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McDonaldization and Artificial Intelligence

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Introduction

George Ritzer is Distinguished University Professor Emeritus at the University of Maryland. Among his awards are an honorary doctorate from La Trobe University, Melbourne, Australia; honorary patron, University Philosophical Society, Trinity College, Dublin; American Sociological Association's Distinguished Contribution to Teaching Award; and being named the Eastern Sociological Society's Robin Williams Lecturer. He has chaired four sections of the American Sociological Association: Theoretical Sociology, Organizations and Occupations, Global and Transnational Sociology, and the History of Sociology.

In the application of social theory to the social world, Ritzer's books include *The McDonaldization of Society* (10th edition 2021; 11th edition forthcoming with J. Michael Ryan), *Enchanting a Disenchanted World* (3rd edition 2010), and *The Globalization of Nothing* (2004). He is the author of *Globalization: The Essentials* (Ritzer and Dean 2011/2019), *Globalization: A Basic Text* (Ritzer and Dean 2010/2022), and *Introduction to Sociology* (Ritzer and Ryan 2024, 6th edition).

Ritzer edited *The Wiley-Blackwell Companion to Sociology* (2012), *The Blackwell Companion to Globalization* (2007a), *The Wiley-Blackwell Companions to Classical and Contemporary Major Social Theorists* (Ritzer and Stepnisky 2012), and the *Handbook of Social Theory* (Ritzer and Smart 2003). He was founding editor of the *Journal of Consumer Culture*.¹ He also edited the 11-volume *Blackwell Encyclopedia of Sociology* (2007b; 2nd edition forthcoming with Chris Rojek and J. Michael Ryan), the five-volume *Wiley-Blackwell Encyclopedia of Globalization* (2012), and the two-volume *Encyclopedia of Social Theory* (2005). His books have been translated into more than 20 languages, with more than 15 translations of *The McDonaldization of Society* (2021) alone.

J. Michael Ryan is a Professor-Researcher (*docente-investigador*) at Pontificia Universidad Católica del Perú. After receiving his PhD in Sociology from the University of Maryland, he has gone on to become an award-winning teacher who has held academic positions at leading universities across five continents. Before returning to academia, Michael worked as a research methodologist at the National Center for Health Statistics in Washington, D.C., where he led multiple projects aimed at improving national statistical survey methodology. He is author of *Introduction to Sociology* (Ritzer and Ryan 2024, 6th edition) and *The McDonaldization of Society* (Ritzer and Ryan forthcoming 2025, 11th edition), and *Covid-19: Social Inequalities and Human Possibilities* (Ryan and Nanda 2022). Michael has edited numerous volumes, including *Gender in the Middle East and North Africa: Contemporary Issues and Challenges* (Ryan and Rizzo 2020), and is the Series Editor of Routledge's *The Covid-19 Pandemic Series*.²

¹ See <https://journals.sagepub.com/home/joc>. Accessed 26 April 2024.

² See <https://www.routledge.com/The-COVID-19-Pandemic-Series/book-series/CVIDPAN>. Accessed 26 April 2024.

Sarah Hayes is Professor of Education and Head of Research in the School of Education at Bath Spa University, UK. Sarah's PhD was in Sociology and her research includes linguistic analysis of Higher Education policies and examining society through a postdigital lens. Sarah's books include *The Labour of Words in Higher Education: Is it Time to Reoccupy Policy?* (2019) which, inspired by the work of George Ritzer, called for human reoccupation of university 'McPolicy'. Sarah also wrote *Postdigital Positionality: Developing Powerful Inclusive Narratives for Learning, Teaching, Research and Policy in Higher Education* (2021) and co-edited *Human Data Interaction, Disadvantage and Skills in the Community* (Hayes et al. 2023). Sarah has taught Sociology, Education and Computing, is an Honorary Professor at Aston University and is an Associate Editor for *Postdigital Science and Education*.

Mark Elliot is a Project Manager in the Centre for Education and Teaching Innovation (CETI) at the University of Westminster, UK. Mark's PhD investigated the influence of neoliberalism on the experiences of university students in the UK. Mark's current research interests include the use of metrics to measure performance in UK Higher Education, the 'datafication' of students' identities, and the use of critical, 'non-traditional' pedagogies. Previously, Mark taught the sociology of sport and physical activity, sport management and sport development at three UK universities.

