working definition of mindfulness" is cleaner, if less precise, and seems to be what many build off of: "[mindfulness is] the awareness that emerges through paying attention on purpose ... and nonjudgmentally to the unfolding of experience moment by moment."¹⁵ Of course, a "relaxed state of mind" doesn't imply an "attitude of acceptance and openness to internal and external experiences," though they often appear congruous. "Paying attention on purpose" doesn't require "systematic training." These descriptions, which appear in scientific literature and claim to refer to the same scientific phenomenon, mindfulness, dependably display these kinds of inconsistencies. If researchers intend for their descriptions to *refer* to the same phenomenon, they should be at least semantically equivalent. This means that even if each researcher defines mindfulness with slightly different *language*, their definitions should *mean* the same thing.

While the previous descriptions are not incommensurable, they are distinct enough to sow confusion as to what mindfulness practice specifically entails. Bikkhu Bodhi, in his paper "What Does Mindfulness

Really Mean?”, derives the canonical origin of mindfulness, and this derivation may provide insight as to the actual commonality between various interpretations of mindfulness. After some hermeneutic unraveling of the Pāli Canon, he concludes that the term “mindfulness” comes from the *sati* prefix in *satipaṭṭhāna* practice, which can be vaguely read as “an establishment of mindfulness.” Though *sati* is frequently translated as just “mindfulness,” it is perhaps more accurately rendered “as memory and as lucid awareness of present happenings.”¹⁶ A kind of transparent and unrestricted awareness suitably embodies “mindfulness” according to other Buddhist meditators as well¹⁷ and this feature seems consistent with a substantial number of modern mindfulness definitions. Bodhi claims these modern interpretations of mindfulness refer inadvertently to the Buddhist source material, and therefore originate with this concept of “lucid awareness.”¹⁸ In this sense, all practices that cultivate mindfulness—whether MBSR, MBCT, another Western program, or a practice very directly adopted from the Buddhist sutras¹⁹—are simply methods for cultivating a phenomenal quality of “lucid awareness.”

A few difficulties immediately become apparent. Separate mindfulness practices have separate goals explicitly, despite the common feature of “lucid awareness.” *Samādhi*, or “calming,” meditation nurtures *generally* relaxing and attentive mental states, whereas *vipassanā*, or “insight,” meditation focuses more on developing *specific* mental states and focusing on *specific* mental objects.²⁰ “Mindfulness” meditation can describe both of these practices, and a failure to recognize differences like these can lead to misleading conclusions when evaluating research.

In one study, titled “Mindfulness meditation improved cognition” by Zeidan et al., short meditation sessions were shown to result in improvements with cognitive tasks that required executive processing and sustained attention.²¹ Participants were separated into a meditation group, which practiced mindfulness meditation for four short sessions, and a control group, which listened quietly to an audiobook for four short sessions. Though Zeidan et al. discovered that the meditation group reported reduced anxiety (in addition to improved performance on cognitive tasks like memory games and verbal fluency tests), there was no significant difference in overall self-reported mood

after the sessions.²² In fact, the control group actually claimed increases in overall mood because they found listening to audiobooks relaxing.

This result may at first seem incongruous with other studies, such as one by Helen S. Ma and John D. Teasdale, where mindfulness meditation reduced the frequency of negative moods in depressed patients.²³ How could one study report increases in mood and the other report no change if each used *mindfulness meditation* as its primary therapeutic intervention? Of course, the former study with Zeidan et al. operated on psychologically healthy patients, whereas the latter with Ma and Teasdale operated on those with diagnosed depression. The time scales of each study also differed substantially: Zeidan et al. engaged their participants in a few brief sessions whereas Ma and Teasdale ran their participants through a full multi-week long MBCT course. Another relevant difference, however, offers a much more revealing explanation. Meditators in the study by Zeidan et al. were presented with training modelled on “basic *Samatha*,” an umbrella term for styles of meditation which principally relate to *samādhi meditation* as portrayed above.²⁴ In practice, this kind of training might seem similar to that in MBSR, where meditators focus on chosen somatic sensations and nonjudgmentally redirect distracting thoughts. As described in the paper, meditators were instructed to gently focus on an “object of meditation” and “if a random thought arose, they were told to passively notice and acknowledge the thought and to simply let ‘it’ go, by bringing the attention back to the sensations of the breath.”²⁵ If Ma and Teasdale’s study incorporated a mindfulness meditation program other than MBSR, maybe one which was developed from a slightly different tradition, that could explain the divergent results between the two studies.

Accordingly, Ma and Teasdale’s study applied MBCT instead, which incorporates a more systemic approach that more closely aligns with *vipassanā* meditation styles. While both MBSR and MBCT incorporate elements of the *samādhi* and *vipassanā* traditions, MBSR seems to lean more closely towards *samādhi* and MBCT towards *vipassanā*. A crucial part of this distinction can be noticed in how MBCT encourages meditators to confront difficult or troubling emotions early in the practice.²⁶ Consider the following framing in

the MBCT handbook: “we can’t intentionally let go of unhelpful patterns unless we are aware of them; because awareness itself removes processing resources that are required for the self-perpetuation of unhelpful patterns.”²⁷ “Unhelpful patterns” in cognitive therapy refer to the recurring harmful thoughts in many struggling patients such as “you’re not good enough” or “nobody likes you.” MBCT, from the start, aims here to cultivate a *specific* mental attitude of ambivalence towards these negative thoughts, which is never explicit in MBSR.

Consequently, even with their similarities, MBSR and MBCT, or *samādhi* and *vipassanā* meditation styles more generally, may be suitable for separate therapeutic purposes. “Mindfulness” canonically may purport to be *one* thing, but *mindfulness-based* practices in Buddhism are actually diverse and encompass a wide range of techniques and associated benefits. When these practices were exported into a variety of therapeutic programs, their distinct therapeutic capacities were not entirely accounted for, only that they were associated with *satipaṭṭhāna* or “mindfulness practice.” What exactly mindfulness meditation *means* cannot be clearly recognized because it likely refers to a variety of different practices. At first, it seemed like the vagueness in descriptions of the term mindfulness disguised a more comprehensive, singular meaning. What has hopefully been exposed is that the term is multifarious rather than secretive or deceptive. It is not as if a more complex meaning encompassed every one of the previous definitions given for mindfulness; rather, those definitions probably refer to *different* practices or qualities of mind.

Yet, there is another aspect of mindfulness meditation that seems genuinely secretive – its *mechanisms*. Even if there was a singular type of “mindfulness meditation” and “lucid awareness” wasn’t such a polysemous term, descriptions of the mechanisms of meditation would remain exceptionally imprecise. Attempts at defining the mechanisms of mindfulness always use subjective and experience-oriented language, especially when contrasted with the objective standards that are expected by empirical science. The scientific method appears currently unsuited to deal with a psychotherapeutic treatment option in which the *mechanisms*, as opposed to merely the *effects*, are subjective. Consider meditation in relation to talk therapy, where the

mechanism is conversation, and therefore is observable, even if the effects are internal. A useful comparison here might involve the virtues of courage and integrity. To pretend to be courageous is, in actuality, to be courageous, as participating in talk therapy, even reluctantly, is to be participating in the treatment. Conversely, knowing whether someone has genuine integrity or artificial integrity seems as impossible as knowing exactly how one is exactly dealing with the instructions delivered in mindfulness training.

The mechanisms for meditation are neither audible nor observable—the only thing that differentiates one style of meditation from another is how an individual subjectively interacts with their own experience. This challenge has encouraged Harald Walach to suggest that Western science should reevaluate how it discusses the brain from a metaphysical perspective: “Can [mental] states be captured from outside alone? Will we be able to make sense of such observations without the inner flavor, the subjective experience?”²⁸ In the end, Walach seems to be arguing, somewhat puzzlingly, that we should come up with a way to talk about the brain dualistically, even if it is still ontologically monistic: “the duality arising from this proposal is purely phenomenological in nature ... One could conceive of an ontological monism out of which the material and the mental systems co-arise.”²⁹ The awkwardness of this move represents a much broader problem with the exportation of Buddhist components into a secular setting. The encouraging results of nascent studies may mean some researchers haven’t properly scrutinized the doctrinal assumptions that the religion of Buddhism weaves into their practices.

Specifically, the Buddhist doctrines associated with salvation and enlightenment accompany many of these therapeutic regimens. Consider how a neuroscientific description of IBMT asserts how it targets the “ACC, mPFC, striatum, and other areas [of the brain], mainly involved in self-control networks,” which are also the primarily affected regions for addiction.³⁰ Coincidentally, IBMT also targets the “prefrontal cortex (PFC), striatum, thalamus, and motor system,” which are likely responsible for the most oppressive symptoms of ADHD.³¹ The author of this description continues to expand on an applicability for IBMT that is flexible and ubiquitous enough to

inspire at least a little skepticism in attentive readers. Geoffrey Samuels lays out the unwritten assumption in some of these claims about meditation: “If MBSR encodes the essential message of the Buddhist teachings, as Kabat-Zinn and others have told us, then it should be good for everybody, since that message is of universal applicability.”³² The inescapable influence of Buddhism on secular thinking and secular thinking on Buddhism has been considered by only a few authors.³³

Meditation, especially MBSR by itself, clearly lacks the ability to mend every form of psychological suffering. It can even propel certain kinds of psychological suffering. In the words of Willoughby Britton, it is “fully capable of leading to a major psychological and existential crisis.”³⁴ Individuals with certain psychological conditions could find mindfulness meditation especially disturbing: “A key process in MBSR is the encouraging of direct and unmediated awareness of the present, and one can see why this might be particularly threatening and difficult for people on the autism spectrum.”³⁵ Many meditation programs require participants to be alone for long stretches of time, where they are directed to honestly engage with whatever thoughts or feelings arise. Intuitively, one could expect this to be damaging for those with, for example, bipolar disorder or schizophrenia. Even those without a diagnosed condition could suffer negative effects, as one public intellectual, Sam Harris, controversially compares certain aspects of meditation practice with solitary confinement, “a punishment *inside* a maximum-security prison.”³⁶ The analogy has a rough but sensible basis: meditation is essentially a form of isolation. Even if one is literally surrounded by other meditators, during many programs one becomes effectively alone in the darkness for countless hours of the day. Discussing solitary confinement, Bruce Arrigo and Jennifer Bullock observe that “social isolation is correlated with clinical depression and long-term impulse-control disorder.”³⁷ These serious potential side-effects are frequently ignored in published papers.

To summarize, the *exact* mechanisms of mindfulness seem largely inaccessible by current scientific approaches. Where studies fail to divulge these secrets, they inadvertently fill in the gaps with assumptions from Buddhist source material. Plainly, if the source material claims one form of practice as a panacea, and a few studies

point in that same direction, many researchers are ready to jump to conclusions. This is problematic not only because it's inaccurate, but also because it has the potential to cause harm to a subset of prospective practitioners.

Now, although science is limited in how it engages with mindfulness, there are better and worse ways of engaging with it. Scientific methods have the capacity to obtain a more accurate impression of the mechanisms even if it cannot deduce their *precise* identity. Yet, even the attempts to gain a more vague impression of its identity have encountered problems in terms of confirmation bias and post hoc justifications. For example, researchers will make claims about the causal and functional mechanisms involved with meditation, then perform a study where the control group either received no treatment or treatment as usual, such as in the depression case by Ma and Teasdale cited previously. In these cases, how can these researchers be sure the specific meditative practice was any more effective than a simple relaxation exercise or another comparable treatment? Without an *engaged* control group, how can they be sure those causal or functional mechanisms are responsible for the effect they observed?³⁸ One clinician, investigating a report on meditation research, noted: "they were looking for active control groups, and they found that only 47 out of over 18,000 studies had them, which is pretty telling: it suggests that there are fewer than 50 high-quality studies on meditation."³⁹

To clarify, an *engaged* or *active* control group is one participating in an activity associated with the one the *experiment* group participates in, with preferably only a single altered variable. One might imagine a study with an experiment group E that participates in a few short meditation sessions. The study's main hypothesis is that the meditators' cultivation of mindfulness will result in increased performance in a certain set of attentional tests in periods immediately after the meditation sessions. The control group C exists so the researchers will have a baseline test performance to contrast with E's. If C is just instructed to stare at a wall and sit quietly, and E displays higher test performance after the study ends, how can the researchers be sure that meditation's mechanisms were responsible for that higher test performance as opposed to the mechanisms from some other source?

