

EVERYDAY AUTOMATION

Setting a research agenda

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Everyday life is increasingly automated with the use of new and emerging digital technologies and systems. Discussion of these automated technologies is often shrouded with narratives which highlight extreme and spectacular examples, rather than the ordinary mundane realities that characterise the overwhelming majority of people's actual encounters with them. When we hear about the practical effects of automation in society, it is usually for one of two corresponding reasons. The first relates to when automated systems go disastrously wrong and receive high levels of public attention. Recent examples include the Australian 'Robodebt' scandal,¹ where an automated system wrongly issued debt notices to vulnerable welfare applicants, and the UK school leavers' exam grading fiasco,² where students were sent algorithmically estimated exam grades much lower than those expected. The second reason that automated technologies receive high levels of publicity or promotion is when they have saved, or are predicted to save, lives: for instance, through accident prevention, medical and pharmaceutical interventions or in humanitarian domains.³

In contrast, experiences and processes of automation as part of quotidian routines in our everyday lives in our homes, transport, at work and in education have slipped under the radar of much popular and academic attention. *Everyday Automation* brings this domain of our lives into focus through its attention to the mundane. It asks: How, where and when are automated systems and technologies operating and emerging in everyday life across different global regions? What is their likely impact in the present and future? How do engineers, policy makers, industry stakeholders and designers envisage automation as a solution to individual and societal problems? How do these future visions compare with the everyday realities, power relations and social inequalities for which automated systems and technologies are planned? What do people know about automation? And what are their experiences of engaging with 'actually existing' automated technologies?

The contributors to this book discuss these questions in relation to two overlapping manifestations of digitised automation: artificial intelligence (AI) and automated decision-making (ADM). These involve technical systems that are characterised by algorithms. However, all of these terms – AI, ADM and algorithms – escape single definitions and indeed are defined contextually by each contributor, as they discuss their manifestations in particular technologies and fields of practice. An algorithm is ‘an abstract, formalised description of a computational procedure’ in computer science (Dourish, 2016: 3) or is described more sociologically as instructions for carrying out tasks and solving problems, assembled by professionals and engineering teams (Burrell, 2016). Algorithms are not static; they are always situated, and, as Paul Dourish (2016: 2) puts it, they always ‘come to act within broader digital assemblages’.

Moreover, as emerging technologies, definitions of AI and ADM are likely to shift as their capabilities, imagined markets and possible applications change over time. There is no monolithic definition of AI: indeed, there has been a long trajectory of its discussion spanning back to the mid-20th century (Elliott, 2021: 5). The hype, hope and anxiety around the implications of automation in everyday life are commonly centred on the future of AI. Yet, in fact, the subset of automated technologies represented by ADM is already a part of our everyday worlds in both overt and silent ways that receive little attention in public forums. Deborah Lupton’s (2021) analysis of references to ADM in the mainstream Australian press from 1997 to 2021 revealed that this term was infrequently used in such outlets. While Lupton found some positive reports on the benefits of ADM technologies, they more often referred to scandals and failures of ADM and portrayed it as ‘untrustworthy’ or ‘inferior to human decision-making’. Indeed, as these concerns grow, researchers and advocacy organisations have become committed to calling out the uses, possibilities and the consequences associated with ADM. This has given rise to a current debate about ADM that covers a variety of technical tools and systems and a plethora of ADM definitions. Designers, legal scholars, policy makers, ethnographers and data scientists tend to rely on incompatible notions of ADM when they discuss the decision-making qualities and possibilities of new and emerging digital technologies.

There are now numerous research institutes, centres, groups and networks globally that focus on the design, development and critique of AI and ADM. We ourselves and many of the authors featured in this edited collection are leaders or members of these research groups.⁴ Their very existence and the often considerable levels of funding that have been granted for their establishment demonstrate that there is considerable public, corporate and government interest in and concern about the rise of the latest wave of digital technologies involving AI and ADM, their implications for our futures and how best to regulate them to forestall any harms.

The messiness of the ADM and AI fields might be seen as a problem, and one way forward involves engaging in a cross-disciplinary mapping of ADM and AI definitions to produce taxonomies and classifications for a shared vocabulary. Nevertheless, the cases presented in this book suggest an alternative approach: to depart from the techno-centricity of the debate and define what ADM and AI are contextually after having carefully explored what they do, with whom and to whom. This keeps the

focus on both the sorts of social and societal arrangements currently being built with algorithmic systems and technologies, and the kinds of problems they are seen to solve. Above all, in this book, we are interested in how emerging technologies such as AI and ADM participate, or are expected to participate, in cultural and social processes together with humans. *Everyday Automation* argues that to understand the possible present and future of digitised automation, we urgently need a people-focused approach, led by theoretical and methodological approaches of the humanities and social sciences, which acknowledges that people are involved at every stage of the design, delegation and implementation of automated systems and technologies.

Collectively, the contributors to this book demonstrate this by bringing together research developed across anthropology, sociology, media and communication studies and ethnology, which shows how by rehumanising automation – acknowledging the multiple roles that humans play in relation to automated systems and technologies – we can gain deeper understandings of both these technologies' societal impacts and the impacts human have on technologies. The contributors achieve these relational insights through close examinations of ADM and AI in medicine and public health, the smart energy industry, mobilities, marketing and advertising, administration, fashion, smart homes, platform labour, social services and service industries, education and the news media.