Petar Jandrić's work is focused on the relationships between technologies and human beings. He is founding Editor-in-Chief of *Postdigital Science and Education* journal, book series,³ and *Encyclopedia of Postdigital Science and Education* (Jandrić 2023). Petar's books include *Learning in the Age of Digital Reason* (Jandrić 2017), *The Digital University: A Dialogue and Manifesto* (Peters and Jandrić 2018), and *Postdigital Dialogues on Critical Pedagogy, Liberation Theology and Information Technology* (McLaren and Jandrić 2020). Recent edited volumes include *Postdigital Research: Genealogies, Challenges, and Future Perspectives* (Jandrić et al. 2023a) and *Constructing Postdigital Research: Method and Emancipation* (Jandrić et al. 2023b). Petar's work is strongly focused on collective academic research (Peters et al. 2020, 2021; Jandrić et al. 2023a), and he has a special passion for conducting interviews. His books have been translated into more than 10 languages.

About the Conversation

In 2018, Sarah Hayes and Petar Jandrić interviewed George Ritzer on the relationships between 'prosumer capitalism and its machines' (Ritzer et al. 2018). Responding to the recent research hype in and around Generative Artificial Intelligence (GAI), we argue that 'an in-depth understanding of the topic requires contextualization and historicization, nuance, and feeling, that come only from knowing theories old and new' (Jandrić 2023). To ensure continuity, sustainability, and to 'enjoy our hypes responsibly', we decided to conduct another interview focused on the relationships between Ritzer's theory of McDonaldization and AI.

This time around, our 'Q&A teams' have been strengthened by Mark Elliot and Michael Ryan. The interview was conducted in writing, in several iterations, between January and May 2024.

McDonaldization of Society

Sarah Hayes, Mark Elliot, & Petar Jandrić (SH, ME, & PJ): A few years back, we wrote that *The McDonaldization of Society* (Ritzer 2021) 'is generally considered as one of the most important sociological works of the late twentieth century' (Ritzer et al. 2018: 113). As we have now entered deeply into the age of Artificial Intelligence (AI), it is prudent to examine the book's messages for the context of the early twenty-first century. George: how does your work,

³ Postdigital Science and Education Book Series, <https://www.springer.com/series/16439>. Accessed 26 April 2024.

inspired by ‘the brick-and-mortar world of the McDonald's restaurant’ and then ‘attuned to the digital world’ (Ritzer et al. 2018: 115), transform in, and for, contemporary circumstances?

George Ritzer (GR): The fact that AI is mentioned only once in the last, 10th edition of *The McDonaldization of Society* (Ritzer 2021), and there in the context of its limited role in analyzing ‘big data’, is reflective of the recency of the exploding importance of (generative) AI. However, AI is implicit in the last edition in the much more frequently discussed ‘robots’, which increasingly operate on the basis of AI. More generally, AI is one example of one of the key components of McDonaldization - a ‘non-human technology’ - that is increasingly controlling and replacing human technology.

In the past, technologies controlled what people *did*. That is still true to a large extent, but AI is mimicking and increasingly controlling, if not replacing, people’s *thinking*. If machines can *do* what people now do and can *think* the way people now think, the question will arise: Do we really need people to do many kinds of work, when technologies can do the work (and even, in a sense, the thinking needed to do the work)? AI is one of the latest examples of a non-human technology as well as one that lies at the base of many more familiar non-human technologies such as robots.

Michael Ryan (MR): AI is certainly representative of all aspects of McDonaldization – efficiency, predictability, calculability, and clearly control by nonhuman technologies. It might also be the ultimate in the irrationality of rationality. For example, there are many who argue that AI, and ChatGPT in particular, are great tools to help us further human knowledge. At the same time, there is little doubt that the ‘knowledge’ generated by such platforms is still highly imperfect, frequently flawed, and often suspicious. One major problem arises if people rely on knowledge ‘generated’ by AI and come to see it as accurate, even if it is not. At some point, we can imagine a tipping point where the inaccurate information generated by AI comes to be seen as accurate while the actually accurate information is washed away.

