

## A Lifetime in Logic and Philosophy

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**Abstract:** Professor Krawczyk-Wasilewska has influenced my work as a philosopher. Our collaboration focused on the human impact of the digital revolution, and my research had explored its philosophical roots in formal logic. Modern logic replaced an orthodoxy dominated by the works of Kant and Hegel, whose philosophies continue to influence the neurosciences and ethnology. Meanwhile, modern logic has enabled the development of a global organizational infrastructure that is already dominated by machines. Awareness of the philosophical roots of this historic development can help human individuals and communities adapt and flourish in a world that increasingly resembles a machine dominion.

**Keywords:** Logic, philosophy, technology, ethnology, neuroscience, politics

### Introduction

This author first befriended Violetta Krawczyk-Wasilewska in about 2010. She was working as professor of ethnology and folklore at the University of Łódź, I was living and working in Germany, and we met online. Our first collaborative work, again online, was with Theo Meder, then a researcher at the Meertens Institute in Amsterdam and now professor in Dutch folktales and narrative culture at the University of Groningen, to edit and produce the book *Shaping Virtual Lives: Online Identities, Representations, and Conducts*.<sup>2</sup>

Violetta and I collaborated on the publication of various other works, for example on her contributions to the proceedings volume *Food and the Internet*<sup>3</sup> and her personal collection of essays *Folklore in the Digital Age*,<sup>4</sup> for which I wrote the foreword. She

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<sup>2</sup> KRAWCZYK-WASILEWSKA 2012.

<sup>3</sup> KRAWCZYK-WASILEWSKA 2015.

<sup>4</sup> KRAWCZYK-WASILEWSKA 2016.

helped me with my article in the journal *Transformations*<sup>5</sup> and provided moral support while I wrote my books *Coral* and *Albion*.<sup>6</sup>

The focus of my work has been on the historical and philosophical impact of the digital revolution. New technology has transformed how we live and work in countless ways, but the changes have barely begun, and those yet to come are more radical than most of us anticipate. My aim has been to help prepare both individuals and society to adapt to them and survive their impact.

The likely impact of digital technology impressed me as a young graduate researcher in mathematical logic at the University of Oxford. My studies in set theory and the foundations of mathematics suggested that machine logic would probably lead to a digital revolution that would leave human individuals and communities as we had known them in need of new conceptual foundations. Since then, I have sought to understand the technical operations and social significance of the new environment of machine infrastructure growing around us (for example, in the global network of servers hosting the cloud that supports online services and social media) and between us (for example, as the increasingly pervasive mediation of mobile phone apps in our personal lives).

Subsequent work teaching mathematics and physics helped me to understand the technical development of this machine infrastructure. In 1987, I moved to Germany and worked first as a computer science editor for the academic science publisher Springer-Verlag in Heidelberg (1987–1998), then as a knowledge worker for the global business software company SAP in Walldorf (1999–2009). Since then, I have been writing books. The theme of these books has been the impact in science and politics of new technology and the new perspectives thereby revealed in modern culture.

One major change has been in how we communicate with each other. From oral traditions of song and poetry in the preliterate past to written and then printed books and papers, we have progressed to audio-visual media, first in analogue form as films

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<sup>5</sup> Ross 2013a.

<sup>6</sup> Ross 2013b; Ross 2022.

and television and now as digital media in all their forms, including modern versions of older forms in the music industry (with its global streaming services for popular songs) and the world of book publishing (with word processors and printing on demand for specialist works). The personal communication we previously enacted in face-to-face conversation is now increasing mediated by text messages routed through apps running on mobile phones. My work with Professor Krawczyk-Wasilewska has all been done through my desktop computers.

## **Technology and history**

A historical account of the transformative impact over the millennia of evolving technology is an essential tool for understanding where that process may take us. As writers of Big History such as Yuval Noah Harari have demonstrated,<sup>7</sup> the changes we are witnessing today can best be appreciated by seeing them as milestones on a long path with a prehistoric origin and a posthuman future. It is becoming ever more evident that digital technology is enabling the biggest transformation in human social interaction since the first words were carved in stone.