Perhaps the soothing voice of the instructor *relaxed* the meditators, and this decreased their anxiety and allowed them to more easily respond to test questions. If C is an *active* control group, alternatively, they would also have engaged in some relaxing activity like listening to audiobooks or breathing softly with their eyes closed. This function of ruling out alternative unintended conclusions is one of the key purposes of control groups—and, as mentioned above, it’s disappointingly uncommon in mindfulness meditation research.

Nevertheless, Buddhist mindfulness meditation continues to show genuine potential. The body of evidence should reveal that *something* about mindfulness is uniquely effective, even if that *something* remains mysterious. The vast diversity of Buddhist techniques and their partial incompatibility with empirical science simply means that, if these techniques are truly worth exploring, they should be considered cautiously and systematically. Researchers should be continuously aware of the virtues and limitations of mindfulness practices, and include reasonable caveats about the limitations of their studies. Even if current research possesses some disappointing mistakes, one ought to remain optimistic about the therapeutic promise of mindfulness in future research.

Notes

¹Bodhi, “What Does Mindfulness Really Mean? A Canonical Perspective,” 19; McMahan, “Buddhism and Global Secularisms,” 120; Kabat-Zinn, “Mindfulness-Based Interventions in Context: Past, Present, and Future,” 148-149; Samuel, “Mindfulness Within the Full Range of Buddhist and Asian Meditative Practices” 47.

²Pāli refers to the Pāli language in which most of the Buddhist scriptures are written. The most essential collection of these scriptures, at least in the Theravada Buddhist tradition, is termed the “Pāli Canon”.

³Bodhi, “What Does Mindfulness Really Mean? A Canonical Perspective,” 22.

⁴Ma and Teasdale, “Mindfulness-Based Cognitive Therapy for Depression: Replication and Exploration of Differential Relapse

Prevention Effects,” 31.

- ⁵ Zeidan et al., “Mindfulness meditation improves cognition: Evidence of brief mental training,” 601-602.
- ⁶ Kabat-Zinn, “Mindfulness-Based Interventions in Context: Past, Present, and Future,” 151-152.
- ⁷ Tabak, Horan, and Green, “Mindfulness in Schizophrenia: Associations with Self-Reported Motivation, Emotion Regulation, Dysfunctional Attitudes, and Negative Symptoms,” 542-543.
- ⁸ Bishop et al., “A Proposed Operational Definition,” 231.
- ⁹ Bishop et al., “A Proposed Operational Definition,” 232.
- ¹⁰ Kabat-Zinn, “Mindfulness-Based Interventions in Context: Past, Present, and Future,” 148-149.
- ¹¹ Segal, Williams, and Teasdale, *Mindfulness-Based Cognitive Therapy for Depression, Second Edition*.
- ¹² Tang, “Mechanism of Integrative Body-Mind Training,” 383.
- ¹³ Zeidan et al., “Mindfulness meditation improves cognition: Evidence of brief mental training,” 598
- ¹⁴ Y. Tang, R. Tang, and Posner, “Brief Meditation Training Induces Smoking Reduction,” 13972.
- ¹⁵ Kabat-Zinn, “Mindfulness-Based Interventions in Context: Past, Present, and Future,” 145.
- ¹⁶ Bodhi, “What Does Mindfulness Really Mean? A Canonical Perspective,” 25.
- ¹⁷ Ricard and Singer, *Beyond the Self: Conversations Between Buddhism and Neuroscience*, 3-4.
- ¹⁸ Bodhi, “What Does Mindfulness Really Mean? A Canonical Perspective,” 35-36.
- ¹⁹ A “sutra” in Buddhism can either refer to an aphorism/pithy lesson or a scripture that comprises a collection of aphorisms.
- ²⁰ Bodhi, “What Does Mindfulness Really Mean? A Canonical Perspective,” 28.
- ²¹ See note 5 above.
- ²² Zeidan et al., “Mindfulness meditation improves cognition: Evidence of brief mental training,” 604.
- ²³ Ma and Teasdale, “Mindfulness-Based Cognitive Therapy for Depression: Replication and Exploration of Differential Relapse

Prevention Effects,” 38-39.

²⁴ See note 18 above.

²⁵ Zeidan et al., “Mindfulness meditation improves cognition: Evidence of brief mental training,” 599.

²⁶ Segal, Williams, and Teasdale, *Mindfulness-Based Cognitive Therapy for Depression, Second Edition*, 408-418.

²⁷ Segal, Williams, and Teasdale, *Mindfulness-Based Cognitive Therapy for Depression, Second Edition*, 91.

²⁸ Walach, “Towards an Epistemology of Inner Experience,” 9.

²⁹ Walach, “Towards an Epistemology of Inner Experience,” 14.

³⁰ Tang, *The Neuroscience of Meditation: How the Body and Mind Work Together to Change Our Behavior*, 62.

³¹ See note 30 above.

³² Samuel, “Mindfulness Within the Full Range of Buddhist and Asian Meditative Practices,” 49.

³³ Brown, “Can ‘Secular’ Mindfulness Be Separated from Religion?” 75-94; McMahan, “Buddhism and Global Secularisms,” 112-128.

³⁴ See note 32 above.

³⁵ Samuel, “Mindfulness Within the Full Range of Buddhist and Asian Meditative Practices,” 50.

³⁶ Harris, *Waking Up*, 13.

³⁷ Bruce and Bullock, “The Psychological Effects of Solitary Confinement on Prisoners in Supermax Units,” 628. This distinct error is circumvented in the Ma and Teasdale’s paper on depression, as they add a short, final caveat at the end: “the lack of another group intervention comparison [means that] ... the beneficial effects of MBCT cannot be unambiguously attributed to its specific components rather than to more nonspecific factors” (Ma and Teasdale 2004, 38). It recurs in other papers, however, as evidenced by the subsequent quote.

³⁸ See note 35 above.

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**REFUSING THE HAIL:
SELF-MUTILATION, AGRAMMATICALITY, AND THE
POLITICS OF BODY READABILITY AMONG EAST-
AFRICAN MIGRANTS IN CALAIS'S 'JUNGLE'**

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Abstract. This paper will use the example of fingertip mutilation among migrants in Calais, France drawn from Sylvain George's documentary film *Qu'ils reposent en révolte: des figures de guerres* (*They Rest in Rebellion: Figures of War*) to explore questions of censorship and agency, foreignness and hospitality, and the politics of bodily agrammaticality. It will use Derrida's conceptualizations of agrammatical speech and absolute hospitality to examine the status of the Calais migrants, as well as to analyze the manner in which their revolutionary speech acts both succeed and fail with regards to purposeful non-intelligibility, agrammaticality, and rejecting interpellation (and thus, subjecthood).

The film *Qu'ils reposent en révolte: des figures de guerres* (2010) by director Sylvain George depicts a community of mainly Ethiopian and Eritrean refugees congregating in the Calais 'jungle' refugee camp in Northern France. According to her 2017 essay, "Calais's 'Jungle': Refugees, Biopolitics, and the Arts of Resistance," author Debarati Sanyal claims that the encampment was "built on a former toxic waste dump" and functioned as a "fortified space of deterrence and detention, with routine administrative procedure of harassment, incarceration, deportation, and destruction."¹ From 2015 to 2016 the jungle was a site of intense surveillance and control, with securitarian measures that Sanyal describes as a "large police presence ... [and being] walled by twenty-nine kilometers of chain-link fences and triple-coiled razor wire."² These measures of control are couched in the right to visibility, which is itself one of the main tenets of humanitarian rights. The proliferation and mainstream success of narratives and testimonies of human rights atrocities highlight a topical preoccupation: ensuring that all people have the right to speak and be heard. This increased visibility may allow persecuted people some measure of protection from outside entities such as the United Nations or foreign NGOs. Put another way, international visibility of human rights abuses is

in theory, designed to scrutinize abuses of state power. In turn, this pressure should incentivize governments to implement programs ending or minimizing such violations.

The logic of this regime of visibility is applicable to the situation in the Calais ‘jungle.’ As part of the screening process, the French government fingerprints all immigrants, biometrically documenting their entry into France. This process imposes a legal standing upon the Calais migrants as refugees—it names them, classifies them, and marginalizes them as peripheral political subjects before the government. George’s documentary, however, catalogues the actions that migrants take in Calais to shroud themselves from the surveillance apparatus of the French government, the very same apparatus that seeks to extend them the status of refugee. Sanyal explains that in order to escape the totalizing eye of Eurodac, “the database that collects and manages the biometric data of asylum seekers and illegal entrants into the European Union,” the migrants subvert the biometric regime “by means of [using] razors, fire, or acid” to obscure their fingerprints.³ George follows a group of men as they engage in this practice, slicing off the tips of their fingers with razors and burning them with hot screws (Fig. 1).



FIGURE 1. Man mutilating his fingertips with a razor in *Qu'ils reposent en révolte* (00.40.00)

In this essay, I use the term ‘irregular migrant’ or simply ‘migrant’ when referring to the population of the Calais jungle. Broadly speaking, irregular migrants are undocumented individuals who do not pursue legal proceedings in order to obtain citizenship in their host country. George and Sanyal alternate between using both this term and ‘refugee,’ a designation I have chosen not to deploy because the classification of ‘refugee’ implies that the individual in question seeks political protection and asylum in the state to which they have fled. I contend that the migrants of Calais specifically reject this paradigm of hypervisibility, opting instead to disappear namelessly into their new state in order to foreclose the possibility of biometric tracking and the risk of deportation. Through this act of protest and resistance, the migrants that George films render themselves unreadable by the state. Instead of seeking a right to be seen and heard, they subvert state power by engaging their right to invisibility. This powerful bodily act refuses to answer the call to state-sanctioned subjecthood by the regime of both the French government as well as international human rights groups, and additionally declines the call to hospitality issued by the government. While refugees seek to be recognized, irregular migrants choose unrecognizability.

Performative Speech, Iterable Speech

The phenomenon of performative speech gives weight to the invisibility that the Calais migrants embody. This theory originates in J.L. Austin’s *How to Do Things with Words*, which discusses performative statements, speech acts that are distinct from constative (true/false) statements. Whereas constative statements are descriptive and have specific truth values, Austin argues that “to utter the [performative] sentence (in, of course, the appropriate circumstances) is not to *describe* my doing of what I should be said in so uttering to be doing or to state that I am doing it: it is to do it.”⁴ Performative statements bring about what they state, they *invoke*. Take, for example, the statement ‘I now pronounce you married.’ The utterance of this statement initiates marriage—the speech act is generative; it creates the situation about

which it speaks. However, in many instances, performative statements fail, often due to a lack of appropriate power wielded by the speaker. If the utterance ‘I now pronounce you married’ is to succeed, the speaker must have the proper authority that accompanies such a statement. According to Austin, if they do not have this authority, the utterance is not simply false but “rather the *act*, e.g. the promise—was void, or given in bad faith, or not implemented, or the like.”⁵ Rather than being factually wrong, the performative utterance is nullified since it does not accomplish its aim. Austin refers to this phenomenon as the doctrine of infelicities, thus, performative speech that fails to be effective is termed infelicitous speech.

Austin goes on to describe the many ways in which performative speech can fail. He differentiates between void speech acts in which “the verbal formula in question is designed, [but] is not achieved,” and that which does achieve its intent but in an “insincere way, an abuse of the procedure.”⁶ The first of these acts he calls *misfires*. This type of infelicity would look like an unqualified person being asked to conduct a marriage ceremony. Such an act cannot succeed because the conditions under which it is performed are not sufficient. The second type of infelicitous speech Austin terms *abuses*. Continuing with the marriage example, an *abuse* of the performative would look like a qualified person officiating a wedding, only to shout ‘I’m kidding!’ immediately after finishing and running out of the room, leaving a very confused crowd behind. Are they married, or are they not? The officiant properly executed the speech act, but then revealed the act to be insincere. Austin describes *abuses* of performative language as being used “not seriously, but in ways *parasitic* upon its normal use.”⁷ In this way, infelicitous speech preys upon successful speech, threatening to take control unless the speaker executes their statement with the utmost care.