Rehumanising automation

AI and ADM systems, technologies and devices do not and cannot exist independently or autonomously from human thought, embodiment and action. They are always inextricable from humans; they are entangled within social relationships, cultural contexts and human-made infrastructures and institutions (Lupton, 2019). As social science and humanities scholars, we need to *rehumanise* automation. The task of rehumanising is not a new research endeavour, but it is an urgent one. With the spread of ADM and AI from media and health to urban planning, homes, work and education, computational procedures shape aspects of the everyday. Credit scoring, hiring practices, allocation of social benefits, social media engagement and healthcare diagnostics now take advantage of ADM and AI. Rehumanising is a starting point for exploring the complexities of AI and ADM systems by establishing the human as a critical and creative agent in sociotechnical transformations and human-machine relationships. A focus on rehumanising allows us to make visible the human discontents, forces and imaginaries in relation to AI and ADM systems as well as surfacing the possibilities generated by these enactments and assemblages.

Existing research reveals two poles that tend to narrow down the current debate. On the one side, industry imaginaries frequently represent automated technologies as complex yet seamless, offering almost magical solutions to problems (Elish and boyd, 2018; Mateescu and Elish, 2019; Dahlgren et al., 2020). On the other side, a counter-imaginary portrays data-driven automated decisions as cruel, inaccurate and reductionist (Lupton, 2021), suggesting technologies will soon make people redundant across a wide array of domains (Brennen et al., 2022; Köstler and Ossewaarde,

2021; Ouchchy et al., 2020). Other critics further position AI, ADM and related technologies as operating to dehumanise people by not properly acknowledging human differences, individual lived experiences, socioeconomic inequalities and cultural contexts in data-driven decision-making. According to this viewpoint, humans are rendered into collections of data points, with their individuality, feelings and embodiment rendered invisible in algorithmic processing that relies on generalisability and simplification of complexity (McQuillan, 2021). As McQuillan (2021: 70) points out: ‘There is nothing personal about the predictions of AI – at root, they are always some form of labelling in terms of “people/objects like you”’.

Our emphasis on rehumanising automation is a response to the historically rooted and persistent dichotomised imaginaries of digitised automated devices and systems. We insist on the need to account for how humans are involved in AI and ADM systems and technologies at every stage of their design, development and implementation. These devices and systems involve the engineers and computer scientists who develop and design automated technologies and systems and the organisations that constitute their markets (Seaver, 2019). Supposedly, ‘automated’ services are regularly propped up by human workers behind the scenes (Mateescu and Elish, 2019). More recently, however, some industry discussion of the merits of the ‘AI-Human Hybrid Chatbot’⁵ has emerged, and research about older people’s experiences of smart home technologies has shown specifically that such devices are usefully combined with human support services (Pink, 2021; Strengers et al., 2021). There is, moreover, a massive academic research enterprise in the creation of AI and ADM, sustained by research funding and involving humans who determine research policy and priorities, frame funding calls, review funding applications and award funds.

All the human decisions that are made in these environments inflect the ways that AI and ADM proceed as part of our lives. Yet the emphasis in existing media coverage, research and industry or advocacy reports often focuses on what automation *does to people* (see Dahlgren et al., 2020; Lupton, 2021), rather than on what *people do with automation*.

Beyond regulatory ethical frameworks

The current problem is not that there is no concern about people in existing research and policy regarding AI and ADM but that this work usually fails to engage with people in their everyday worlds. In fact, considerable debate and critique – some of which we and the contributors to this edited volume have participated in – exist about questions of ‘Automating Society’⁶ and ‘The Algorithmic Society’.⁷ Yet much research and strategy directed towards bringing these technologies into society is still seen as being dependent on their ethics, governance and regulation, as if once these issues were sorted out, then they would be able to effectively function in society as semi-autonomous agents. Ongoing developments have created a situation where societally shared values, ranging from trust and solidarity to autonomy and equality, can become compromised with the implementation of new digital infrastructures (Sharon, 2018; Prainsack and Van Hoyweghen,

2020). However, the questions related to values are typically treated narrowly or at a high-theory level, without closely paying attention to what goes on in society: what people actually do and think.

These developments have energised legal, regulatory and ethical approaches, promoting new governance frameworks and debates around privacy, fairness and ethics (Marelli et al., 2020). The recent proposal for harmonised rules on AI in the EU (European Commission, 2021) is an example of a regulatory attempt to navigate the negative societal consequences and potential socioeconomic benefits of ADM systems. In all these well-meaning initiatives, everyday lives remain at best a curious sidenote or at worst ignored altogether.

The ethics associated with automated systems and technologies foregrounded in much of the existing academic literature also frequently diverts attention away from the ethics implied by the situatedness of AI and ADM in the everyday. Instead, dominant approaches have tended to treat the everyday as a landing site upon which these emerging technologies will make an impact. These approaches have consequently argued that AI and ADM technologies must be designed and regulated to make them ethical (on terms defined by experts) prior to being allowed to make an impact on people. For example, prominent legal and science and technology studies (STS) scholars (e.g. Jasanoff, 2016) and ethicists (e.g. Floridi, 2019) have tended to assert that the problem is that AI and other emerging technologies such as ADM and machine learning are being developed first, with regulation, governance and ethics applied as an afterthought, whereas ethics really needs to be considered at the outset. They are right that ethics must be prioritised. But such arguments still do not fully account for people, in that they put regulatory and ethical frameworks before considering the actual practical experiential and social and political encounters, meanings and implications that emerging technologies might have in diverse everyday worlds. They take ethics out of the everyday rather than engaging with it in the everyday.