One potential hole in the above argument would be to point to the success of something like Wikipedia. Although everyday folks can contribute to knowledge on Wikipedia, numerous studies have shown that it has no more errors than a standard professional encyclopedia (Jemielniak 2019). The difference, of course, is that Wikipedia is a crowdsourced database, one where humans can fact check other humans. AI, on the other hand, is an algorithm that uses databases. The ‘output’ of Wikipedia is public and can be checked by the general public, whereas the output of AI is often private, thus excluding the possibility for crowd sourced verification. While a human did write an initial algorithm for generative AI, the fact that it is ‘generative’ implies that it has since largely escaped the program-writing hands of a human being. It has become the cart leading the horse, but no longer with a driver in the cart.

SH, ME, & PJ: This shift from controlling behavior to controlling thinking is fascinating. Can you please expand on it a bit further?

GR: All non-human technologies control people (and their human technologies), but the control exercised by AI is more insidious than that of other non-human technologies because it is largely invisible. It is integral to, part of, much more visible non-human technologies (such as robots). The AI behind these technologies is largely unknown to most of their users. This is a huge problem for those who oppose AI, or who might want to oppose it. The robots controlled by AI are clear, but few understand that it is AI that increasingly lies at the base of robotization and many other contemporary technological developments. Thus, in opposing robots and many other contemporary technologies, humans are fundamentally opposing the AI that lies at their base.

Therefore, one of the newer concerns of the McDonaldization of society can be said to be the replacement of human intelligence by artificial intelligence (a non-human technology). This can be seen as an overriding irrationality of rationality in the contemporary world. While AI is rational in many ways, it brings with it an irrationality of rationality in the sense that is

coming to dominate, if not replace, human (*not* artificial) intelligence. This subordination of human intelligence to artificial intelligence (a non-human rationality) is an increasingly important example of the ‘irrationality of rationality’. And it is more difficult to counter than many other irrationalities of rationality because of its invisibility and the fact that it lies at the base of all sorts of new and yet-to-be-developed technologies.

SH, ME, & PJ: Is the increased use of AI going to contribute more diverse examples of the ‘irrationality of rationality’? For example, how will Generative AI interpret McDonaldization back to us as the people immersed in this culture?

GR: Clearly, the vast majority of people are excluded from rational automated systems and the AI that lies at their base. The elites and experts in many systems are included to varying degrees, but those who rank lower in the system are at least partially, if not wholly, excluded from these systems. It is this exclusion that renders most people subject to the control of these systems rather than having at least the possibility of controlling them. It may be that in the future even elites and experts will not be able to control these systems.

Generative AI is not limited to what has been done in the past, but it is capable of generating new and different actions when they are required.

Production, Consumption, and Artificial Intelligence

SH, ME, & PJ: How do you think the introduction of AI into so many areas of life and work is likely to disrupt the close relations you have observed for decades now between humans as consumers and humans as producers? Is prosumption about to change – and if so, how?

GR: In a formal sense, there is an increasingly close relationship between consumers and producers; they are increasingly prosumers. However, while I doubt there was ever a ‘close’ (in the emotional sense) relationship between producers and consumers, producers are increasingly separated from consumers by AI and the fact that it is the producers who create, control, and use AI in their relationship with consumers.

To put this another way, producers have the ability to create and control AI. Consumers have no such ability and they are being controlled by AI without the ability to create equally complex AI systems of their own that can counter those created by producers. In the main, consumers largely naively provide the data needed to create AI. There is a long tradition of work on controlling behavior (behaviorism and behavior modification) in sociology, but much more importantly in psychology. While it is out of the mainstream of sociological theory, I do accord its paradigmatic status in my 1975 book on sociology as a ‘multiple paradigm science’ (Ritzer 1975). There is much work on it in adjacent fields such as psychology. However, controlling thinking is a whole other matter which has largely been unexplored in sociology.

MR: AI, for the moment, is still a tool, albeit an entirely new type of tool and one not yet fully understood. Of course, the more we produce using that tool, and then consume based on that tool, the more it becomes a self-generating form of prosumption. For the moment, we are just producing using it and consuming things based on it, but as it becomes increasingly popular, it will no doubt begin to impact prosumption.

Of course, it is also possible that we are on the cusp of yet another transformation. Just as it was in the evolution of production (industrial revolution) and consumption (advertising, franchises, and big box stores) leading to a prosumer, perhaps AI will also lead to something new. For example, human sentiment and expression have become so easily manipulated by technology that it has become increasingly difficult to differentiate between a simulation and the ‘real’ thing.

SH, ME, & PJ: For many years you have shown how McDonaldisation has convinced people to work for nothing. What is your take on the threat of technological unemployment (see Peters et al. 2019)? If the more dystopic predictions about the future of work are correct,

what happens when people no longer have tasks to work on due to all kinds of work having been automated in some form or another?