In order to understand the ways that speech acts relate to and build off of each other, as well as the receiver of the speech, we must consider the concept of *iterability*. Broadly speaking, *iterability* can be defined as the potential repetition of any speech act or text and its possibility to be reinterpreted and reconstituted by the receiver. In

his essay “Signature, Event, Context” Jacques Derrida explores the ramifications of the iterability of writing, particularly the ways in which the infinite number of possible interpretations of a text complicates the relationship between reader and writer. Derrida claims that “one writes in order to communicate something to those who are absent.”⁸ This seems simple enough. Writing is a sign which functions in the absence of the sender, thus making it so that a reader can *encounter* Derrida even though Derrida is not physically present. In fact, in order to be properly iterable, Derrida’s writing must be understandable and interpretable without the author needing to explain himself and his work every time it is read. Derrida claims that writing becomes performative speech because it continues “to ‘act’ and to be readable even when what is called the author of the writing no longer answers for what he has written, for what he seems to have signed.”⁹ The written sign gives way to potentially infinite reiterations and reconstitutions of its signification, but even in these new contexts, it still retains a meaning.

In addition to iterability, the concept of reiteration is important when discussing the reproduction of normative power structures. Building off of Derrida’s concept of written iterability, Judith Butler argues that power is upheld by the reproduction and reconstitution *ad infinitum* of former notions of power. In *Excitable Speech*, Butler claims that “all performativity rests on the credible production of ‘authority’ and is, thus, not only a repetition of its own prior instance and, hence, a loss of the originary instance, but its citationality assumes the form of a mimesis without end.”¹⁰ She explains that no authority can exist in order to properly carry out performative actions without basing itself upon an authority that came before it. However, much like Derrida, Butler sees possible reconstitutions of meaning within this endless citationality. She terms “the false or wrong invocations of power as *reiterations*,” claiming that while reiterations of power are often seen as invalid upon their emergence, over time, they may work to subtly shape and form expressions of power into new, different iterations.¹¹ For Butler, reiteration is how “the form of social institutions undergoes change and alteration ... an invocation that has no prior legitimacy can

have the effect of challenging existing forms of legitimacy, breaking open the possibility of future forms.”¹² In the same way that writing can become detached from the speech of the original speaker, so too can social paradigms become detached from their original functioning, taking on new meanings and providing the basis for social change.

Context Matters: Resignification of Speech Acts

Derrida and Butler both focus on the context of an utterance as being simultaneously constitutive of and destabilizing to the *meaning* of an utterance. Derrida begins by stating that “context is never absolutely determinable, or rather ... its determination can never be entirely certain or saturated.”¹³ For this reason, a multitude of meanings and play within language is possible. Because a written sign is nothing more than a code that can always be reconstituted and resignified, Derrida claims it is not only able to stand in the absence of its author but also carries within it “a force that breaks with its context, that is, with the collectivity of presences organizing the moment of its inscription.”¹⁴ One of the ways that a sign can be made to resignify is through its citation in various contexts. A singular sign can carry within it an infinite amount of new meanings, corresponding to different contexts. Thus, the possibility of citing a speech act in a new or unknown situation carries within it the very same force that breaks the context of the old utterance. Butler goes a step further and claims that “an utterance may gain its force precisely by virtue of the break with context that it performs.”¹⁵ She argues that reconstituting a speech act may draw attention to the perceived meaning of the original speech act. In recontextualizing speech, its meaning may change in potentially consequential ways that affect the generalized context of the speech. I will explore this phenomenon a bit later with the migrants in Calais using fingertip mutilation to reconstitute their bodies. The divergence from the context of typical migrant bodies reconstitutes what it means to have a body, and sheds light upon the ways bodies are read precisely by presenting the body as illegible.

Discussing the concept of reiteration raises the question of legitimacy. At what point does the subversive speech become legitimate,

within the realm of understanding? At what point does it become felicitous? What transforms subversive speech from incoherent ramblings into politically viable, potentially dangerous speech? I believe that abandoning the usual context of a performative act lends a fair amount of force to the utterance—but only when it is recognized by and repeated by others. Subversive resignification requires repeatability within itself in order to be consequential—if it is not iterable, then it is not a successful performative statement. However, if the speech act is replicable and others have the desire and means to replicate it, then the act of re-contextualizing the utterance may carry within it the possibility for a radical change of meaning.

Butler devotes much of *Excitable Speech* to discussing the formative powers of not only new significations of performative speech, but also of restrictive speech, or censorship. She claims that before there is even a speaker, censorship produces both the speaker and the reader. Butler makes the case that in order to define what one *is*, one must first define what they are *not*. For example, one is only short in the sense that they are not tall. Without the opposing category of ‘tall,’ the category of ‘short’ has no practical meaning. Butler calls this phenomenon *foreclosure*, and claims that it “does not simply happen once, [but] ... continues to happen and ... what is reinvoked by its continued action is precisely that primary scene in which the formation of the subject is tied to the circumscribed production of the domain of the speakable.”¹⁶ Thus, the formation of identity, like speech, is constantly evolving and must be renegotiated each time it is reiterated.

Unintelligible Speech as Resistance

The Calais migrants mutilate their fingertips in an effort to reproduce their identity through a blatant self-censorship of their own bodies (Fig. 2). This censorship is generative as well as restricting, it prevents them from being read through the codes and frameworks of the state, and also creates a new identity for them that is renegotiated each time it is acknowledged—the identity of one who is unreadable in a way that most other humans *are*—perhaps, even, a new type

of human. However, while the migrants' actions represent a radical recontextualization of their bodies, it is not clear whether these bodies actually perform speech in an intelligible manner. Are they readable, or are they completely outside the realm of speakability? Butler states that while "to move outside the domain of speakability is to risk one's status as a subject, to embody the norms that govern speakability in one's speech is to consummate one's status as a subject of speech."¹⁷ In rendering one's speech unintelligible, one's status as a speaking subject is brought into crisis. Is not the point of the fingertip mutilation to send a message to the French government that these migrants refuse the subjugation enforced by their surveillance system? Is it not to raise awareness of their plight in front of a larger world audience, to amplify their politically weak voice through actions which 'speak for themselves?'

While one can make these arguments, they are a poor analysis of the political aims and current status of the refugee as a speaking subject. Sanyal provides background on the voice of the refugee by claiming that we "currently witness a convergence between biopolitical theory and humanitarian reason, both which pivot upon figuring the refugee as 'bare life' and as apolitical, speechless victim."¹⁸ In her invocation of 'bare life,' Sanyal references Giorgio Agamben's theory of *homo sacer*: the human who is beyond the reach of conventional law, who can be killed with impunity but cannot be sacrificed. This concept



FIGURE 2. Scarified fingertips from
Qu'ils reposent en révolte (00.47.10)

is applicable to modern refugees on the world stage. The empathy that is afforded to most politically legible people, the recognition of their basic humanity, is not extended to refugees. Instead, the politically visible citizen desires that the refugee be categorized as the ‘perfect victim’ upon which the privileged members of developed nations can project their so-called sympathy. Yet the authenticity of such sympathy comes into question considering that this sentiment in actuality may be disguised guilt for their country’s complicity and active participation in creating the tenuous political condition which displaces the refugee in the first place.

For this reason, it seems ineffective to analyze the Calais migrants’ fingertip mutilation as an act which amplifies their voices. As such, the migrants of Calais start from a place in which their subjecthood is in constant crisis. Their speech is not guaranteed to be functional, due to their precarious positioning within the margins of speakability. For this reason, Sanyal contends that:

The erasure of fingerprints is not conducted in the name of a right to be seen, but in the name of a right to disappear. The reduction of recognizable, politically qualified, and hence containable and deportable life, to what might be seen as illegible, ‘bare’ life—a body that cannot be identified as belonging to any state, or indeed to any (registered) *name*—is precisely what constrains the violence of sovereign power.¹⁹

While the French government enacts an interpellating hail to the migrants, calling upon them to step into subjecthood in the eyes of French law, the migrants are *refusing*. The move towards bare life is a calculated one which in effect renders the migrant unaddressable by the French authority—not afforded the same protections as a citizen, but exempt from regulation, surveillance, or threat. What appears to be a call into subjecthood on the part of the French government turns out, upon closer inspection, to be a powerfully silencing action (i.e. answer and you will be marginalized, maligned, and possibly deported) that excludes the option of almost any meaningful response. The fact that the migrants choose to mutilate their fingertips as opposed to speaking back constitutes an alternative to a response: a refusal to be

interpellated altogether.

This refusal to formulate a readable speech act in response to the interpellating call is especially powerful because what emerges is a non-legible response that is at once, according to Butler, “bodily and linguistic.”²⁰ If the repercussions of verbal speech are impossible to chart and control, the effects of speech at the level of the body are even more nebulous. Whereas speech acts can only be conceptualized through repetition and reiteration, Butler claims that “the body does not merely act in accordance with certain regularized or ritualized practices; it *is* this sedimented ritual activity; its action, in this sense, is a kind of incorporated memory.”²¹ Thus, she suggests that the habitus does not merely constitute a repetition of bodily speech acts performed in the past and present. Rather, it *becomes* the very speech act which it performs. Butler refuses to limit the body to mere citationality, claiming “the *habitus* is formed but it is also *formative*.”²² Whereas all speech must draw from previous speech, this is not the case for all bodies. Bodies are not mental formulations--they are physical beings and may be said to exist outside the social. Whereas much of bodily speech is indeed citational--take, for example, the thousands of intricate regulatory acts which humans perform every day in order to render our bodies legible--bodily speech is not *bound* in the same way to repeatability as verbal speech acts. Butler contends:

The body, however, is not simply the sedimentation of speech acts by which it has been constituted. If that constitution fails, a resistance meets interpellation at the moment it exerts its demand; then something exceeds the interpellation, and this excess is lived as the outside of intelligibility.²³

In the case of the Calais migrants, their bodily constitutions produce illegible humans, and thus they meet the interpellated call with resistance, ultimately exceeding it. Due to their biometrically incomprehensible fingertips they live in a state of permanent *agrammaticality*, a phenomenon Derrida formulates as “utterances [that] can have a meaning although they are deprived of *objective* signification.”²⁴ By consistently refusing to fully assimilate into French state, the migrants “practice their own arts of resistance, both in their testimonies and upon their bodies ...

[by] destroying their skin, as they would their papers, the subjects ... paradoxically reveal themselves becoming unclassifiable, illegible, even invisible.”²⁵ Ultimately, this unreadability is a radical reconstitution of what it means to be a human within the bounds of a nation-state. It destabilizes the very nature of the citizenship bond—it envisions a way to reside in a nation-state as a form of bare life with purpose. It re-configures the notion of the *homo sacer* from a human stripped of all rights (usually afforded to them by the state) to a human wielding rights bestowed upon them from forces *outside* of the state—forces of refusal.

In his discussion of *agrammaticality*, Derrida gives the examples of the phrases ‘the green is either’ and ‘abracadabra’ as *agrammatical* utterances, speech that functions outside of the boundaries of truth or falsity. It is not necessarily performative speech, although in the case of the migrants’ fingertips it is. The reason that *agrammatical* language differs from completely unintelligible speech is that, while “‘the green is either’ and ‘abracadabra’ do not constitute their context by themselves,” explains Derrida, “nothing prevents them from functioning in other contexts as signifying marks.”²⁶ The speech retains its ability to signify, yet it loses its concordance in the situation by which it functions *agrammatically*. However, one may ask: how does this *agrammatical* speech gain enough authority to become recognized as actively *agrammatical* and revolutionary, and not simply as impotent speech?