New governance initiatives, organised around fairness, accountability and transparency are of course important, but they can leave a lot to be desired from the perspectives of the social sciences and humanities if they ignore decades of social scientific research, employing off the shelf, normative or philosophical understandings of values and ethics. Much of the current literature on fairness and trust in fields like human–computer interaction, for instance, locates values within algorithmic operations (fairness as a statistical property of models), ignoring the differing ways that values might be understood in the larger contexts in which algorithmic systems are embedded (Lanzeni and Pink, 2021). To truly promote ethically sustainable automation, approaches are needed which account for values and ethics as emergent and relational, responding to various circumstances of life.

We argue that, instead, for ethics to come first, people need to come first, since ethics and values cannot and should not be separated from people and their everyday lives. In her chapter, Sarah Pink discusses how ethics and trust in AI and ADM have become bound up in industry and government frameworks which treat them as commodities which can be extracted from faceless publics and invested in machines. It is assumed that these machines will subsequently be considered ethical

and that people will then invest their trust in them. Pink proposes that a recourse to anthropologies of ethics and trust, which locate both as continually changing everyday feelings, is needed to reorient work on AI and ADM ethics as an interdisciplinary field which accounts for the social sciences.

In business circles, a quest to anticipate and guide industry and policy makers through automated futures has become a key theme in the work of the consultancies and technology companies. A review of technology and energy industry reports on automated home technologies revealed that these reports rarely attend to the complexities of everyday life, relationships or experiences (Dahlgren et al., 2020; Strengers et al., 2022), but the question of how to better design for ethical, fair, accountable, transparent or unbiased automation is frequently raised. Moreover, frameworks for responsible and ethical AI abound. A 2019 review study ‘identified 84 documents containing ethical principles or guidelines for AI’ (Jobin et al., 2019) from a mix of industry, government and consultancy sources. Yet these frameworks are rarely underpinned by deep understandings of the diverse people in whose everyday lives, relationships and experiences automation is having varied uses and meanings. In fact, such people are not usually considered as active participants in the ethical AI futures that ethics frameworks prescribe.

Ethical considerations of the design or deployment of emerging technologies also often fail to recognise the effects of major social transformations or challenges and how ethical evaluations may change in response. The COVID-19 pandemic is one such global transformation, throwing societies around the world into disarray as they faced not only a health crisis but also serious socioeconomic upheavals. In her chapter, Deborah Lupton shows how during the pandemic, in the name of crisis management, the promissory narratives and practices around the rollout of automated technologies for monitoring and control of the novel coronavirus precluded acknowledgement of the diverse everyday circumstances and inequalities that they sometimes exacerbated. In this case, discussions of ethics were located elsewhere, outside the realm of the everyday. The demands of the crisis trumped considerations of the ethics of managing people’s movements and limiting their freedoms with the use of digital devices and software. Together with other restrictions and surveillance imposed by governments and health authorities, people were expected to accept greater personal surveillance and limits on their movements enforced by novel technologies as the trade-off for protecting their own health and that of the body politic. The ethical implications of these restrictions and monitoring systems were rarely openly discussed or debated, with the social licence for their imposition assumed to be upheld by the state of crisis. Lupton’s analysis, therefore, highlights the relative, situated and arbitrary nature of ethical considerations of emerging technologies: a perspective that contrasts with the normative, fixed and generalised approach that is often articulated in the AI ethics literature.

One of the key limitations of the contemporary avalanche of technologically and governance-driven assumptions and arguments about the benefits and risks of automation to people, and how to achieve or mitigate them, is not simply that they are deceptive because they appear as if they were solutions to a problem. Rather, it

is that they represent singular interpretations and agendas. In fact, it is the inevitable incompleteness of these existing critiques and calls for ethics and regulation from the social sciences and humanities which illuminates the need for an interdisciplinary approach. Approaches that account for the inseparability of people, ethics and technology are increasingly being advanced, and this trend indicates that we need to account for ethics differently. This involves attending to a reality where humans as well as animals and other non-human species are inevitably co-implicated with AI and ADM systems and technologies. In this experienced reality, people and other species are situated beings, who inhabit continually changing environments. It is of no surprise that this complexity is usually not accounted for by the scholars, public bodies and industry stakeholders who are most concerned with regulation, policy and governance because understanding people in their complex habitats requires a different kind of expertise and sensibility.

Approaches to automation and ethics as expressed in more-than-human theory, decolonial theory and Indigenous and First Nations philosophies highlight that humans and objects are never separate from each other. Humans make digital technologies and digital data; digital technologies and data make humans in a continually co-evolving set of relationships (Lupton, 2019). As outlined in the ‘AI Decolonial Manifesto’ (2021) (so-named because of the plurality of viewpoints expressed therein), the language used to talk about AI and ethics is typically grounded in the perspectives and assumptions of men, whiteness and wealth. The ‘manifesto’ goes on to assert that ‘We reject the Western-normative language of “ethical” AI and suggestions of “inclusivity” that do not destabilise current patterns of dominant and address power asymmetries’. The authors argue that most current attempts to consider AI ethics are merely ‘tweaks’ that do little to properly address the fundamental power asymmetries that are currently structuring of and inherent in AI and related emerging technologies – and, indeed, often serve to ‘whitewash’ these inequities. Separating feeling and being from knowing, materialities from immaterialities, the social from the technical, is a common approach in Westernised, colonial perspectives on the ethics of AI and ADM (AI Decolonial Manifesto, 2021).