A sense of this historic depth may be gained by recalling the continuity through change of philosophical debate from the Axial Age to the present. The earliest instances of logic and mathematics display essential continuities with the modern incarnations of those disciplines. For example, Epimenides' liar paradox in logic was once discussed face to face in Socratic dialogue. Today it has morphed into the undecidable statement at the heart of Kurt Gödel's incompleteness theorems for formal systems of arithmetic<sup>8</sup> and hence into the halting problem that secured Alan Turing's fame as the father of computer science.<sup>9</sup> The form has changed, but the deep logical puzzle remains.

Logic is more than mathematical. My early graduate work in logic and scientific methodology at the London School of Economics began to reveal its deeper roots. The

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<sup>7</sup> HARARI 2011; HARARI 2016.

<sup>8</sup> GÖDEL 1931.

<sup>9</sup> TURING 1937.

department had been founded by Karl Popper and was then chaired by Imre Lakatos,<sup>10</sup> whose view of mathematics as a discipline that evolved through a process of trial and error suggested a hidden link with the Hegelian tradition in logic that had been superseded by the mathematical approach adopted in the works of Gottlob Frege and Bertrand Russell. The latter approach had launched an international attempt to formalize mathematics, which reached its clearest statement in the program championed by David Hilbert in 1900.<sup>11</sup> That program ended when Gödel proved his incompleteness theorems. Such formal approaches to logic were powerful, but they were unable to penetrate fully into the semantic and pragmatic roots of the natural human languages that provide the anchor or foundation for formal logic.

Workers in the Anglo-American analytic community made sustained attempts to use formal logic to develop the wider semantic theories that today underpin our understanding of natural languages. A seminal paradigm for such attempts was Alfred Tarski's truth theory,<sup>12</sup> with its axiom that "Snow is white" is true if and only if snow is white. A large body of work has grown from Tarski's paradigm in the analytic tradition. Willard Quine's Tarskian assertion that the truth predicate is a device of disquotation is an exemplary formulation of the core idea.<sup>13</sup> Saul Kripke later developed the Tarskian paradigm into an outline of a theory of truth by defining a formal hierarchy of metalanguages.<sup>14</sup> His outline invites a mapping into the detailed model theory that interacts with proof theory to characterize the cumulative hierarchy of sets that forms the natural model of axiomatic set theory.

During the period when Russell and Gödel were active, some philosophers still pursued logic in the Hegelian manner. Some of them in turn applied their work in more specifically Marxist theories within the humanities.

A caution: Any modern reconsideration of Hegelian logic must accept at least two things. First, Hegel's methodology and formulations appear unacceptable by modern

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<sup>10</sup> LAKATOS 1976.

<sup>11</sup> HILBERT 1900.

<sup>12</sup> TARSKI 1944.

<sup>13</sup> QUINE 1976.

<sup>14</sup> KRIPKE 1975.

Anglo-American analytic standards. His writings are filled with obscure and baffling attempts to explain – often by means of contradictions – ideas that even today resist clear expression. Second, many philosophers in Germany today – such as Marcus Gabriel<sup>15</sup> – nevertheless say that his logic has something important to teach us, independently of any Marxist misuse to which his doctrines were subjected.

That misuse becomes clear when reading the philosophical literature on Hegel and Marx. A conversation with Leszek Kołakowski,<sup>16</sup> the critical historian of Marxism who at the time was a senior research fellow at All Souls College in Oxford, finally convinced me that more modern theories of truth and justice improve upon Marxist approaches. So far as formal logic is concerned, Marxist glosses in terms of the triad of thesis, antithesis, and synthesis are practically worthless.

A sense that Hegel's deeper writings in logic contain insights hidden from the usual Anglo-American gaze offers a reason to seek to express those deep insights in a form that can be held in shape within modern set theory. However, my own attempt to do so was premature in twentieth-century Oxford, and so I put the project on ice.

Since then, a major work (thirty years in the making) by the Pittsburgh philosopher Robert Brandom<sup>17</sup> (working with John McDowell, who had taught at Oxford during my years there) has located Hegel's phenomenological investigations firmly within the landscape of Anglo-American analytic concerns. The great divide (between the traditional German philosophers of the nineteenth and twentieth centuries on the one hand and the more mathematical works of Frege, Russell, and their successors on the other) that existed a generation ago can thus in principle be bridged. The mainstream tradition in western philosophy now includes Hegel as it leads through analytic philosophy to information theory, programming code, and the use of artificial neural networks to model and reproduce natural languages. In the realm of ideas, at least, the great detour that led via Marxist ideology to some of the darkest chapters of twentieth-century history has been diverted back to the mainstream.