Reconstituting State Violence through Self-Mutilation

In the case of the Calais migrants, their speech acts gain authority by reproducing the very violence that the state seeks to impose upon them. Where state-sanctioned violence would come in the form of punitive recognition, imprisonment, and eventual deportation, Sanyal describes the migrants deploying “a disposable razor and a red-hot screw ... as weapons that mirror the EU surveillance databases and their transnational reach.”²⁷ Instead of waiting for the violence that the EU would enact upon them, the migrants enact these violences upon themselves first; in a manner that Sanyal claims

constitutes “a subversive mimicry of state violence, where the will to circulate confronts the state’s blockade, in turn using ‘whatever means necessary.’”²⁸ By utilizing an unexpected form of violence, the migrants pre-empt the state violence that will be enacted upon them through surveillance and tracking. In doing so, they render the state’s violence ineffective. If the only way to be recognized as human in France is to be branded and tracked with the eventual end of deportation in mind, well then, say the migrants, let us not be recognized at all. Sanyal claims that these tactics of disappearance “challenge the ubiquitous politics of representation, rights, and visibility, thereby undoing the humanist regime of subjects and citizenship.”²⁹ Perhaps the most radical action that these migrants can take is to actively reject a framework of human rights, which relies upon the structure of nation-states to extend so-called ‘inalienable rights’ to citizens and visitors, and then relies upon surveillance and policing in order to ensure that these rights are indeed practicable. This conception of human rights, which fundamentally rests upon the right to be visible in the eyes of the state and thus afforded its protection, is not useful to the migrants of Calais. They must look for other methods to protect their natural rights outside and beyond the bounds of state sovereignty.

Using the Windows: Absolute Hospitality, Bare Life, and Refusing the Hail

Derrida’s concept of the foreigner is relevant to interpreting the plight and resistance of the Calais migrants. In his book *Of Hospitality*, Derrida distinguishes between legal, recognizable hospitality, and what he terms “absolute hospitality,” a practice that “commands a break with hospitality by right, with law or justice as rights” by allowing for hospitality to be rendered without the foreigner having to identify themselves.³⁰ Derrida claims that in *any* context, a foreigner inherently poses a threat to the host country, as it “is often the Foreigner who questions,” and who is able to point out the flaws and inconsistencies in the worldview of the host country that its native citizens cannot see.³¹ Thus, when the foreigner enters into the host country, they are afforded certain protections in exchange for certain regulations of their

speech and actions. In order for the foreigner to fully function within the codes of the host country, they must be able to conduct themselves in the native language of their host country, as well as assuming certain “obligations ... [which can be invoked] whenever there is a wish to reproach [them] for bad behavior,” in instances of criminality, for example.³² These obligations come into being the moment hospitality is offered to the foreigner in exchange for their name, history, and context. In the case of the Calais migrants, their biometric data functions to ‘name’ them before the French government. In the act of providing this traceable information to the host country, Derrida argues that the foreigner becomes “responsible before the law and before [their] hosts ... a subject in law.”³³ Essentially, the foreigner is compelled to answer the call and step into subjecthood in their new country. In being recognized as a legal subject, they can now be held responsible for their actions in a similar way to the citizens of that host country. They are placed not only into the ‘system’ of the host country--that of surveillance and legality-- but also into the cultural knowledge and collective myth of that country. Their foreign presence becomes part of the nation that hosts them.

The Calais migrants demand that which Derrida terms “absolute hospitality,” wherein the foreigner is received anonymously, without having to identify themselves, without recognition of subjecthood in the eyes of the state. Derrida explains that the main difference between the foreigner and the *absolute other* is that “the latter cannot have a name or a family name.”³⁴ The *absolute other* is excused from having to provide a lineage, some record of their existence. They lead a nameless existence which lies beyond the bounds of subjecthood, is outside of the social contract that binds the citizen to the state, and exceeds the paradigm of law and criminality. This *absolute other* is reminiscent of Agamben’s *homo sacer*. They are not afforded the protections of the citizenry; they are effectively cast away by society. However, these conditions are the price that the *absolute other* must pay for the right to exist without a name in a foreign country. For the migrants of Calais, this type of *absolute* hospitality is preferable over *conditional* hospitality, which, upon recognizing them, names the migrants as a threat, as illegal immigrants.

In refusing this categorization, the migrants reject recognition as either of these identities. By figuring themselves into the bounds of bare life under the auspices of absolute hospitality, the migrants circumvent this recognition of both criminality and humanity, doing away completely with “the right to or pact of hospitality.”³⁵

However, absolute hospitality as Derrida theorizes requires a paradoxically reciprocal recognition of unrecognizability between the host and the foreigner. He explains,

Absolute hospitality requires that I open up my home and that I give not only to the foreigner (provided with a family name, with a social status of being a foreigner, etc.), but to the absolute, unknown, anonymous other, and that I *give place* to them, that I let them come ... without asking of them either reciprocity (entering into a pact) or even their names.³⁶

In my formulation of the absolute hospitality practiced by the migrants of Calais, there is certainly no *giving place* to them on the part of the French government. Rather, the migrants extend this place to themselves, by themselves, in an effort to prevent any mutuality. Can absolute hospitality only exist when both parties are able to completely open themselves up without any conditions of cohabitation? What happens to the concept of foreigner and host once these boundaries are destabilized so intensely? Perhaps Derrida would not insist on the reciprocal nature of absolute hospitality. This concept may simply be illuminating what has always been true since state boundaries were formulated, since the binaries of ‘foreigner’ and ‘citizen’ were created—that they have always been unstable categories, that there are always *absolute others* in every country. Derrida claims, rather offhandedly, that “there is no house or interior without a door or windows.”³⁷ Perhaps the windows are what allow for this absolute hospitality, present in every house, even those with well-guarded doors. The boundary between inside and outside, foreigner and absolute other, documentation and namelessness, has never been as simple as two distinct categories. Inherent in the possibility of a *named* foreigner is a *nameless* one. Like the millions of refugees and migrants existing worldwide, those who are forcibly displaced to Calais choose to remain nameless.

Notes

- ¹ Debarati Sanyal, "Calais's 'Jungle': Refugees, Biopolitics, and the Arts of Resistance," *Representations*, Vol. 139 No. 1, Summer 2017; (pp. 1-33), 1.
- ² Sanyal, "Calais's 'Jungle,'" 1.
- ³ Sanyal, "Calais's 'Jungle,'" 15.
- ⁴ J.L. Austin, *How to Do Things with Words*. (Oxford University Press; Oxford UK. 1962), 6. ⁵ Austin, *How to Do Things With Words*, 11.
- ⁶ Austin, *How to Do Things With Words*, 16.
- ⁷ Austin, *How to Do Things With Words*, 22.
- ⁸ Jacques Derrida, "Signature, Event, Context," *Limited Inc.* (Northwestern University Press, Evanston, IL. 1988), 5.
- ⁹ Derrida, "Signature, Event, Context," 6.
- ¹⁰ Judith Butler, *Excitable Speech*. (Routledge; New York. 1997), 151.
- ¹¹ Butler, *Excitable Speech*, 147.
- ¹² Butler, *Excitable Speech*, 147.
- ¹³ Derrida, "Signature, Event, Context," 3.
- ¹⁴ Derrida, "Signature, Event, Context," 9.
- ¹⁵ Butler, *Excitable Speech*, 145.
- ¹⁶ Butler, *Excitable Speech*, 139.
- ¹⁷ Butler, *Excitable Speech*, 133.
- ¹⁸ Sanyal, "Calais's 'Jungle,'" 5.
- ¹⁹ Sanyal, "Calais's 'Jungle,'" 20.
- ²⁰ Butler, *Excitable Speech* 141.
- ²¹ Butler, *Excitable Speech* 154.
- ²² Butler, *Excitable Speech* 155.
- ²³ Butler, *Excitable Speech* 155.
- ²⁴ Derrida, "Signature, Event, Context," 11.
- ²⁵ Sanyal, "Calais's 'Jungle,'" 15.
- ²⁶ Derrida, "Signature, Event, Context," 12.
- ²⁷ Sanyal, "Calais's 'Jungle,'" 17.
- ²⁸ Sanyal, "Calais's 'Jungle,'" 17.
- ²⁹ Sanyal, "Calais's 'Jungle,'" 22.
- ³⁰ Jacques Derrida, *Of Hospitality*. (Stanford CA, Stanford University

- Press, 2000), 35. ³¹ Derrida, *Of Hospitality* 5.
- ³² Derrida, *Of Hospitality* 23.
- ³³ Derrida, *Of Hospitality* 27.
- ³⁴ Derrida, *Of Hospitality* 25.
- ³⁵ Derrida, *Of Hospitality* 25.
- ³⁶ Derrida, *Of Hospitality* 25.
- ³⁷ Derrida, *Of Hospitality* 25.

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A REVIEW OF JANE H. HILL, *THE EVERYDAY LANGUAGE OF WHITE RACISM*

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In her book, *The Everyday Language of White Racism* (2008), Jane H. Hill gives a systematic analysis of how a racist project in the United States is actively supported by white peoples' language and conceptualizations of race. After remarking on the importance of recognizing structural racism as a way to think beyond an understanding of racism as solely focused on individual bigotry, Hill states,

The central problem for this book is how White Americans, while claiming to be anti-racist, are somehow able to acquire and share with one another negative stereotypes that they use, consciously or unconsciously, to justify the subordination and oppression of people of color (31).

Hill sees the book as expanding upon the numerous theories about racism that recognize white racism as primarily a matter of historical oppression and its continued effects. This expansion is meant to include the ways in which white people in the United States still actively support and deploy racist projects. To do this, Hill elaborates on two essential components to racism in the United States today: the folk theory of racism and linguistic ideologies commonly held by white Americans. These components are framed as deeply embedded in the lives of white people, such that they often do not think that their actions are racist or harmful. Instead, they believe their behaviors are merely jokes or completely innocuous.

Hill first opposes the folk theory in favor of critical race theory. The term "folk theory" describes what is seen as common conceptions of the world held by a group of people. Hill references research that argues one way a folk theory functions is by ignoring contradictory evidence that may disprove or disrupt the hypothesis a folk theorist wants to believe (5). Folk theories are often based on the so-called "common sense." The white American folk theory of racism is described as making various claims: that race is simply a biological fact; that racism is only about individual, bigoted prejudices;

and that racism is only prevalent in primarily rural, stereotypically racist areas. On the other hand, critical race theory makes the claim that race is better understood as a social and political structure. Some critical race theorists even argue that racism is better understood as a type of framework that obscures racist, hateful speech and acts as commonsensical and logical.

Hill then lays out various linguistic ideologies that enable the proliferation of the folk theory of racism. Hill argues that the “Monoglot Standard”, wherein a culture deems one dialect or set of linguistic conventions as more intelligent, sophisticated or “correct” than all others, serves an essential role in upholding white racism (35). In addition to the Monoglot Standard, other covert linguistic ideologies include personalism and referentialism. Personalism refers to the idea that the meaning of a sentence is derived from the speaker’s intentions. This ideology allows a speaker to claim that their speech is not actually racist or harmful because they intended it to be understood differently, or that they were only joking. Referentialism refers to the belief that a word has one correct meaning based on what the word meant originally. It can enable racist speech by providing a speaker with the excuse that their language is not offensive because it originally meant something harmless, and therefore still means no harm.

The rest of the book is largely a critique of how the intersection of the folk theory of racism and racist linguistic ideologies cultivate widespread racist speech in the United States. Hill primarily draws from media examples such as radio, television, and Internet forum excerpts in order to provide examples of this dangerous intersection and how consumers of racist media are conditioned to deny their complicity in spreading racism. Hill’s analysis of these examples is somewhat lacking, given that she does not elaborate upon how this speech affects people harmed by it. At most, there are a few cases in which Hill includes responses from people who have been discriminated against but only as a means to demonstrate that covert racist language is often not covert to the people it harms.