GR: Doing work for nothing (e.g., collecting and paying for our food in a fast-food restaurant) is built into many contemporary structures. It is *not* that people are ‘convinced’ to work for nothing. Rather, they are literally *forced* to work for nothing in many modern structures. If you want to get a meal at McDonalds, you *must* do various types of work to get it. For example, lining up to get your food, going to the ‘fixings bar’ and adding condiments to your burger, filling a ‘glass’ with your drink, carrying your ‘dressed’ burger, drink, and other things to your table, and especially disposing of the debris after your meal is finished rather than relying on restaurant personnel do that ‘dirty work’.

MR: ‘Technological unemployment’ could also be rephrased as ‘human liberation’. Presumably, at least from a non-capitalist, human advancement perspective, the purpose of technology is to advance human liberation. Technological unemployment can be seen as an end goal of humanistic socialists as well as anyone who has ever wanted to spend more time pursuing their innate human potentials and desires. The more negative impacts of such a situation are arguably only negative for those whose livelihood depends on the exploitation of the labor of others.

So, to more directly answer your question, what happens when people are no longer forced to labor? Well, quite honestly, the impact has yet to be fully explored. To feign idealistic (which is often confused with realistic or possible), people would presumably be freer to explore their own human potential. They would be free to spend more time with family, friends, and loved ones. They would be freer to explore their own unique creative potentials, and their own potential contributions to the advancement of our collective humanity. In short, people would be freer to be people.

Unfortunately, rather than technology helping to reduce the need for human labor, it seems to be intensifying it for many. For example, cell phones have greatly reduced the boundaries between work and non-work space. We can now check our work e-mails over the family dinner table, and many people do. The situation has become so invasive that some countries (e.g. France) have even made it illegal to reach out to employees after certain work hours.

GR: The unemployment that may or may not accompany automation (which increasingly requires AI) is one of the irrationalities of rationality. However, automation may have more positive consequences as tasks that do not require, or even deny, the capabilities of humans are eliminated or relegated to non-human technologies. Automation will serve to liberate many people from mindless work, but those who are so liberated will need to flex and expand their capabilities in order to fill the voids (of income, time, etc.) left by the decline of paid work. As desirable as it might be, we are a long way from a society in which people will be paid not to work.

Data, Social Justice, and Disadvantage

SH, ME, & PJ: It is often said that ‘data is the new oil’. What are your thoughts on that common trope?

GR: Data may be seen as the new oil that allows the system to hum along, but it is much more than that. Data is now *the* basis of the system and *not* simply a lubricant of that system. In these terms, data is ‘oily’, and in that sense, it flows easily and quickly in many different directions. This is one of the qualities that makes data so valuable, but it also serves to make it highly dangerous in that it can be accessed and used by many people, including those with nefarious goals. It can also be misused by those with the best of intentions.

MR: It depends on the purpose of oil and the purpose of data, but that trope is by and large very true. Data can’t be used to provide energy, but it can certainly be used to provide

profits. Oil can power the engine of your car, but data is increasingly powering the engine of many societies.

One key difference is that oil takes a lot of work to extract, while data is relatively easy to obtain. People are increasingly willing to give up their data quite freely (on social media, for example) and, if not, most data can still be bought at a price, or hacked for a ransom. Oil and data are both important for species development and data, like oil, needs to be used with care. If this represents a shift in AI-driven, McDonaldized society, it is only so far as it further masks consumer exploitation. For example, many consumers were initially thrilled with self-checkout options, only to later realize (or not) that they had now essentially become unpaid employees, having to do work for a corporation to be able to pay a corporation.

My other concern about using data generated by technological insights is that the data is only derived from a select, relatively privileged, few. It was not until 2018 that even 50% of the global population was using the internet (International Telecommunication Union 2019), and even then there are limitations for many based on physical capabilities, cultural capital, and language, among other factors.

SH, ME, & PJ: What are your thoughts on the production and consumption of our data, and those who may be included, excluded, or disadvantaged by the rational, automated decisions made (often without our knowledge) concerning our data? Is this a situation we could/should discuss as McData?

GR: There are people who are excluded from the production and consumption of our data. However, that is not a situation that relates to the idea of McData. McData is all of the data that is produced by rational automated systems.