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<sup>15</sup> GABRIEL 2015: S. 105.

<sup>16</sup> KOŁAKOWSKI 1978; KOŁAKOWSKI 2008.

<sup>17</sup> BRANDOM 2019.

## Ethnology and neuroscience

Philosophers are human beings, and an understanding of the personal lives and social traditions that shaped them is essential to achieving a clear understanding of their philosophical works. Ethnology is thus a useful discipline even for a philosopher. In particular, the new work on human interaction via digital media, most dramatically in the fascinating worlds of online dating and the gaming community, with their use of virtual avatars to represent the dating or gaming subject, is helpful for understanding the very latest philosophy.

One philosopher whose work can be helpfully illuminated by such contemporary ethnology is David Chalmers, who is now a professor of philosophy and neural science at New York University. His first great book, *The Conscious Mind*,<sup>18</sup> introduced the “hard problem” of consciousness into the philosophy of mind via his notion of the philosophical zombie, which is a creature that visually resembles and behaves like a normal human individual as closely as may be, but that lacks the inner light of consciousness. An answer to the question of how from an outside (third person) perspective we can distinguish a conscious human being from a zombie seems to lie beyond science as we know it.

Chalmers’ philosophy was influential in the neuroscience community during the first decades of this century, when he organized a series of conferences worldwide in which his work was a central topic. At the conferences, philosophers and neuroscientists interacted fruitfully in a paradigm illustration of the idea that philosophy is the fertile seedbed for the birth and growth of new sciences, such as physics in the seventeenth century, chemistry in the nineteenth, biology in the twentieth, and neuroscience in the present century.

These conferences and the “neuro-Kantian” school of philosophy more widely were the basis for my essay collection *Mindworlds*.<sup>19</sup> The main thrust of this book is to argue that the Kantian synthetic unity of consciousness reflects the ceaseless activity of the

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<sup>18</sup> CHALMERS 1996.

<sup>19</sup> ROSS 2009.

brain (in its logical status as a neural network) to generate a temporal succession of mindworlds from the data of sensory experience. This process is amenable to formal reconstruction in set theory (and regimentation within the ranks of the cumulative hierarchy defined by the von Neumann rank function) and can also be represented as a dialectic in an almost Hegelian fashion.

Since then, Chalmers has become more specifically interested in virtual worlds, as defined in online games and Virtual Reality systems. As he demonstrates in his book *Constructing the World*,<sup>20</sup> a methodology inspired by this perspective provides a powerful platform for a new understanding of many traditional issues in the philosophy of mind and epistemology.

For example, the old Cartesian question of whether the phenomenal world is a demonic illusion is transposed in Chalmers' account into the question of whether we are living in a Matrix-style digital simulation. His answer is that, once the physics of what we observe is properly reconstructed into a rigorous theory, it hardly matters: A physical world that by the best modern accounts is reducible to quantum information can obviously be described metaphorically as a simulation run on a quantum hypercomputer by a vastly superhuman intelligence. That said, the metaphor is an unhelpful excrescence on an otherwise clean physical theory and therefore raises more questions than it answers, much as the epistemic possibility of a Cartesian demon adds nothing of value to Galilean physics.

Another modern philosopher whose work is based on the science of virtual worlds and is motivated by the neuroscience of consciousness is Thomas Metzinger. His book *Being No One*<sup>21</sup> proposes that we understand ourselves as avatars (in the digital gaming sense) that our brains construct to act in the virtual worlds that our brains also construct from experience, so that we represent this virtual drama starring our avatar within a mindworld as our reality. Evolution has hardwired us to regard the drama as real. This use of a metaphor from our latest technology is in the same spirit as Descartes' use of a mechanical doll metaphor (steered by the soul acting via the pineal

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<sup>20</sup> CHALMERS 2012.

<sup>21</sup> METZINGER 2003.

gland) to explain human minds for his contemporaries. Metzinger's account is controversial among philosophers, but it offers an illuminating example of how digital technology is reshaping our deepest cultural understanding of human identities, representations, and conducts.