Hill furthers her analysis of the intersections between the folk theory of racism and racist linguistic ideologies with her discussion of gaffes and slurs, covert racist speech, and the myriad ways in which

white racism undergirds American English. Hill claims slurs and gaffes are conspicuous forms of racism as they are used by white Americans (88). One of the most relevant examples of slurs that Hill provides is the white Americans' use of the Native American word "squaw," allegedly a term of endearment for Native American women (64). This usage by white Americans, and their defense of that usage, goes against the beliefs of many Native Americans who consider the word's contemporary usage derogatory. However, since Hill claims that slurs are seen as racist to most white Americans, it seems contradictory that she then cites evidence of white Americans not understanding that slurs are racist. It seems to us that the slur "squaw" would, according to her framework, fit within Hill's category of covert racist speech.

Covert racist speech is speech that is often obviously racist to the people it targets, but is either not understood as racist, or is construed as not racist, by the speaker. The major example provided of covert (for white people) racist speech is Mock Spanish, or pseudo-Spanish phrases which use stereotypes about Spanish speaking people in an attempt at being humorous. Hill discusses how Mock Spanish is primarily seen by white Americans as a valid form of emphatic speech, and draws on a wealth of examples of Mock Spanish use in which the speaker does not believe their speech is racist. For example, using the phrase "no problemo" when the correct Spanish word is *problema*, illustrates how Spanish morphology functions in deploying racist behavior (138). Mock Spanish has several roles. It marginalizes Spanish as a language by playing into the belief that it is not a valid form of communication within the United States (142). Furthermore, it is seen as "un-American" (142), in that white Americans construe Spanish as foreign, and therefore the people who speak it are foreign as well. Covertly, Mock Spanish reproduces negative stereotypes about the Spanish language and Spanish-speakers not only within the United States but the greater Spanish-speaking world (152). Language such as Mock Spanish is largely made covert through the use of Personalism and Referentialism. Mock Spanish naturalizes and normalizes negative stereotypes, by giving speakers the ability to covertly communicate their racist beliefs. For example, Hill writes that the use of the phrase "el presidente" is primarily used by white, non Spanish-speaking people

in reference to politically corrupt leaders (150). In this way, the phrase reinforces negative beliefs about Spanish speakers as untrustworthy based on stereotypes about Latin American leaders being corrupt dictators.

Hill then discusses how racist speech is fundamental to American English. She argues that American English appropriates speech from Spanish and Native American languages in order to create new meanings of words, thereby erasing the original meanings and contexts. Many of these words are recontextualized from their quotidian uses within their original language into slurs in English. Appropriated language becomes constitutive of what it means to be a white American. One can see this mechanism at play in the outrage over suggested name changes of football teams or landmarks. Hill uses the example of white citizens of Nevada who protested against changing the name of a local mountain from the previous “Squaw Mountain.” This sense of identity, which is based around appropriated language, only makes the racism implicit in it more covert. Few white people would feel that Arnold Schwarzenegger’s famous “*hasta la vista*” line is an example of racist speech, and yet, according to Hill, such famous media examples play an important role in this productive aspect of identity through appropriated, racist speech (144-145).

Hill provides an extensive overview of the ways in which white racism in the United States is enabled and furthered by the folk theory of racism and common linguistic ideologies, how these work together to simultaneously occlude and produce racism, and the widespread ignorance of this form of racism among white Americans. This was particularly useful when it came to Mock Spanish, which was shown to be deeply ingrained in American English. Hill manages to cover a wide array of the various forms Mock Spanish takes and elaborates on them with extensive use of examples. *The Everyday Language of White Racism* is an important work in the age of contemporary politics in the United States. Not limited to Donald Trump and the alt-right, it situates the language used by white Americans throughout the country. It sheds light on the different ways white Americans use language to not only convey negative stereotypes but to reproduce racist thought.

While illuminating the important ways in which racism plays

out, Hill's numerous examples sometimes lack depth, and at times this abundance seems gratuitous rather than helpful. Furthermore, Hill does not unpack the use of the phrase "white racism," which is used consistently throughout the book. Particularly unfortunate is that Hill does not contextualize white racism as the dominant form of racism in the United States. Such an omission prevents Hill from seeing that white racism is only one amongst many others in the United States.

THE EVERYDAY LANGUAGE OF WHITE RACISM

By Jane H. Hill

224pp. Wiley-Blackwell

**A REVIEW OF BRYAN W. VAN NORDEN, *TAKING BACK
PHILOSOPHY***

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If you find yourself in the philosophy section of a college bookstore, you are likely to see some fairly recognizable names: Plato, Kant, and Hume to name a few. You are less likely to see works belonging to what Bryan W. Van Norden, professor of philosophy at Vassar College, coins “LCTP” or “less commonly taught philosophies.” These include the philosophical traditions of China, India, Africa, Latin America and the indigenous peoples of the Americas, as well as African American, Jewish, feminist, and LGBTQ+ philosophy, among many more. Regarding the place of these philosophies in the prevalent Western tradition, Van Norden reveals that “of the top 50 philosophy doctoral programs in the English-speaking world, only 15 percent have *any* regular faculty members who teach *any* non-Western philosophy.”¹ This statistic is shocking, but unfortunately not surprising. The present philosophical field tends to self-identify as distinctly, if not exclusively, Western. This bias is what Van Norden and Jay L. Garfield note in their provocative *New York Times* opinion piece, “If Philosophy Won’t Diversify, Let’s Call It What It Really Is,” in which they urge philosophy departments who refuse to include LCTP to rename themselves as “departments of Anglo-European philosophy.” The article garnered resistance. *Taking Back Philosophy: A Multicultural Manifesto* responds to this backlash and elaborates upon Van Norden’s claim.

Van Norden leads by example, cementing both the legitimacy of non-Western philosophical thought and demonstrating how diverse traditions can be brought into conversation with each other. Discussion topics include the nature of the self, justification for social structures, and rational motives for ethical action. He tackles these metaphysical, political, and ethical debates, uniting Descartes, Hobbes, and Aristotle with Buddhist and Chinese tradition.

Van Norden also tackles the mechanisms that impose racial

¹ Garfield, Jay L., and Bryan W. Van Norden. “If Philosophy Won’t Diversify, Let’s Call It What It Really Is.” *New York Times*, 11 May 2016.

and intellectual barriers between cultural traditions. He provides an overview of recent Chinese political, cultural, and intellectual history, transitioning through various influences to highlight the key ways in which these three forces interact. He identifies a lack of what he calls an “ethical vocabulary” in China. These are the commonly agreed-upon social values that serve as a unifying reference point within a society. Van Norden argues that this absence paves the way for intellectual traditions to be used and abused in the political sphere. To treat classic works in this way, he claims, is to idolize them as symbols elevating an “us” against a “them.”

The exclusivity of Western philosophy is preserved by this same idolatry. Van Norden specifically discusses the importance of ethnocentrism in defining and nurturing dominant cultural values and intellectual traditions, a view held by critic Allan Bloom. Participation in an intellectual tradition, Bloom argues, stimulates development of both an academic and a social identity. Van Norden, in agreement, expands on this view but presses for a more globalized approach. He asserts that there is more than one intellectual tradition that will suffice to, as Bloom puts it, “furnish the mind.”

Van Norden defends philosophy as a worthwhile intellectual pursuit. Beyond identifying a few favorable statistics (such as the fact that philosophy majors on average earn more than other humanities degrees and score higher on law, business, and medical school admission tests (112)), he stresses the versatility of core philosophical skills. He attributes this to the emphasis on reading, writing, and reasoning—skills that engender success in any career path. While these skills are taught in any humanities course, Van Norden explains how philosophy students are held to a higher caliber regarding clarity of understanding and expression.

Most importantly, these skills prized by philosophy, and a liberal arts education at large, are necessary for democratic success. Van Norden critiques the rise of political anti-intellectualism in recent American history. The anti-intellectual, Christian character of popular “common man” approaches to political campaigning promotes the pernicious misconception that religion is diametrically opposed to intellectualism. To divorce intellectualism from religion is to validate

the rejection of empirical knowledge. The devaluation of intellectual traditions reinforces an elitist social structure wherein those in power enjoy the benefits of higher education while hypocritically advocating that the majority confine themselves to exploitable vocational trades. Believing that democracy flourishes on a plurality of voices, made possible by an educated public, Van Norden asserts that the anti-intellectualism plaguing American politics acts to establish social predestination, and further, that access to liberal arts higher education is necessary to secure our country's democratic principles.

Taking Back Philosophy is wide in its scope and tangential in its narrative. Van Norden's expansive voice is a match to the complexity of today's social issues, resulting in a text that wanders through its many subjects. Yet his manifesto sets out as a dialogue, not a treatise. Characterized distinctly by an acerbic tone and a recurrent parenthetical voice offering the occasional witty aside, Van Norden's style invites readers into a conversation. Such an approach makes the argument comprehensible, neither isolating an unfamiliar reader nor sacrificing informational quality. Further, this associative style is masterfully employed to unify the piece, often linking a given point to any other moment in the book. What results may not be a streamlined exposition but is nonetheless a powerful and necessary interrogation of the canon.

Van Norden concludes by proposing his own definition for philosophy: "dialogue about problems that we agree are important, but don't agree about the method for solving" (151). What he intends by this is to address, or rather, readdress the root of philosophy—reasoning about the ethical way one should live in relation to others. Now more than ever our social duty is to expand beyond the nationalistic, requiring that these issues be broached untethered by cultural context. It is necessary to participate in a "great conversation" to encourage social identity, and as Van Norden critically responds "there is more than one 'great conversation'" (105).

**TAKING BACK PHILOSOPHY:
A MULTICULTURAL MANIFESTO**

By Bryan W. Van Norden

216pp. Columbia University Press

**A REVIEW OF JOANNA ZYLINSKA, *NONHUMAN
PHOTOGRAPHY***

Kirk Patrick Testa

Vassar College

Life in the 21st century revolves around the picture. Whether radiating from digital screens or extended into materiality through printing, photographs and images occupy a substantial proportion of our daily attention and set the rhythms of our contemporary life. Despite its prevalence and diffusion into nearly every aspect of life, philosophical work on photography remains limited. Often, philosophical treatments of photography are highly anthropocentric, emphasizing the entanglement of photography with human memory and death. Roland Barthes' *Camera Lucida*, the most prominent of such texts, locates photography as an archival, memory-preserving practice, explicated through a eulogy and meditation on the death of the author's late mother. Though similarly personal and sincere, Joanna Zylińska's 2017 book *Nonhuman Photography* inverts traditional Barthesian conceptions of photography, advocating for a new conception of the medium which acknowledges photography as both life-giving and politically contingent.

Photographs make us not only into consumers, but also into products. Every day, we encounter pictures which tell us what to buy and how to represent ourselves visually. The ramifications of this condition of being, according to Susan Sontag's touchstone text *On Photography*, is the visual normalization of capitalistic modes of consuming, seeing, and living. Acknowledging the frenetic rate at which photographic images are produced and circulated, Sontag adopts a certain wariness of photography, which she contends can never yield a complete or true picture of the world. Such limitations of the photographic medium are eminently apparent in the most popular currents of 21st century social media culture: amateur photographers capture and disseminate the same types of images ad nauseam, yielding a popular visual archive which, in circular fashion, draws from and encourages one standard hegemonic mode of seeing. In *Nonhuman Photography*, Zylińska is careful to pay Sontag her dues for her formative contributions to the

philosophy of photography. However, Zylinska transcends Sontag's wary perspective by emphasizing the radical political potentialities of photography. Photography, asserts Zylinska, bears the tremendous power to produce "cuts" in the flow of life. The creation of these contemplative moments force viewers to realize that the stable images produced through photography are mere way-stations in the ever-changing, variable flux of time. Rather than reacting in alarm to the hyper-visual culture of the 21st century, Zylinska reads photography as but another technology which is inextricably bound with humanity. Zylinska humbles the human figure by placing it in scale with the infinitely vaster expanses of world and time, emphasizing the framing and stabilizing functions of technologies as means of access to such extensive planes of possibility.