In this context, moves towards better regulation or eliminating bias from ADM technologies without recognising these broader dimensions and historically grounded contexts of human-technical relations and alternative forms of knowledge are merely papering over the cracks. A turn to the everyday forms part of a response to the relational and situating call of such decolonising narratives. It also in turn calls for closer engagement with the arguments of decolonising scholarship in the design for future studies of everyday automation. In our brief to rehumanise automation, we are interested in ADM that takes place in situated *practices* rather than in the abstract. We offer a grounded perspective on current algorithmic developments, staying close to actual empirical cases and people behind algorithms, what they do when they build, engage with, promote and evaluate algorithmic systems (Ruckenstein and Turunen, 2020). Such an intervention, from the everyday, is moreover needed to balance the way that ethics are conceived in approaches that seek to foreground ethics through regulation.

Situating the power of automation

When studying everyday automation, we need to take a stance in relation to the automation logic that relies on computational functions that standardise life processes to facilitate the appropriation of data, preferably for profit (Andrejevic, 2020). This logic works not only on a global scale but also internally on local populations in different parts of the world. The current global internet empires – the American companies such as Google, Facebook and Amazon along with their Chinese counterparts such as Baidu, Alibaba and Tencent – aim to capture everyday practices and translate them into quantifiable data, to be analysed and used for the generation of profit. Other actors, who control computational functions, include developers of digital platforms, data analytics companies and digital marketers, suggesting that an expanding range of professionals are taking advantage of automation and exploring its potentials. Given the informational asymmetries and economic forces, it is not surprising that ADM technologies are associated with grim and dystopian future predictions.

Critiques that are more specific point out how ADM favours some groups of people at the expense of others, or it is not accurate enough in its predictions. We are not arguing against the ideas that these powers are at play, but suggest that we need to push back on universalising tendencies and not treat power as if it were inseparable from the people who design, use and promote technologies. Critical data and algorithm studies of the global data extracting machinery and its effects become complicit in making and sustaining the very paradigms and logics that they critique, if they do not acknowledge the situatedness of processes of power. The critique reifies the data extracting capabilities of technologies, rather than querying how they operate or paying attention to ethnographic realities that question its argument. As such, it follows its own internal logic, which denies that there is any power in human creativity, or the everyday expertise of people across diverse situations. In these universalising and techno-determinist approaches, power is portrayed as operating from above, with linear effects leading to dystopian conclusions. For instance, Couldry and Meijas (2019: 5) portray the power of data colonialism as ‘the capitalization of human life without limit’.

The ordinary citizen is represented as passively in thrall to manipulation and exploitation of the proponents of the digital data economy. Yet, the automation logic is not the same everywhere – nor does it operate with the same kind of intensity on every occasion of use or every geographical location. People can and do resist – and, indeed, they may call for more customisation and personalisation (Lupton, 2019; Ruckenstein and Granroth, 2020) or even an expansion of datafication of their lives so that their needs are better met (Milan and Treré, 2020). If we believe that human life can be limitlessly captured with datafying technologies, we are giving far too much credit to technologies and far too little to the human agencies involved. In separating digital technologies from humans in a combative and oppositional relationship, this approach fails to recognise the idea that humans are always part of technologies, and vice versa.

In order to see what specifically is harmful and problematic in automation, we need to recognise which problematic practices are already in place, which are in the realm of possibility and which are merely techno-determinist responses. The cases that are discussed in this book feature local specificities, underlining that societies have their own power dynamics that shape processes of automation. For instance, with the social benefit systems the country has in place, the harm that was caused to vulnerable people by the Australian Robodebt disaster could not take place in Finland, at least for now. Thus, whereas the automation logic seeks universal effects, local developments suggest that they materialise and are responded to in remarkably different ways. When people and organisations work with concepts such as AI and ADM, they affirm them locally and pave the way for technologised futures. Yet, in these processes, these concepts also develop and transform and become sites of negotiation and tension. We need to understand such negotiations and account for the resilience and creativity of people in the everyday life circumstances where automation is encountered, to ensure that automation works for them and to account for the situatedness of the ethics and priorities through which this occurs.

It is precisely on the everyday always emergent ways of knowing and understanding that come about as people encounter technologies in everyday worlds that this book centres. If we ask what happens when we encounter and imagine automation *in* lived everyday environments, with living people and as part of actual lives, then new stories emerge. The contributors to this book take us into professional and everyday worlds to highlight the possibilities that actually emerge as AI and ADM become everyday realities.

Where is everyday automation?

Everyday automation is not necessarily always visible, noticeable or memorable. While industry reports may make regular reference to ADM (AlgorithmWatch, 2020), people's everyday experiences and discussions do not often bring ADM to the fore. A digital home assistant, for example, may not be recognised as an ADM technology by that name. Even the news media tend not to use the term 'automated decision-making' very often, while terms such as 'robotics' and 'AI' are very commonly employed (Lupton, 2021). And this is even more the case when conventional research about ADM technologies fails to investigate exactly how they do become visible, sensorially or affectively experienced in everyday life situations, relationships, places and processes. Industry perspectives often promote the convenience, ease and comfort that automation should bring to people's lives, as it is left to manage the everyday. Automation of mundane tasks, in ways which are promised to free up the time of the individual while benefiting institutions, organisations or society as a whole, has been found or has been imagined across the various sites of everyday life discussed by the contributors to this book.