We see in such stories of what it is to be human a rich field for ethnographic studies in the future, when the apparent cultural universality of the language and idioms of western philosophers can be bracketed and examined within a wider perspective.

### **Philosophy and politics**

When European culture survived the collapse of the Soviet Union, the politics of the western world reflected the relegation of Marxist ideology to history. Since then, eastern Europe has been substantially liberated from the repressive regimes rooted in the Cold War and has experienced the same cultural renewal that has accompanied the digital revolution in the democratic West. That renewal – almost a transformation of what it means to be human – is a foretaste of a truly global culture.

Today, the traditional western politics that pits right against left is falling behind the technological revolution as that revolution continues to globalize our world. Western politics in our era is still primarily national, which is to say tribal, and hence unequal to the task of organizing humanity to meet its global challenges in a world of increasing economic inequality, human destruction of traditional communities and natural ecosystems, and climate change. Political institutions are not adapting quickly enough to the technological changes that force all of us to interact ever more fully with other people worldwide.

Globalization has been a manifest fact of social and economic life for decades. The speed and bandwidth of modern communications technology enables a new level of spontaneity and intimacy in mediated human interaction, so barriers that seemed impenetrable a century ago now seem trivial, with the result that human contacts, tourism, business, and science have flourished over long distances to make use of the new opportunities. Moreover, as science has advanced, old prejudices about human



differences based on race or gender or class have been devalued, allowing us to characterize the resulting social divisions as obstacles to be overcome.

In my book *G.O.D. Is Great*,<sup>22</sup> an attempt is made to understand the consequences of globalization in this sense. After a review of new technology and how it transforms our personal and working lives, the book explores the more speculative realm of guiding ideologies, where traditional religions can be cast as tribal myths that hinder progress. When the artificial intelligence that lies behind online services and social media becomes only slightly more organized than at present, many people will begin to perceive the pervasive presence of AI as godlike in its role for them and their communities. Debased representations of this perception may lead to the emergence of new cults claiming a religious heritage.

Since the global financial crisis of 2008–2009, globalization has been in retreat. The crisis and its aftermath can be understood as obstacles on the road to more global organization under the dominion of a pervasive machine-based regulation of human life. A global financial system that relies on human judgment and misjudgment at its key points is vulnerable to crisis and clearly open to improvement by deployment of yet more machine-based safeguards and controls. This suggests that, once the political animosities that persist from the age of competing ideologies are overcome, the advance of globalization is likely to continue.

In my book *Coral*,<sup>23</sup> an attempt is sketched to cast this narrative in the context of Big History. Beginning in human prehistory and extending into a future of machine domination and human obsolescence, the sketch adapts a logical frame that was developed by German theologians from apparently Hegelian roots to discern structure in the development of religious and ideological movements over the last few thousand years.<sup>24</sup> My sketch adopts the theologians' colour code for the logical frame, which culminates in a level coded coral. The frame maps into set theory and provides the basis for my claim that the logical singularity at the heart of Turing's work on the

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<sup>22</sup> ROSS 2010.

<sup>23</sup> ROSS 2013b.

<sup>24</sup> KÜSTENMACHER 2010.

halting problem,<sup>25</sup> with its ancient roots in the liar paradox, has an implication for the logic of selfhood: A self looks godlike from within. This result will apply for the giant self of a superhuman artificial intelligence in future as well as it did for the human souls of religious mystics in ancient times.

Since the Russian invasion of Ukraine in 2022, we have lived in a world darkened by a political leader acting under the influence of a philosopher who was inspired by an earlier philosopher who worked in an earlier and yet darker age. The more oracular work of that earlier philosopher has so far only been imperfectly assimilated to the mainstream western philosophy that has led to computers and the digital revolution. The leader is President Vladimir Putin of Russia, the philosopher who has influenced him is Alexander Dugin, and the earlier philosopher who influenced Dugin in turn was Martin Heidegger, who promoted an influential but ethnocentric approach to ideology between the two world wars.

The academic work required to reconstruct such oracular philosophy into a better understanding of human communities that can transcend partisan or chauvinist perspectives remains unfinished. The stream of ideas that flowed from Hegel to Nietzsche to Heidegger and thence to Dugin and Putin has not yet been fully rechannelled back to the mainstream. At this juncture in history, the ideas remain too obscure to allow clear reconstruction in analytic terms.