As a "theorist-practitioner," an artist and curator who produces, works, and thinks with photographs, Zylinska incorporates her own creative work into her book. *Nonhuman Photography* poignantly intertwines Zylinska's intensive philosophical work with her own images and personal reflections. It is perhaps such on-the-ground experience with the medium which informs and scaffolds the ambition of Zylinska's philosophical project. Over the course of the book, Zylinska aims to resuscitate photography from its death knell in human archives by decoupling the medium from its most popular humanistic conceptions, by no means an easy feat. To accomplish such aims, Zylinska focuses on the eponymous phenomenon of "non-human photography," of which she identifies three types: photographs not *of* the human, such as images of depopulated landscapes; photographs not *by* the human, which include not only contemporary autonomously captured images like the satellite views of Google Earth, but also "photographic" impressions such as fossils; and photographs that are not *for* the human, such as QR codes which are meant to be interpreted by machines (5). Though such modes of non-human photography are often weaponized, working to further immerse humans in capitalist modes of production, consumption, and surveillance, Zylinska argues that the camera and its role in such practices is a simple manifestation of the essentially symbiotic relationship between humans and technology. Despite its prolific employment by the powers of

neoliberal capitalism, Zylinska refuses to cede photography to the hands of capital or advance the “human versus machine” narrative (3), thereby advocating a refreshing and imaginative orientation towards the interplay of technology and politics. By elaborating on the ways in which the camera can help us see past ideology and indoctrinated modes of looking, alongside a re-historicization of photography as a phenomenon with pre-human roots, Zylinska effectively pushes readers to imagine the radical potentials of photography and, along with them, more hopeful (visual) futures.

Zylinska’s project is as archaeological as it is revisionist, calling to mind the paradigm-shifting historico-philosophical works of major influence Michel Foucault. Zylinska traces the history of photography from its pre-human origins, emphasizing moments of crystallization and development that demonstrate the essential mutuality of technology and life. Even in her citations of the most popularly overwrought historical developments of photography, Zylinska never fails to provide a novel and incisive analysis, supporting her thesis on the transformative potentialities of photography by structuring such transformations — textually and visually — into her book. Such penetrating vignettes are perhaps best exemplified in Zylinska’s recapitulation of the creation of the so-called first photograph, *View from the Window at Le Gras*, which was captured by Joseph Nicéphore Niépce in the late 1820’s via the first ever camera obscura. Rather than lauding the inventor for his human ingenuity in the production of a novel tool, Zylinska uses the moment to demonstrate the camera’s revelatory and parahuman abilities. Niépce’s camera, aimed at a window view of the buildings and landscape in his countryside estate, took eight hours to capture its first picture; such a lengthy exposure time managed to capture the shadows cast from surrounding buildings at both sunrise *and* sunset, yielding an image which could never have been captured by the human eye. As such, the famed image is evidence of the fact that photography “presents a distinctly nonhuman vision, while also enacting a nonhuman agency at the heart of its production” (21).

Zylinska argues for the world-structuring ontology of photography by pointing to other moments of photography’s history

which demonstrate its capacity to allow humans to see the world in ways they never could before, a stance which draws heavily from famed philosophers Giles Deleuze and Felix Guattari's work on cinema. Through the filmic medium, Deleuze and Guattari saw new ways of portraying and understanding movement, asserting that cinema's revolutionary dynamism may enable new ways of thinking about and producing aesthetic sensibilities. Zylinska reconciles such forward-thinking aesthetic frames with the photographic by emphasizing its aesthetic particularity: whereas cinema reproduces and manipulates the flow of time, the photograph stabilizes it. Her discussion of photography also foregrounds the medium's employment of matter and materiality as the factors critical to the production of still images. Zylinska not only highlights the chemical and material processes of photographs (the standard impression of light on chemically altered surfaces or digital retina), but also redefines photography as "a light-induced process of fossilization occurring across different media" (104). Like a fossil, a photograph is an impression which ruptures human/animal temporality, nonhuman dimensions imbued in its material existence. *Nonhuman Photography* examines photography from the ground up, subverting nearly all philosophical and formal expectations. For readers interested in aesthetics, politics, and the host of philosophical topics in between, the book is sure to leave an impression.

NONHUMAN PHOTOGRAPHY

By Joanna Zylinska

257pp. The MIT Press

**BEYOND THE HUMANIST EYE:
IN CONVERSATION WITH JOANNA ZYLINSKA**

Josephine Lovejoy and Kirk Patrick Testa

Joanna Zylinska is Professor of New Media and Communications and Co-Head of the Department of Media and Communications at Goldsmiths, University of London. She is a cutting-edge scholar, renowned for her pioneering role in the philosophy of new technologies and media, ethics, digital culture, artificial intelligence, photography, art, and ecological crisis. An experimental photographer and internationally sought-after curator, Zylinska's talents and interests are truly unique.

Zylinska is the author of seven books—most recently, *The End of Man: A Feminist Counterapocalypse* (University of Minnesota Press, 2018), *Nonhuman Photography* (MIT Press, 2017) and *Minimal Ethics for the Anthropocene* (Open Humanities Press, 2014). She has also co-edited *Photomediations: An Open Book* and *Photomediations: A Reader* as part of Europeana Space, a grant funded by the European Union's ICT Policy Support Programme, and published her translation of Stanislaw Lem's philosophical treatise *Summa Technologiae* (University of Minnesota's Electronic Mediations Series, 2013). Her own work has been translated into Chinese, French, German, Norwegian, Polish, Russian and Turkish. Zylinska's current research focuses on photographing media entanglements and starting a new project on hydromedia. She is also exploring the conceptual and creative edges of artificial intelligence in a new polemical book titled *AI Art: Machine Visions and Warped Dreams* (forthcoming, 2019).

Beyond her prolific and lauded philosophical writing, Zylinska is celebrated for her work in new media art, photography, and curation. In 2013 she served as the Artistic Director for Latin America's largest new media festival, *Transitio_MX05*, which took place in Mexico City. She has also presented her work at numerous international art and cultural institutions including Ars Electronica in Linz, CCC Barcelona, Centre Culturel International de Cerisy, Fotomuseum Winterthur, MMOMA in Moscow, Serpentine Galleries in London, SESC Sao

Paolo, and Transmediale in Berlin.

Zylinska's work in unveiling the algorithmic nature of our digitally-mediated lives perfectly coalesces with the *Journal's* theme of "Codes and Secrets." She is steadfast in her view that despite the ceaseless global conditions of technological development, it is no secret that human beings are the agents behind the flood of digital screens which encode our orientations to the world.

On April 3, 2019, we the co-editors-in-chief were honored with the unforgettable opportunity to interview Joanna Zylinska before her campus-wide lecture on "Undigital Photography." Our conversation began with a question about her beginnings, specifically how she came to practice photography as philosophy. We then returned to the Classical beginnings of Western philosophy to ponder the establishment of ocularcentrism, the relegation of human vision as the ultimate way of understanding the world. Our discussion of human-oriented spaces of perception led us to question who photography is for and how it has been preserved, or more pressingly, *what* gets remembered and how we make this decision. This contemplation of the ease of digital image capture and transmission even provided grounds for examination of the photo-sharing app Snapchat and the 'selfie trend.' Given that pre-packaged image frames such as selfies are so clearly marketed towards the human subject and agent, we then asked, *who* is *nonhuman* photography (e.g. Google Street View, security cameras) for? Zylinska's response to this question prompted analysis of the so-called 'autonomous gaze' of the camera and the ways in which photography is both an embodied and disembodied medium.

Towards the end of our interview, we asked Zylinska to reflect on the ways in which her work is influenced by the city of London. By steering our conversation towards a discussion of the metropolis, Zylinska offered us insight into the importance of the cut as facilitated by photography, which she regards as a moment of stabilization to ceaseless flows of life. For Zylinska, a photographic cut into time not only allows for human aesthetic pleasure as in the case of #foodporn images, but it may also be exploited as a way to influence politics (take for example Brexit campaigns and the futility of technosolutionist po-

litical agendas). Our interview concluded with a preview of Zylinska's lecture for that evening titled "Undigital Photography." She informed us that the lecture would pick up on her work in *Nonhuman Photography*. The lecture challenges modes of image-making in the age of artificial intelligence, in part through Zylinska's new photographic art project which involves hiring Amazon MTurkers to capture images of the view outside of the window nearest to them. We hope that this interview, as well as Zylinska's interdisciplinary approach to philosophy, will provoke readers to notice and contemplate the modes of image creation in their everyday lives.

Josephine Lovejoy: How did you come to photography, or, how did photography come to you?

Joanna Zylinska: I've always been interested in photography as a medium and a mode of practice. For me, photography is a form of pleasure, a mode of noticing things, and a way of framing the world in a particular way. It's also a way of learning about how others frame the world, capture it, and slow it down to the point of stillness. As for how photography came to me as a scholar, I had been working as a professor at Goldsmiths for a number of years, producing theory- and philosophy-driven texts, when I experienced an academic midlife crisis and decided to go to an art school to explore a different, more visual, mode of thinking. After obtaining a master's in photography from the University of Westminster, I started incorporating photography and photographic reflection into my own philosophical writings, as a way of philosophizing with a camera as much as with a pen or keyboard.

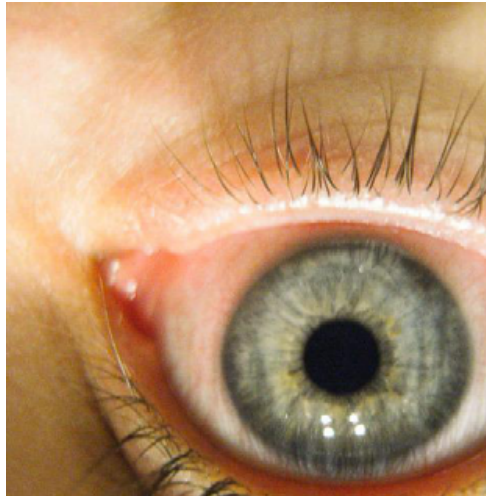
Kirk Patrick Testa: From Platonic scholarship to Christian hegemony, the Western tradition is marked and shaped by its upheaval of the hierarchy of the senses, which ranks vision as the best of the human senses. What are your thoughts on this pervasive ocularcentrism as it pertains to the structuring of the human?

Zylinska: You are absolutely right to highlight the privileging of visuality as the organizing mode of Western epistemology, where seeing and knowing, if we look at those terms' Latin etymology, are positioned as equivalent. However, the way I've attempted to approach photography in my book, *Nonhuman Photography*, was via a desire to restructure the hierarchy of the senses, partly drawing on Donna Haraway's essay "Situated Knowledges," where she questions the dominant masculinist view of the world. Nicholas Mirzoeff describes this view as that of a general "scanning the battlefield." And you can argue that photography has traditionally been associated with such a masterful gaze, as evident in the violent vocabulary, whereby the camera is identified with a gun as it shoots images. I wanted to decouple this association by drawing on the 1979 psychology work by James Gibson, *The Ecological Approach*

to Visual Perception. For Gibson perception is not located solely in the ocularcentric apparatus (an apparatus which is interesting in itself because of its dual structure), but is rather distributed through the whole body. So this idea that we do perhaps actually perceive the world with our whole bodies, encountering the environment and capturing images through our skin, through our gestures, as well as through our eyes, was driving my attempt to think about image-making and meaning-making differently. One way of understanding of my concept of nonhuman photography would be precisely as the human mode of seeing otherwise, a seeing which involves facing the world, being exposed to it, touching it, and allowing oneself to be touched by it.

Testa: As a follow up, in what ways could photography be retooled in a way that dislodges vision from the top of the hierarchy of the senses?