In the home, dominant discourses see the backgrounding of automation as an advantage, whereby invisible automation can help people run busy lives in energy- and time-efficient ways. For example, in a 'set and forget' scenario, based on industry

assumptions about the future, where smart home technology manages otherwise boring everyday tasks and decisions, Strengers et al. (2022) portray visions of smart hot water and laundry systems which optimise energy use. In their contribution to this volume, Julia Velkova and colleagues discuss the example of smart thermostats designed to track and learn people's preferences and automatically regulate the temperatures of their homes while saving energy. Their case demonstrates how the ADM experiment is built to mediate the interests of residents, energy infrastructure providers and data-driven companies. Here, the ADM system consists of a plethora of relations that require careful balancing. Velkova and her colleagues describe how the ADM system creates new kinds of ties between users, data handling properties and company interests, but at the same time these relations remain hidden. This raises questions about the nature of the experiment at hand, and what all is being tested with it. New relations involved in the ADM system suggest material and societal reconfigurations that call for further engagement.

In their chapter, Tuukka Lehtiniemi and Minna Ruckenstein discuss another case of experimentation: an unusual data labour arrangement in which prisoners label Finnish language data for a local AI firm. In current research, data labour is often seen to accelerate precarity and inequality, but Lehtiniemi and Ruckenstein demonstrate that the Finnish prison data labour case is multifaceted in its aims. In demonstrating what is of value to the different parties involved in the organisational arrangements of AI training, they show how the prison data labour both work with and intervene in political-economic incentives and pressures, such as platformisation and automation. By doing so, the case calls for critical inquiry that is able to hold seemingly contradictory aspects of ADM together without resolving them into a totalising perspective that loses important differences and alternative paths and ends up seeing only techno-deterministic futures.

Domestic life is also increasingly a site of contradictory values that have to do with technologies. The chapters in this volume reveal persistent incompatibilities between humans and their technological companions, including digital assistants that are supposed to help people with everyday tasks. In Horst and Mohammad's contribution, we are presented with a study of how the Amazon Echo Look – a device that uses machine learning and AI to support people in deciding what to wear – invites a certain kind of human-machine interaction which helps people to make everyday choices. Drawing on an interview study with women in both the USA and Trinidad, these authors show how the device's built-in learning model did not allow for the kind of nuanced personalisation that fashion would require. In the chapter authored by Strengers and Kennedy, a similar, albeit more ubiquitous and well-known, domestic technology is discussed: the Amazon Alexa, a device that increasingly uses emotions as the basis of decision-making. Drawing on a variety of sources, the authors go beyond the emotional surface of Alexa to show how this technology is underpinned by a series of human decisions that affect how emotions are defined and categorised, how data are collected and what caring forms of interactions between people and machines should look like.

Automation in the workplace takes many forms in which humans are implicated in different ways. Collectively, the chapters in this book suggest that the more humans are acknowledged and involved in the processes and practices through which ADM and AI at work are acquired, applied and used, the more likely it is that they will become productive coworking technologies. Contributors reveal cases where the rationalising and personalising discourse that frame industry narratives about why and how to automate everyday workplace practices miss the point due to their failure to engage with either how work really fits into the everyday life of the very workers on whose lives they are seeking to make an impact.

In his chapter, Martin Berg discusses how industry ideas underpin the automation of the workplace by exploring two world-leading platforms for process automation. He shows that platforms of this kind require that work and work tasks are imagined and categorised as either creative, and thus meaningful, or repetitive, and thus meaningless and – according to companies in this sector, at least – borderline unworthy of human life. Since this way of framing work builds on a very narrow understanding of the realities of professional life, Berg shows how work automation companies market their products and services through stories that create an imaginary universe in which they make perfect sense.

Stine Lomborg's chapter also discusses how automated workplace monitoring software systems, designed externally to supposedly help workers and organisations, do not necessarily account for the realities of workers' lives, in this case drawing on the empirical example of how workers engaged with a technology for self-tracking at work. Lomborg reminds us how the role that self-tracking plays at the workplace depends on the employee's job description and the organisation in question. While technological solutions of everyday AI at work push for standardisation and optimisation aims, people also continue to shape and appropriate digital systems in the contexts where they operate.

The contribution by Magnus Bergquist and Bertil Rolandsson shows how in contrast to situations where automation has been applied in workplaces where it is intended to increase efficiency and output, amongst the healthcare practitioners who participated in their research, ADM was integrated by the healthcare professionals themselves. The result was a commitment to working with ADM in explorative ways that could support their work, amongst a group of professionals who saw themselves as experts who were involved in the design of automated technologies for the purposes they believed they were relevant.