Much of Heidegger's philosophy was embraced in the huge literature of existentialism, but most of that literature is not well regarded by analytic philosophers. Perhaps its closest approach to modern American culture came with the later books of Herbert Marcuse,<sup>26</sup> who as a Frankfurt School philosopher sought to meld Marxist and Freudian ideas in an existentialist critique of alienation and authenticity. His books found an approving resonance among American Hippies before San Francisco became the home of Silicon Valley.

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<sup>25</sup> TURING 1937.

<sup>26</sup> MARCUSE 1955; MARCUSE 1964.

The hermeneutical work of incorporating insights from this extensive literature into the mainstream analytic tradition will not be finished before political movements in the many regions and communities worldwide that find inspiration in narratives of colonial suppression of their ethnic traditions and identities are assimilated within a globally accepted Big History of human life on Earth.

In the meantime, it is impossible to ignore a new geopolitical division in Europe as western nations work together to enable President Volodymyr Zelensky of Ukraine to lead his people to what westerners understand as freedom. Ukrainians are struggling against a Kremlin regime that apparently seeks to suppress them in an ethnocentric vision of Russian imperial domination. Westerners inspired by the Enlightenment accept that the founding values of the European Union offer a better political philosophy for the peoples of Europe.

As for Britain, the political development that has most influenced this British author since 2016 has been Brexit. That great British misadventure, funded and encouraged by a cynical President Putin, was the theme of my book *Albion*.<sup>27</sup> Although the book is cast as a political history and reads like a novel, my academic friend in Łódź encouraged me to regard it as an extended ethnographic study of British political dysfunction. So be it. Thank you, Violetta.

## Conclusion

The Anglo-American analytical tradition in philosophy has given rise to the digital revolution and hence decisively shaped the modern world. That revolution looks set to shape the human future for decades and centuries to come. Like all human cultural artifacts, the philosophy behind it is inseparable from its human roots. Scientific examination of those roots has a psychological side in the neurosciences and a societal side in ethnology and related disciplines. Through her academic life and works, Professor Krawczyk-Wasilewska reminds us of that fact.

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<sup>27</sup> Ross 2022.

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## Podsumowanie w języku polskim

Profesor V. Krawczyk-Wasilewska wywarła wpływ na moją twórczość filozoficzną. Nasza współpraca koncentrowała się na ludzkim wpływie rewolucji cyfrowej, a moje badania dotyczyły jej filozoficznych korzeni w logice formalnej.

Tradycja analityczna w filozofii wyrosła w opozycji do filozofii Kanta i Hegla. Nauki humanistyczne i wiele nauk stosowanych nadal czerpało inspirację z Kanta i Hegla, a także z idei marksistowskich. Ten autor studiował logikę i filozofię w poszukiwaniu głębszej ciągłości.

W artykule przedstawiono rozwój logiki nowożytnej w odniesieniu do G. Fregego, B. Russella, K. Gödla, A. Turinga, A. Tarskiego, S. Kripkego i innych. Zarysowuje związki ze starszą tradycją w odniesieniu do L. Kołakowskiego, R. Brandoma i innych. Odwołuje się do nowych prac z zakresu filozofii i neuronauki D. Chalmersa, T. Metzingera oraz autora. W artykule przytoczono dalsze prace autora odnoszące się do nowego świata wysokich technologii, w odniesieniu do Wielkiej Historii, rozwoju ideologii i prawdopodobnej przyszłej roli sztucznej inteligencji.

Etnologiczna strona historii obejmuje politykę. Ostatnie wydarzenia w Rosji mają swoje korzenie w etnocentrycznych ideach M. Heideggera. Idee te nie zostały jeszcze zasymilowane w tradycji analitycznej. Jednym ze skutków pomysłu w Wielkiej Brytanii był Brexit. Autor napisał etnograficzne studium Brexitu.

Filozofia stojąca za rewolucją cyfrową ma ludzkie korzenie. Badanie tych korzeni ma stronę psychologiczną w neuronaukach i stronę społeczną w etnologii i dyscyplinach pokrewnych.

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