MR: Personally, I say lucky people who are excluded from having their data used for the profit of corporations and the privileged others who exploit it. That said, being excluded from data, including having your own collected, is increasingly becoming a new marker of inequality.

I have argued elsewhere (Ryan and Nanda 2022) that the digital divide has come to replace other forms of demographic inequality as a leading marker of social differentiation in today's world. In that context, I was specifically thinking of access to the Internet (through broadband, devices, cultural capital, and linguistics). In this context, a disadvantage is that many decisions in today's world are made based on data, and if your data isn't included, then you aren't impacting those decisions.

I have actually spent more than a decade working on issues of the inclusion of gender and sexual minorities in survey data and ways to improve how that data is collected (if at all) (Miller and Ryan 2011; Ryan 2013, 2019). I must confess feeling a bit torn about that work and that tear I have felt relates to this question. On the one hand, it is important that data is collected accurately and in ways that allow human expression, not limited by response options. On the other hand, reducing our identities to response options will inevitably limit our range to be accurately identified for who we are. Data itself isn't bad, but it is how it is used that becomes problematic.

SH, ME, & PJ: Human Data Interaction (HDI) is a field that has questioned how little agency, legibility, and negotiability we all have in our encounters with data of all kinds in digital society (see Hayes et al. 2023). How can we make our interactions with (Mc)Data more emancipatory?

MR: I would start by saying that there are great levels of difference (read: inequality) in how much agency, legibility, and negotiability each of us has with regards to our encounters with data. There are certainly generational differences, geographic differences, linguistic differences, cultural differences, physical differences, and lots of other differences that greatly impact how well each of us is able to interact with, control, and utilize data.

To your question, if you want to be emancipated from data the solution is simple – avoid interacting with it (at least to the extent possible). To quote Audre Lorde, ‘the master’s tools will never dismantle the master’s house’. In other words, participation will never bring true emancipation. There is certainly learning to live better within a system, as your question implies, but oppressive systems can only ever be dismantled, never negotiated.

That idealistic response given, data can also be useful, and so perhaps emancipation isn’t what we should seek. Instead, we should seek equality (both in terms of access as well as reaped benefits) and control (particularly over our own data).

The McStudent and the McTeacher

SH, ME, & PJ: Universities now routinely collect data about students from their interactions with various systems such as registration, class attendance, virtual learning environments, library services, student records, and plagiarism detection software (Williamson et al. 2020). What do you feel are the implications of data collection and analytics for students? To what extent can such data analytics lead to students being becoming performative? By this we mean that students become aware that they are under surveillance and behave in ways that they think will be rewarded.

MR: Students have always behaved in ways that they think will be rewarded because they have always been under some kind of surveillance. I actually see an issue in that students don’t realize that surveillance extends far beyond what you mention – for example, looking at social media profiles and other content posted online. Many universities and employers now openly acknowledge that they review the social media profiles of potential applicants.

Students seem to have little problem sharing things on social media so I have little sympathy for complaints about collecting data about their class attendance or using plagiarism detection software. In general, and again specifically for those who engage with social media, I think performativity has almost become a way of life for many students in ways that are different from pre-social-media generations.

SH, ME, & PJ: Six years ago, we discussed the McUniversity. The conclusion was, at the time, ‘the McUniversity lacks distinctive content in McDonaldised degrees. Yet George argues that at the face-to-face level professors can still make a difference even when they exist in structures operating against creativity.’ (Ritzer et al. 2018: 114) While we can probably agree that professors can still make a huge difference, we’re likely to also agree that the ways of making that difference have changed. What can you tell us about the changing role of the teacher in the context of new AI applications in education?

GR: Artificial intelligence can produce material (texts, music, etc.) that approximates that which is produced by human actors, but it is unlikely to create material that is the equal to that produced by human actors. For example, AI can produce ‘deepfakes’, but in the end, as good as they might be, they are still ‘fakes’ lacking the qualities of the human-made originals. They are therefore a type of nothing lacking in the somethingness that distinguishes human products. Such fakes are centrally controlled and lacking in the distinctive content of ‘originals’.

The contemporary university retains much of its basic somethingness, but it is increasingly moving in the direction of nothingness. Take, for example, the many cases where professors are losing control of what and how they teach. Instead, what and how professors teach is increasingly being dictated by university administrators and worse by government legislators. While generative language models can create innovative responses, it is still the models that are producing those responses. To the degree that these models are being used in education it is the models, not the students, who are producing the responses. Students can now use large language models and AIs, but they are still being controlled by the models.