In professional contexts, the experimentation and testing appear to be a key to whether people see ADM as coming from 'outside' of their workplaces, or whether it is something that they domesticate to solve problems that they are facing. Jakob Svensson's chapter examines algorithmic work in the Swedish 'Daily News' room to show how different professionals, including journalists, editors, marketing people and algorithm developers, negotiated their professional priorities through the algorithm: often at weekly in-person coffee meetings. Here, Svensson's ethnography leads to a critical engagement which overturns some of the techno-determinism of critical data studies. He shows in fact how the algorithm developers moderated the

journalists' search for solutions via the algorithm and effectively demonstrates the importance of situating any discussions of algorithmic power within the specificity of the relations and nature of power found in any given everyday context.

In contrast to the active professional involvement with ADM found in the studies discussed by Bergquist and Rolandsson and by Svensson, Neil Selwyn sets the scene for an educational context, where Australian teachers are bypassed in the implementation of technologies. Teachers become observers of how automation, in this case in the form of fairly useless facial recognition technology, is pushed to the classroom with erroneous and outdated assumptions about education and what schools might need. Here, technologies become harmful not because they automate but because they are coupled with a mindset that trivialises and instrumentalises everyday encounters at schools. Selwyn outlines the instrumentalisation as inevitable in the context of current educational policies. Yet his case also demonstrates that teachers are well aware of the ill-fitting nature of technology designs, opening possibilities for a careful analysis of which technologies teachers think might actually support educational aims. This would most likely be something much more sophisticated than the stand-alone technology developed for very narrow tasks presented in Selwyn's chapter, requiring the collaboration and co-evolving of teachers, students and technological possibilities.

Everyday mobilities are similarly framed by dominant narratives about how 'we' will travel in the future, which again neglect the realities of the everyday and do not attend to diversity or inclusivity. This includes, for instance, the proposed future scenarios of commuting, which Sarah Pink writes of in her chapter, where your electric car can be automatically wirelessly charged at opportune moments for the energy grid and seamlessly paid through trusted blockchain transactions. In their contribution, Vaike Fors and colleagues discuss the future of autonomous vehicles, envisaged as a solution to the (sometimes imaginary) 'first and last mile' problem of getting people between their homes, transport hubs and places of work. Yet again, these visions of futures have little to do with the ways in which people actually anticipate charging their electric vehicles in the future, or with how they prefer to experience the first and last miles of their commutes.

Knowing where everyday automation is and what it's doing is important for reasons of ethics and responsibility. This is urgent in the private sector and has also been demonstrated in the two public sector examples of the Australian Robodebt and UK GCSE exam grading scandals mentioned at the beginning of this introduction, where automation remains invisible until things break down. Here, uses of everyday automation apparently brought ease to the work-administering systems that are responsible for life-changing information for people living in poverty or the careers of young people. Would these systems have been thrown into the lime-light had they brought outcomes that centred the positive wellbeing, nurturing and sustenance of the people whose lives they intervened? Or put differently, had these systems already been visible, transparent and easily accessible and responsible to the people whose lives in which they were implicated, would they have been likely to go so badly wrong? This is a topic that Mark Andrejevic and colleagues discuss

in their contribution to this volume. Drawing on an analysis of advertisements on Facebook, they explore methods to produce knowledge about what is going on beyond the promises of platform customisation and individualisation. Methods of the kind they develop can be used to gain a better understanding of this realm and to support discussions about responsibility and accountability. We cannot afford to simply wait for cases of automation going wrong in order to critically deconstruct them. Rather, as the contributors to this book collectively demonstrate, we need to seek out how automation actually plays out across multiple and diverse everyday circumstances and to understand the complexities and contingencies of the dynamics through which it becomes part of life.

The anticipatory modes of everyday automation

There is much to learn from the recent examples of how AI and ADM technologies and systems are entering everyday life discussed by the contributors to this book and highlighted in the previous section. The debates surrounding automation not only are concerned with what is currently underway but also involve anticipatory modes and imaginaries, through which ADM and AI technologies are portrayed as being part of possible futures. There is a rich literature detailing what Sheila Jasanoff (2015) has called 'sociotechnical imaginaries', which in the case of emerging technologies invites us to deconstruct the narratives through which the promise of these technologies and their perceived implications for and impacts with and through the people who design, build and use them are constituted. Identifying and deconstructing dominant promissory narratives about automation invites us to respond through our ethnographic accounts of how automation is playing out in the present in 'actually existing' contexts of use. As mentioned earlier, such analyses make visible, contest and complicate the technologically determinist and solutionist visions of industry, policy and other institutions, while sometimes sustaining their myths in everyday discourses. The constitution of sociotechnical imaginaries is also by definition an anticipatory practice: it is always concerned with predicting or postulating possible futures.

Many of the empirical cases with which the contributors to this book have engaged are supported by the anticipatory stance. People buy into and anticipate and boost the promise of AI and ADM technologies, particularly when they can be seen to be fulfilling some of that promise: such as in the cases of diagnosing rare diseases, creating thermally soothing living spaces or freeing people of the tedious tasks at the office. Optimistic predictions or claims about how emerging technologies will improve 'our' futures are reinforced by speculations of how lives become more fulfilling as these technologies support an unprecedented convenience. A key approach here is to closely engage with cutting-edge technology developments to better understand how they position people in relation to technologies. For instance, the Finnish data activism initiative MyData, a technologically driven effort to rehumanise the digital environment by means of new data arrangements, seeks to promote 'human-centric' data arrangements (Lehtiniemi and Ruckenstein, 2019). Yet human centrality tends to translate into development aims by which humans are

efficiently tied to human–technology loops. While aiming to rehumanise, technology development has the tendency to reduce the human, as it expects humans to fit into certain prescribed machinic loops and standardised categories.