Zylinska: Presumably we are working here on the assumption that dislodging vision doesn't mean getting rid of it altogether, because both functionally and conceptually it's an important sense that has shaped our ways of engaging with the world... I think these days photography functions as a kinetic or haptic practice, where images become forms of digital touch. When you send an image to a friend via Whatsapp or Instagram, very often its content is less important than the gesture and affect you convey through that act. So that act of touching or poking someone with an image can become a digital caress, it can also function as a reminder of something, or a way of establishing a commonality. Photography generates a whole set of affects, the majority of which today have less to do with its visual content and more with its modes of operation and its specific technological forms. Photography also perhaps allows us to come to terms with what the philosopher Bernard Stiegler has called an "original technicity," i.e., the fact that humans are quintessentially technical beings, having emerged with and via technology—starting from stones that functioned as both tools and weapons, or from fire. Cameras are another iteration of these extension devices, which play the role of our prostheses. A case in point: we don't really remember many phone numbers the way our parents or grandparents did. So we can talk about photography as a practice



Joanna Zylińska, from the *Too Close for Comfort* series, 2009

of creating a multi-modal, multi-sensory way of being in the world, enabling us to recognize ourselves as embodied technological beings, but also generating a plethora of affects which exceed the visual. One of my ambitions for the book was to go beyond the content analysis of images and their purely semiotic readings. Of course, we still do (and need to do!) semiotics and mobilize all sorts of hermeneutic methods—not just as students or scholars, but also in our everyday engagements with the world of images and texts (advertising, film, clothes, gestures, other forms of everyday interaction). Yet I wanted to point out that there were other ways of engaging with photography—which may be especially important now that we are experiencing this supposed “deluge” of images and that (almost) everyone is a photographer. Photography as a genre *and* practice functions in this kind of undetermined space today. And this is why I also feel compelled to explore, both philosophically and culturally, what photography *does*—and what it *does to us*. Because photography arguably reshapes our visuality and our way of being around places, of being with friends and engaging with what we call “culture,” of making and re-making history.

Lovejoy: In speaking of this sort of “dislodging of the senses,” you spoke in your video essay *Nonhuman Vision* about the merits of nonhuman photography as offering a more ecological mode of

perception, one which abstracts from a more fixed, humanist vantage point. Given that this technology (smartphones, CCTV) is human-made and placed with human intention, do you think there is a limit to the extent to which we can achieve a truly nonhuman perception of the world? On a related note, does this sort of photography speak to what the boundary of “human” is?

Zylinska: Absolutely, and the concept of “nonhuman photography” is not meant to be a binary opposite of “human photography.” Rather, my aim in the book was to discover a certain nonhuman element within human practices. The reason for doing this sprang from the recognition over the recent decades that there are serious problems with the category of the human, and with the epistemological and ethico-political frameworks that have been premised upon it, because historically that category applied only to the very few. It was as much premised on the enactment of violence and exclusion as it was on opening up forms of freedom and emancipation. Another reason for proposing the concept of “nonhuman photography” had to do with the current moment, and with certain specific modes of technological co-constitution we are experiencing. I should stress here that I believe philosophers *should* get their hands and minds dirty looking at the so-called “present moment.” They should also build alliances with cultural theorists, with cultural studies scholars, with sociologists, anthropologists and ethnographers, who all look at “stuff” and can tell us something about particular modes of the production of visibility, about how it’s changing, and about how the accompanying apparatuses, be it biological or technical, are changing too. So for me it wasn’t about replacing the human mode of being or seeing with a nonhuman one, but rather about outlining *another* mode of seeing, another epistemology—and another ethico-political framework. One of the issues I was concerned with as part of that enquiry was that some of the forms of nonhuman vision enabled by the technology around us can actually end up having inhumane consequences. You can see that, for example, with some uses of CCTV cameras (e.g. with security cameras that primarily protect property rather than humans, or that track down refugees and “illegal aliens”). These apparatuses

are enacting nonhuman vision in a normative and proprietorial way, where the boundary lines are firmly delineated, with a very particular intention. You can also see this issue in the current developments around machine vision in artificial intelligence (AI) research, where you can't be sure what decisions are being made by algorithms, who those algorithms see and who they don't see. Or, as artist Hito Steyerl put it, "who is signal and who is noise?" Because we don't really know who writes those algorithms and how they are being programmed, and can't therefore call anyone out, and so we end up with what Safiya Noble calls "Algorithms of Oppression."

Testa: Speaking of the "inclusive exclusion" or the "exclusive inclusion," what are your thoughts on the "Capital A Archive," and how photography plays into that?

Zylinska: The question of the archive has returned, understandably perhaps, under the guise of the digital, where questions are being asked once again about the practicalities and technicalities of preservation. These questions are again coupled with broader political issues about whose memory we are preserving and how we are doing that. At the same time, with a massive proliferation of images and devices, we are also suffering from what Derrida has described as an "archive fever," where there is almost too much data. A perfect archive that does justice to everything would have to preserve everything. At the same time, it wouldn't be capable of doing that. We have to remember that an archive always involves a set of decisions and responsibilities. So for me the question is about recognizing and accounting for modes of preservation, for what gets remembered and how, in what medium and for whom. That nonhuman horizon, the horizon of the extinction of the human and of other species, provides another layer of meanings in the book. This layer provides us with an opportunity for a much-needed reflection on human responsibility *here and now*. The idea is for the human to place him- or herself against this infinite temporal horizon where the human will have eventually disappeared, just as many other species have. That kind of knowledge and realization can bring us a certain form of philosophical humility, if you like. I don't



Joanna Zylińska, still from *Exit Man*, 2017

mean humility in a Christian sense, but more as a mode of cutting the philosophizing subject to size, adjusting their mode of writing, and recalibrating the philosophical eye and mind to be able to keep themselves in check about the pronouncements made about the world and the scale on which it operates. So raising the question of the nonhuman also brings up the question of scale. It involves zooming out to look at so-called “deep history” and then zooming back in to re-anchor oneself in the here and now, and to take account of the situation and the set of circumstances in which one is lodged. This philosophical excursion into deep time and back could also allow us to build better archives.

Testa: In *Nonhuman Photography* you cite Instagram and the “selfie trend” as evidence of image deluge, banality, and narcissism. I’d like to hear your thoughts on another social media app, Snapchat, particularly in the way that it allows users to track and map their friends’ locations on a digital world map, and the way that it archives a user’s images under the term “memories,” which reappear as reminders of one’s past experiences through the app on a yearly time frame. To put it more directly, do you find worthwhile value in apps that deploy photography as memory markers?

Zylinska: I'm actually wary of dismissing ubiquitous image making today as *just* a manifestation of banality and narcissism. Anyway, the question you are asking requires us to go beyond philosophy and mobilize the apparatus of socio-political theory to address it properly. The issue of logging everyone's data and creating an archive of it is certainly very scary! Its occasional usefulness aside, scholars in Media and Communication Studies have been pointing out for a while now that those modes of surveillance and data capture, where we all become data subjects, have grave consequences for our own self-understanding and self-ownership. This is not just a form of archiving but also a form of monetization, where you become a data point for another machine—and its owners. Interestingly, that idea has reached public consciousness via Shoshana Zuboff's recent book, *The Age of Surveillance Capitalism*. It's intriguing that you need a professor from Harvard Business School to say what media scholars have been arguing for years if this argument is to have wider resonance. She has basically pointed out that surveillance has become the fundamental mode of capitalism's functioning today, with our lives, represented through their multiple data points that are being constantly mapped out and monitored, creating a surplus value for the economy. Similar arguments had been made previously with regard to so-called "sharing economy." When you share pictures or other forms of data with your friends, you do much more than that. You are really sharing your data with the big tech companies, who need that data to understand you better and to enhance their algorithms. So, to go back to Snapchat, its public perception is that of a really innocent, fun app where images disappear on being seen (although nothing ever truly disappears, even with the digital). But in fact with Snapchat individual images don't really matter. What matters is this kind of "mapping" of the archive that is presented to you as either a playful aide memoire or an alternative form of a student face book, which is a map of all your friends, or an affective network of your belonging. And yet that affective network is basically another point of capitalization, where every aspect of your life—from sofas, where couch-surfing has become Airbnb, to helping people, where giving people a lift has become Uber—is seen as an opportunity to be monetized. Criticisms of those kinds of platforms

and mechanisms were initially dismissed as being anti-business, lacking an understanding of the way our society operates or of what “people” really want, until suddenly we have found ourselves in a situation where every breath you take literally becomes a business opportunity. (Think mindfulness and meditation apps such as Headspace!)

Lovejoy: In speaking of the Archive, I’m wondering what the archive of nonhuman photography might be. More specifically, you’ve said that “nonhuman photography stands for the production of light-induced images that are not of, by, or for the human” (*Nonhuman Vision*). I’m specifically interested in the “for” part here, since as I understand it things like Google Street View do serve some sort of human need, whether to offer a presentation of our environment or monitor our activity. If these images are not for the human, who are they for (if anyone) and what is their purpose? A different way to phrase this would be, how should we reconcile the tension between these two ideas: that nonhuman photography is not for the human but can at the same time be used to educate the human?

Zylinska: There are different aspects of this idea of photography being not *for* the human. Photographic artist Trevor Paglen points out that the majority of images are not being produced today with the human viewer in mind. Paglen does a lot of work around surveillance photography and the spaces used by the government that are meant to remain hidden from public view. He also highlights how all these images being taken today with a variety of media are in the process of constituting a large database for AI, with a view to helping neural networks to get better at image recognition. But because those neural networks function in a kind of blackbox, we don’t know what goes in there and what actually happens inside. We thus need to ask questions about the kinds of decisions that are being made in the process, and whether there are *any actual decisions* being made at all. How are the databases of the future being constructed, by whom and what for? So there is a political aspect to the fact that the majority of images taken today are not being made for the human. Another aspect of photography not being for the human that I also wanted to incorporate



Joanna Zylińska, from the *Media Spaces* series, 2009

into the book involved a reflection on the end of the human timeline, i.e., the end of human culture and human history. I was drawing there on the work of photographer Tong Lam, who was photographing abandoned amusement parks in China. In his interpretation of Lam's work, Jason McGrath has suggested that an abandoned sphinx might not be particularly useful for the human, but it's a good perch for a bird. Of course these are still images and visions made *for us*, for human pleasure and human reflection, but I wanted to introduce a broader set of sensibilities with that concept of "photography not for the human" by drawing on the work of philosopher Claire Colebrook, who has asked questions about culture and art after the human. On one hand this idea may seem completely absurd because art and aesthetics are specifically human practices that we've developed historically for our own pleasure, capital, and all sorts of other reasons. At the same time, if you go back and think with Deleuze about how certain affects can reshape our bodily set up, you may also start wondering whether there are other beings in the world that experience a similar form of aesthetic pleasure. A related question that would emerge from that enquiry would be, "What do all these images *do*?" Is photography just there for *looking at*, or can it serve some other functions? For example, for me photography also enables a philosophical reflection on the mode of the expiration of our culture and on our current way of life, which is really a reflection on the Anthropocene and on our human responsibility for the here and now, and for what we want to preserve

in the future. It also involves asking what kind of archive of the future we want to build, and also what kind of *future* we want to build. Will there be anything to archive, basically?

Testa: Your book focuses on photographic endeavors which involve the placement of cameras in uninhabitable locations for long periods of time. From my reading, I take this capacity of the camera to stay put and see in a way that exceeds human faculty as one of the ways through which photography may be considered nonhuman. As such, it seems as if you ascribe an autonomous gaze to the camera. For you, what does it mean for the camera to have an autonomous gaze?

Zylinska: You're referring here to a project by Jason Balog who made a film about the Anthropocene by photographing glacier retreat. That autonomy is, of course, constrained or proscribed already by the placement of the gaze, and by the choice of the anchor point. So it is enacted in coupling with the human. That raises a broader philosophical point of whether there is ever a full autonomy of anything or anyone. Do humans ever have full autonomy, or is our autonomy always already partly machinic, partly coupled with other beings, other entities? It's a question posed by Vilem Flusser in *Towards a Philosophy of Photography*, where he wonders to what extent we are a function of our apparatuses and to what extent can we still enact something. He is shifting the parameters of the debate on agency beyond the enslavement-free will dyad, to recognize our "entanglement," to use Karen Barad's phrase borrowed from quantum physics, with other modes and forms of being, while giving up on this idea of the discrete self-sovereign subject. To turn this around, I'd argue that the gaze of the machine is never entirely autonomous either. Although, with the current technical developments, especially around machine vision and artificial intelligence, I think there exist possibilities for that gaze to gain more and more autonomy. Again, we are back with the question about the kind of autonomy that we want to see emerge—and whether we can fully control this emergence at all. Does this potentiality not require some urgent attention from us humans, here and now?