MR: I actually don’t see that the role of professors in making change has been impacted by AI, at least not yet. As of yet, AI cannot bring personality or caring per se. And, speaking

from a personal standpoint, the professors that most impacted me were not the ones who knew the most, but the ones who cared the most. I think the role of educators as change makers in the lives of students is safe... for now.

SH, ME, & PJ: In the previous interview with Sarah and Petar, when asked about the trend of people being replaced with nonhuman technologies you said that, as an academic, you may be harder to replace than somebody who works on an assembly line. However, you added that ‘there are going to be ways to replace me soon by artificial intelligence’ (Ritzer et al. 2018: 116). Do you feel that AI is closer to replacing academics now? Is there any room for pushback against such replacing, and if so, where?

GR: We are undoubtedly seeing professors beginning to be replaced by AI, and further strides in that replacement can be expected as AI grows in sophistication. While an AI replacement might have as much (or more) knowledge than a given professor, it will lack the creativity to go beyond that knowledge base and innovate in the ways in which a knowledgeable professor would, or at least be able to. It is those professors who will have the capability to push back against the forces pushing AI.

AI is playing a role in replacing professors and it will grow in the coming years, but it cannot play the role in the university that it will play in most other settings. The somethingness that professors bring to their research and to their teaching can never be replaced by AI no matter how much more knowledge AI can bring to bear on teaching and research.

MR: For now, academics are increasingly replaced because the university itself is changing from a place of free thought and the pursuit of knowledge to a business, and one heavily impacted by politics. Many academics are already being replaced, by downsizing, increasing faculty-student ratios, distance learning, master classes on YouTube, etc., all tied to the corporatization of academia. Students are increasingly treated as customers and professors are increasingly treated as assembly line workers. And while not necessarily being replaced by machines (yet), machines are allowing some of us to take the jobs of many others (distance learning, etc). With today’s technology, why take a class from a random professor in person when you can take one from someone like Noam Chomsky online? Sure you lose interaction, but that is an increasingly common condition in a world of social media where people live by screens (and likes).

The McUniversity

SH, ME, & PJ: These days, Large Language Models (LLMs) (championed by ChatGPT) have brought about yet another challenge that may – but also may not – contribute to further McDonaldization of the university (Hayes and Wynyard, 2002, Hayes, 2017). What are your thoughts on the use of LLMs and AIs in the context of education?

MR: Quite simple - they should absolutely not be allowed! Artificial intelligence is, by definition, artificial, and while that might have practical uses in many fields, it should have no role in education. We are indeed at a tipping point where computers are teaching, aka programming, us instead of us programming computers. The Matrix is the new 1984.

SH, ME, & PJ: With regards to the continuum of ‘something’ to ‘nothing’ you developed in *The Globalization of Nothing* (Ritzer 2004), do you feel that universities are increasingly characterized by that which is ‘nothing’ and are moving towards the ‘nothing’ end of the continuum?

GR: The ideas of *something* and *nothing*, as well as the continuum with those concepts as poles, relate well to AI (Ritzer 2004). Something is defined as ‘a social form that is generally indigenously conceived, controlled and comparatively rich in distinctive content’ (Ritzer 2004: 7), while nothing is defined ‘as a social form that is generally centrally conceived, controlled, and comparatively devoid of distinctive content’ (Ritzer 2004: 3). In these terms, as important as it is, AI is clearly an example of nothing.

MR: Yes, absolutely. Like everything else in society, and particularly as they have become increasingly corporatized and politicized. And it's not just universities, but also professors and students. Professors are increasingly required to use standardized syllabi, focus on citation counts and journal rankings, and to be evaluated by quantitative course evaluations. Students are increasingly pressured to focus on scores, GPA's, and rankings. I think as many of today's students have grown up in a world of nothing, they have also come to expect it. The great threat of the spread of nothingness is that it will come to be seen as something and that is what I think is happening with a lot of students' expectations of education today.

In order for universities to become 'something' again, they need to return to their academic roots, be run and operated by academics, and return to a sense of security (tenure, itself designed to allow for freedom of academic expression, has all but disappeared in many institutions), democracy, and the embrace of science (which has, not coincidentally, also come under attack alongside educational institutions in recent years).