The pessimistic scenarios identified in some of this book’s chapters are fed by another kind of anticipatory stance. They treat algorithmic systems as external forces that threaten humans and even humanity itself. Here, as Lina Rahm and Anne Kaun’s chapter shows, it is also relevant to attend to history. Historically rooted future scenarios that materialise as enthusiasm and anxiety for technologies fail to account for the complex and contingent ways that humans experience, promote and practice future anticipations. Everyday modes of anticipation are characterised by much more nuanced anticipatory sentiments and visions characterised by hope, trust and ambivalence (Pink et al., 2018). These feelings may align with both optimistic and pessimistic narratives, but they also contaminate and contradict the much too clean and purified future visions that dominate industry and policy narratives (Dahlgren et al., 2020; Strengers et al., 2021).

What becomes clear when futures are considered from the social sciences is that imaginaries of sociotechnical futures are likely to be just as messy (Dourish and Bell, 2011), contingent (Bessire and Bond, 2014; Pink and Salazar, 2017) and uncertain (Akama et al., 2018) as those portrayed in the past (as Lina Rahm and Anne Kaun show in their chapter) or in the present. We cannot predetermine the future of automated technologies. However, by examining how they are bound up with the ways futures are imagined, predicted and planned for, as social researchers we can begin to consider how to respond to, critique and intervene in the narratives of future that are predominant. As this book reveals, AI and ADM are not static or simple concepts. Earlier in this introduction, we have pointed out that they are likely to shift and change over time. As such, while AI and ADM themselves are technical research fields, and practical technologies, they come into being in the world in the very technologies that are discussed in the different chapters of this book: in digital voice assistants, work planning and monitoring systems, workplace algorithms, self-driving cars, health and medical technologies, electric vehicle charging, temperature control systems and many more.

Moreover, emerging technologies such as AI and ADM serve as what Sarah Pink has elsewhere called ‘anticipatory infrastructures’ (Pink et al., 2022) through which to contemplate the future everyday technologies and applications that they make possible and, indeed, imaginable. Here, following the anthropological notion of infrastructures as themselves fluid and relational, while also enabling other things (Larkin, 2013), as infrastructures AI and ADM can be seen as anticipatory devices:

[I]n being the conveyers of possibility, infrastructures are not only about what might happen in the present, but because they have an inevitable association with the realm of possibility, they are also anticipatory structures, that is they are associated with what might happen next.

(Pink et al., 2022)

If we could not conceive of AI or ADM, then we would not be able to imagine the capabilities of the technologies that depend on them, such as those discussed by the contributors to this book: self-driving cars, digital home or workplace assistants, COVID surveillance devices or automated energy systems. We would also not be able to think of more distant mundane technologies, such as blockchain-enabled wireless electric car charging. Subsequently, as future AI and ADM capabilities are developed (and indeed newly define AI and ADM), new sociotechnical imaginaries will be built on them. Given the current state of play in scholarship about automated technologies, this will lead on to a new spate of critical responses to the futures they imply.

As the chapters of this book show, responding to existing sociotechnical imaginaries, as well as actual applications of ADM and AI from the everyday sites in which they are used or implicated, complicates their agendas. Such an approach can also be applied by casting everyday future imaginaries in relief with the sociotechnical visions of dominant narratives. However, the chapters also suggest another starting point, where the everyday is more than a site of response to the colonising tendencies of engineering and science, but a leading collaborator in shaping our present and futures. We return to this point as we define a strategy for future research to conclude this introduction.

A research agenda for everyday automation

The contributions to this book collectively show that everyday automation is a research field in its own right. Yet it is more than just that. It offers a key lesson in understanding automation from the ground up, from the sites where it really plays a role in people's lives and emerging futures. Viewing emerging technologies from any other perspective only touches the surface of their real harms and possibilities because it attends only to the kinds of sociological structures that obscure people and how they feel, imagine, hope and fear. As the examples discussed by the contributors to this book make clear, automated systems and technologies, informed by different intentionalities, manifest and are experienced and engaged with by people very differently in diverse everyday sites, which can be configured in relation to varying relations of power and societal structures.

A new research agenda that foregrounds everyday automation calls for innovative research methods and strategies. The examples discussed by the contributors in the following chapters unfold how in different ways, we might gain entry into the everyday sites where AI and ADM technologies are experienced and imagined. This involves critically immersing ourselves in and following the threads of dominant visions and imaginaries of automated futures; figuring out what ADM and AI are actually *doing* through analyses of, for instance, the ways that they make certain materials and options available to people as they navigate social media or automated energy systems, and how automation platform providers imagine the future of work. Our contributors discuss immersive ethnographic studies in the places where people are already living with AI and ADM; remote or distance digital ethnographies that enable access to the everyday digital routines and places of people which

would be complicated to participate in in-person and in-the-moment. Several chapters discuss the value of inhabiting sites of simulation and technology testing where imagined or possible futures are experimented with through speculative and interventional design ethnographies, and where, from an STS perspective, emerging technologies are seen as the experiment. Importantly, a number of the contributors to this volume compare the clean and optimistic future visions of ADM and AI proposed and predicted by industry, government and technology company stakeholders – revealed through analyses of their reports, websites, marketing, news reporting and other materials – with the fine-grained evidence of ethnographies of the appearance of automated technologies in everyday. The results consistently advise us that the situated mundane experience tells us very different stories about the possible futures of AI and ADM, which need to be listened to.