Lovejoy: I want to return to the autonomous gaze, and the choice of anchor point that you were talking about. Just in thinking about the typical means of producing nonhuman photography, such as Google Street View and security cameras, I'm wondering precisely why we call these "nonhuman." I'm thinking here about a scenario where I am somehow able to place myself in the location of a security camera and film or capture the environment below it. So, what is qualitatively different about this situation and one in which there is no human agent behind the camera at all?

Zylinska: Given that, as you've pointed out, "nonhuman photography" is a rather expansive concept that tries to bring together lots of different ideas, some of them do involve humans more than others (e.g. camera design). However, there is something obviously new about, for example, Google Street View, which is not just a question of the intensity and volume of capture, but also of the sheer fact of a machine being able to model the world, in that way, from so many different vantage points. Yet is that really all that new? I interrogate this question in the book when presenting Joseph Nicéphore Niépce's *View from the Window at Le Gras*, which is this so-called "first image" in the history of photography. The photograph had been taken from the window of Niépce's country house in Bourgogne. It took eight hours to produce because that was the amount of time needed to obtain proper exposure. As a result, the shadows are recorded on both sides of the picture. So you could say that nonhuman vision already lies at the origins of the history of photography, hinting at the possibility of a different way of seeing. The camera can see in ways the human can't, in terms of angle, duration, and scope. That first photographic experiment precedes what Google Street View produces now, with its comprehensive visuality. At the same time, I do think something new is happening around various imagistic possibilities and also around various forms of capture today. Some of those developments are of course useful for us humans, not just Google Street view, but also Google Maps or medical imaging. Those practices also open us up to thinking about a new technological array that is produced in the world and where we become part of that array. That's one of the areas where that

relationship between autonomy and its lack plays out in an interesting way. But that also leads to the need to conduct careful political analyses of the affordances of those nonhuman technologies—some of which may indeed turn out to be inhumane.

Testa: Given photography's genealogical entanglement with urbanity, here I'm thinking about Daguerre's photograph *The Boulevard Du Temple* or Atget's flaneur documentation of Paris or Nadar's aerial photographs, how does living in the city of London influence your work not only in photography but also in writing? In other words, what role does the space of the city play in your work?

Zylinska: It's a great question! When I think of London, I think of flows. And those flows—of bodies moving in the cityscape—are always coupled with the constant flicker of machine-produced images. Digital screens and human bodies intertwine in the city, with human bodies holding screens while looking at them, or touching them. Sometimes these screens wrap around us. That notion of the flow, of this constant movement of bodies and images as flickers of electricity and data, has pushed me to develop—maybe unconsciously to some extent—the concept of the cut that has ended up playing an important role in my philosophy of photography. “The cut” refers to that temporary moment of stabilization, and to giving account of the fact that there are not only flows in the world. That tension between the flow and the cut is something that I'm living through on a day-to-day basis in those very particular urban spaces of London, especially the places of public transport. I don't use a car in London. That sense of the body's constant movement through different technological apparatuses—from cameras, to trains, escalators, and other vehicles—provides me with an opportunity to think about that relationship between movement and stoppage in photography and other media. How do we navigate those image and data flows? How are cuts enacted in them? Maybe the key question of photography is therefore this: “What would a good cut look like?” Who decides how these cuts get made? Are we the only agents that make them? Barad has this notion of the “agential cut,” which involves enacting a resolution within a phenomenon of

an ontological and semantic indeterminacy. You can also find traces of thinking about this tension between movement and stoppage in Bergson's work on creative evolution and in Deleuze's writings on cinema.

Testa: Speaking on the topic of flows and cuts, for me the phenomenon of photographing food is one of the ways so many people navigate their way through cities. Last year, I took Professor Borradori's politics of photography class for which I wrote my final paper on the phenomenon termed #foodporn. Are you familiar?

Zylinska: Mhhhm.

Testa: To follow up, in the essay I argued that our orientation of food today involves the paradox of detached proximity. In the age of social media and instant gratification, we have become detached from and unaware of where our food comes from, but simultaneously introduced this ritualistic intimation of food through the act of photographing our meals, and this practice commodifies and fetishizes food through its digital dissemination with the caption #foodporn. In general, what are your thoughts on this phenomenon?

Zylinska: I would very much go along with your analysis and also think about that process as involving a mode of the aestheticization of our lived experience. The main sources of aesthetic pleasure today are perhaps to be found less in a detached and often disembodied experience of aesthetic appreciation that used to be, almost by definition, only available to the select few—those who went to art galleries and were able to stand in front of gold-framed paintings—and who had the cultural capital to appreciate them. So you can see #foodporn as a way of reframing something quotidian and, by pointing to it, giving it value, the way Duchamp did with the urinal. It is also an attempt to enact and experience these forms of bodily and aesthetic pleasure in a more democratic way, so to speak. But that raises the question of detachment and of the mediation of those pleasures. (Although I'm not sure if there is such a thing as unmediated pleasure;



Joanna Zylinska, from the *Will you ever go back?* series, 2009

is always mediated, both on the bodily and the cognitive level, via all sorts of things: images, stories, technologies.) However, there is also the sociopolitical issue you've raised about our relationship to food and the industrialization of food production, where food is seen as first and foremost an aesthetic object. This mode of imaging and imagining food obscures its relationship to the earth, to soil—and to the wider ecologies. This is not to say that everyone should go digging and start their own allotment, but rather that we do need to understand where things come from and also what happens if we eat certain things and don't eat others. "Who gets to eat what, in what circumstances and at what proximities?" has today become a pressing ethico-political concern.

Testa: To speak about industrialization of food and who gets to eat what, I see that as an entry point to think about Brexit. This critical juncture is difficult to ignore. What do you make of the role of images in fomenting Brexit, and to think about the future, what role if any can photography play in suturing the impending aftermath of Brexit?

Zylinska: Obviously, the time is still very raw, because at the time of our conversation (in April 2019) Brexit is already a political and cultural phenomenon, yet the actual process of Brexit is still very much up in the air—so we don't actually know. But we do know that the mobilization of images was very strong, especially in the Vote Leave campaign. They engaged in these rather pernicious acts of creative repurposing, reusing

images of flows of people to stir up an anti-immigrant sentiment, referencing past-era anti-immigration images and rhetoric. However, I am slightly wary of claiming too much agency for images, for what they can do, because images never function by themselves. There is always a broader discursive and affective apparatus in the air. We saw that with the picture of the drowned Syrian boy Aylan Kurdi in 2015. There was a massive outpour of international sympathy when the image came out. The University of Sheffield even conducted a study that showed how the sentiment towards immigrants and refugees had supposedly changed as a result—except that change lasted about a week when the image was circulating. So I think it would be too simple to say that the negative representation of immigrants led to Brexit. There were also other strong images in the Vote Leave campaign—for example, those red buses with slogans plastered on them, saying something like “Let’s take this money out of the European Union and put it into our health services.” This was a blatant piece of propaganda, and it didn’t square arithmetically, but those buses became symbolic images. Their red and white coloring, their mobility, constituted a certain milieu that allowed the Leave narrative to embed. Another issue that’s also worth mentioning is that there has been a lack of positive images of the European Union. That’s not surprising, because generally there has been a lack of a positive *discourse* around the European Union, in the UK, for a very long time. In spite of that nearly 50% of people felt very strongly—and I was among them—that they didn’t want to leave the European Union. However, even at the most recent anti-Brexit protest in March 2019, though there were some very playful images showing the stupidity and short-sightedness of Brexit, the most positive image of the European Union people could come up with was the EU flag. In that sense, the efficacy of images in stirring the anti-Brexit campaign has been limited, which I think has to do with the lack of the more positive discourse about the European Union—for example, as a community or a peace project—both on the left and on the right in the UK.

Testa: To continue the topic of Brexit—I bring this up because this semester I’m taking an International Studies class called “Borders and

Brexit” and one of our topics is the question of the Irish border. The UK government has pointed to technologies such as x-rays and drones as means to avoid establishing a hard border. Even if the technology does not yet exist in Ireland, in your opinion, is this a viable solution?

Zylinska: Well, I’m more interested in politicians wheeling out techno-solutionism if they don’t really have an answer to a particular problem. The Irish border is really a Catch-22 situation. Or maybe it’s like the Schrodinger’s cat situation because, you can’t have the border as per the prior peace agreements, but post-Brexit, you will have to have it. So how would you be able to square that impossible circle? So again, whether this technology will work or not is a different matter. Technology will never solve sociopolitical issues by itself. I’m interested in how technological solutions are being promised as easy answers to impossible political problems. Yet none of the technologies will resolve the ontological impossibility of both having a border and not having a border. I am also suspicious of those promises that technology will indeed photograph people, but only “bad people.” It will only capture them and it would send the data, to some secret locations, but the data won’t be held, except sometimes it will. So that game of smoke and mirrors that often accompanies the techno-solutionist discourse is very curious, and I think we should be rightly suspicious of it. It’s a bit like politicians trying to ban parts of the Internet and just imagining that somebody will come and cut it off, and build a fence around it.

Lovejoy: Looking forward to today’s lecture, you’ll be speaking on “undigital photography.” Can you give us a preview of your motivation for this project and how it connects to your interest in nonhuman photography?

Zylinska: It’s a continuation of my work on *Nonhuman Photography* and it links with the issues we’ve been discussing today around artificial intelligence. I have borrowed the concept of “undigital photography” from computer science. Basically, “undigital photography” is another term for “computational photography,” where taking an image is only the beginning. In some sense it’s a reiteration of Kodak’s “You take

the picture and we do the rest,” except the machine, the software and the designers do the rest now. You can adjust the focus, you can edit things, you can change the vantage point, or you can light the picture better. So that possibility of actually taking the picture after taking it, once you’ve got some raw data to begin with, is what’s understood by that concept. But I also want to use that concept of “undigital photography” as a reminder, or even a call to action, for us to stop and think about the processes around digitality and the digitization of human and nonhuman agency in the current labor setup. As part of this new work, I did a project around Amazon’s “artificial artificial intelligence,” which is their not very funnily phrased way of describing their Mechanical Turk workers, a very cheap and supposedly global labor force, yet 75% of whom are in the United States, being paid for performing simple and repeatable tasks: filling in surveys, taking images for training machine vision, and feeding machines or other humans with data, and in a way that, at the moment, is too expensive for computers to collect. So I did a project where I hired one hundred MTurkers to take an image from their window, wherever they were. I recognized the political issues with using those workers for my own project. Indeed, I wanted to raise the broader question about so-called crowd-sourced art, which at the end of the day becomes a form of exploitation. Finally, I wanted to draw visibility to that idea of the digital production of knowledge and data and to ask what this “view from the window” looks like today (again playing on Niépce’s *View from the Window*, the “first image” in photography), literally and metaphorically. Having received these pictures from the anonymous workers who only signed their contributions with a digital tag, I built a visual story about the invisibility of the cheap, globally distributed labor force. What emerged was also a portrait of an “artificial artificial intelligence” that is being mobilized to feed, from bottom up, the construction of AI today—and the construction of digital fables and digital futures we are being promised as part of that process.





Joanna Zylinska, from *View from the Window*, 2019 (screengrabs by Kirk Patrick Testa)

Additional images from Joanna Zylinska's photographic series *Too Close for Comfort* (2009) and *The Vanishing Object of Technology* (2015) were used in the creation of the *Journal's* cover. Zylinska's photographic and scholarly works are available for viewing on her website at joannazylinska.net.

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All those interested in contributing an essay to the Spring 2020 edition of the *Journal* are invited to review the submission guidelines listed below. While the *Journal* has in previous years been unified under a cohesive theme, this year we have made the decision to open submissions to any and all philosophically-relevant essays. We always welcome essays written on traditional topics within philosophy as well as essays generated within other disciplines and departments. So long as an essay engages a specific philosophical problem or idea, the *Journal's* staff will be excited to review and potentially publish relevant writings on literature, history, political science, sociology and anthropology, cognitive science, and psychology.

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