SH, ME, & PJ: Teachers, amongst many others, are (or at least should be) public intellectuals, and AIs dramatically change public mediascapes. Can you please elaborate on the transforming role of the public intellectual?

GR: In this context it is much harder for public intellectuals to be truly innovative. Like everyone else they are controlled, at least to some degree, by LLMs and AIs. However, they may be more aware of the dangers (and inaccuracies) within these systems. This awareness should allow them to make more thoughtful and accurate public statements.

MR: I believe that educators should share knowledge in a way that is accessible to the public, aka be public intellectuals in a way, but that is not a requirement of the job. Nor is it necessarily something that should be. Many people are talented educators but not necessarily public intellectuals.

I don't see the role of the public intellectual being changed, at least on the front stage. In the backstage it does seem that many intellectuals, including public ones, are increasingly likely, unfortunately, to rely on AI to get their information, presentations, and 'contributions'. In other words, I don't see AI replacing public intellectuals per se, but I do see it contributing to their contributions.

Postdigital Citizen Science

SH, ME, & PJ: We are currently inviting scholars from all fields to share their ideas on citizen science in postdigital society (see Jandrić et al. 2023). Our article tries to reframe the traditional role of citizen scientists from 'data gatherers' to active participants at all stages of research, and, citing from one of our calls for papers, 'it is our intent to position the voices of citizen scientists as on par with professional scientists'. What are the main issues pertaining to our approach?

MR: I am deeply opposed to putting citizen scientists on a par with professional scientists. And I can only assume that you meant social scientists here? There is a problem that everyone thinks they are a social scientist. They are not. In the same way that not everyone is a physical scientist. One might be comfortable putting a citizen social scientist on par with a professional one, but would they feel the same about a citizen architect? Or someone doling out their medications? Or testing their food for safety? Or building bridges? Putting citizen scientists on par with professional scientists could be interpreted as demeaning to the extensive training and dedication that social scientists are required to put in in order to be considered professionals. This is not to be elitist, not in the least, but it is to recognize that professional social scientists deserve the same elevated recognition of expertise as medical professionals, lawyers, and rocket scientists. Democratizing knowledge is good, but democratizing recognition of 'expertise' is not. And a professional scientist, by definition, should be an expert.

I think perhaps the clearest examples of the danger of elevating citizen scientists to the level of professional scientists can be seen with examples related to the Covid-19 pandemic. With the onset of the pandemic, and with the aid of social media influence, suddenly non-scientists were spouting, refuting, and inventing (conspiracy) theories that had, quite literally, life and death impacts. Unfortunately, many of those non-scientists had larger platforms than many professional scientists.

SH, ME, & PJ: Citing again from our concept paper, ‘we invite everyone who identifies as a researcher, human and non-human, employed or not, to join us in an exploration of postdigital citizen science and its role in building the world we would like to live in’. What do you make of this invitation?

MR: I am opposed, and honestly quite frightened, by inviting non-human whatevers to contribute to thinking about anything related to the social or citizenship. Technology should not have any ‘self-determined’ input into how the future of our species will unfold. Technology should be a tool, not a colleague, not a companion, and certainly not an equal.

I am also not sure what to make of ‘identifying’ as a researcher. Trump can identify as a researcher but it doesn’t mean that he is one. As for employed or not, on that note I actually very much appreciate the inclusion of those without current employment. Employment does not, or at least should not, equal legitimacy or intellect.

Open Questions

SH, ME, & PJ: Time to wrap up... Which open questions have remained; where should we direct our future research efforts?

GR: Artificial intelligence is, well, artificial. As such, can it ever approximate or surpass natural (*not* artificial) intelligence? Can anything artificial ever match, much less exceed, that which is natural? This may be an unanswerable question, or it may be answered in the future. Even so, it is one that is worth raising at this point. As a more theoretical question, it cannot be resolved, at least for now, empirically, but only theoretically.

Much of the fear associated with AI is that it *can* match (or even exceed) natural intelligence, and when it does, we can lose control of it and it can come to control us. We are still a long way from the equality of artificial and natural intelligence and the nightmare associated with that equality, let alone the more fearsome possibilities that might arise if and when artificial intelligence surpasses natural intelligence. Among the fears are the creation of autonomous weapons and, more generally, autonomous computer programs such as Hal in *2001: A Space Odyssey* (Kubrick 1968).

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