Focusing on what ADM and AI do and how this is made possible by humans, rather than what they are, or are supposed to be, suggests that in order to rehumanise the field, we need longitudinal and situational ADM and AI studies that offer more dynamic and processual views of sociotechnical developments. Historicising ADM and AI, as Lina Rahm and Anne Kaun's chapter shows us, allows us to discern continuity and change in their development over a longer temporal scale. It also enables us to understand the different cultural aims or governance regimes under which automated systems in different sectors and domains have developed and are developing. With a historical sensibility, we can witness the strengthening of existing infrastructures and early efforts to build new ones. This is one way to advance ADM and AI studies: to focus on the different infrastructural arrangements, including the stakeholders involved in the building of ADM and AI systems, and their present or future uses. This means conceptualising and researching in circumstances where ADM and AI are present, rather than analysing their supposed effects from the outside.

The notion of the experiment offers us a way to conceptualise the ways that emerging ADM and AI technologies are becoming part of everyday worlds. There is continuing experimentation with algorithmic systems, in fields from energy to mobility and health to security – both through testing and trialling and through their actual applications in both consumer markets and policy initiatives. This can be conceptualised as a societal experiment, simultaneously taking place in different parts of the world, in very different kinds of societies. We are participants in this global living lab whether we like it or not. Taking an all-knowing position in terms of what the results of this experiment – good or bad – will be has the effect of narrowing the perspective and locking out possibilities to engage with the many alternative futures that can still be crafted. Thus, we need to take a more open-ended stance to the reconfigurations of societies brought about by the testing and experimentation in order to avoid absenting ourselves from the futures being made.

To achieve these purposes, empirical analyses of actual cases are essential, as they can foreground who plans, designs, implements, uses and repairs automated systems and thereby rehumanise the study of automation. Alongside the design intent, attention should be paid to the changing nature of ADM and AI systems over time,

as these systems continue to develop with their implementations and uses. Many ADM and AI systems are ‘permanently beta’, meaning that they are never complete or finished products to be launched into predefined markets, but rather they are constantly in development. This indeed also creates an opportunity to extend the field of everyday automation research into considered interdisciplinary collaborations, which might shift the basis of how AI and ADM are manifested in everyday life technologies and imagined futures towards shared processes and visions that are attentive to the emerging worlds in which they are situated. Empirical everyday life studies enable us to clarify the debates that rage between the techno-optimists and pessimists who quarrel about the effects of AI or ADM. The prism of the everyday highlights how the legal, political and ethical tensions, struggles and consequences of automation actually play a role in people’s visions and practices. Immersion in the flow of everyday life brings to the fore the continually changing nature of human-experienced realities, emphasising that relations between people and AI and ADM are similarly always in flux.

To end, we reiterate that in order to renew the conversation, ADM and AI debates need to let go of two key assumptions that have underpinned existing critiques: first, the techno-centricity that treats ADM and AI as stand-alone products, innovations or solutions to existing infrastructural inefficiencies and gaps; second, the critical discourse that treats technologies as a ‘general’ threat and in doing so makes itself unintentionally complicit in the former narrative by endorsing its techno-determinist underpinnings. Instead, ADM and AI need to be treated as complex sociotechnical systems that develop over time and need ongoing stabilisation, repair and care of human-algorithm relations within the mundane everyday worlds of all the humans who are co-implicated with them.

Notes

- 1 <https://theconversation.com/robodebt-was-a-fiasco-with-a-cost-we-have-yet-to-fully-appreciate-150169>
- 2 <https://blogs.lse.ac.uk/impactofsocialsciences/2020/08/26/fk-the-algorithm-what-the-world-can-learn-from-the-uks-a-level-grading-fiasco/>
- 3 www.forbes.com/sites/serenitygibbons/2020/08/25/5-life-saving-applications-of-artificial-intelligence/?sh=59b9ea8b1c58
- 4 Sarah Pink, Deborah Lupton, Mark Andrejevic and Vaikke Fors are all members of the Australian Research Council Centre of Excellence for Automated Decision-Making & Society (grant ID CE2001000005) www.admscentre.org.au/; Martin Berg, Minna Ruckenstein, Deborah Lupton, Sarah Pink, Vaikke Fors, Magnus Bergquist, Bertil Rolandsson, Jakob Svensson, Julia Velkova and Rachel Charlotte Smith are all members of the Swedish Foundation Riksbankens Jubileumsfond’s (RJ) Re-humanising Automated Decision-Making Network <https://mau.se/forskning/projekt/re-humanising-automated-decision-making/>. Martin Berg and Jakob Svensson (and Sarah Pink as a member of the advisory board) are members of Malmö University’s strategic research program Data Society <http://mau.se/datasociety>. Minna Ruckenstein collaborates with Algorithm-Watch, and is a director of a Finnish Academy funded project on rehumanising ADM, with Martin Berg, Deborah Lupton and Sarah Pink as members of its advisory board.
- 5 <https://techsee.me/blog/customer-service-chatbot-human-hybrid/>
- 6 <https://automatingsociety.algorithmwatch.org/>

7 www.routledge.com/The-Algorithmic-Society-Technology-Power-and-Knowledge/Schuilenburg-Peeters/p/book/9780367204310

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