THE FUTURE OF WORK

HR WITHOUT PEOPLE?

Industrial Evolution in the Age of Automation, AI, and Machine Learning

Anthony R. Wheeler
M. Ronald Buckley

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The Future of Work

The future of work is a vital contemporary area of debate both in business and management research, and in wider social, political and economic discourse. Globally relevant issues, including the ageing workforce, rise of the gig economy, workplace automation and changing forms of business ownership, are all regularly the subject of discussion in both academic research and the mainstream media, having wider professional and public policy implications.

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INVESTOR IN PEOPLE

To my co-author, who has made a greater impact on my life than any other mentor

- Anthony R. Wheeler

To Marsha, Kathleen, and Christopher

- M. Ronald Buckley

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ABOUT THE AUTHORS

Anthony R. Wheeler is the Dean of the School of Business Administration and a Professor of Management at Widener University. His research focuses on employee turnover and retention, employee stress, burnout, engagement, and leadership. He has published in *Journal of Management, Journal of Applied Psychology, Journal of Organizational Behavior, Journal of Business Research, Work & Stress, Leadership Quarterly, Journal of Occupational and Health Psychology, International Journal of Selection and Assessment, Journal of Business Ethics,* and *Journal of Business Logistics*. He is a co-editor of *Research in Personnel and Human Resources Management* and has consulted for Fortune 500 companies, start-ups, and governments.

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PREFACE

Depending on the movie or book, the natural end point of artificial intelligence and machine learning is either the destruction of humankind at the hands of the machines or the general atrophy of the human body, mind, and spirit such that our bleary-eyed existence will be reduced to machine-assisted movement and a technology-enabled continuous stream of audio-visual entertainment to keep our brains occupied during waking hours. With the Internet of Things (IoT) linking every device, appliance, and machine, perhaps one day a self-aware network of appliances will conspire to rid their world of human threats while we do our laundry or reach for a cold beverage in our refrigerator – a scene ripped from *The Terminator* itself. Perhaps one day, humans will lounge all day in motorized personal chairs that carry us from our beds to breakfast to morning movie time to lunch and so forth such that we evolve into pure *id* biological masses that no longer resemble our now-distant *Homo sapiens* relatives – something the Disney-Pixar film *WALL-E* portrays. Or perhaps humans adapt and evolve to use technological advances to spur a new age of Renaissance where our creativity leads to breathtaking advancements in art, music, and literature that makes us more human than we have ever been.

Getting from where automation, artificial intelligence, and machine learning currently exists to whatever future might

exist for humans and machines will not be a simple straight-line narrative. How humans and machines evolve will change nearly every facet of human existence, including how we work – and the meaning of that work – and how work influences almost every organizing structure in the world today – companies, industries, government, societies. That span of organizing structures through the lens of human resources management is the purpose of this book. That is, automation, artificial intelligence, and machine learning will change how humans think about the role of work in their lives and how organizations – the force driving automation, artificial intelligence, and machine learning – will use their human resources management systems to influence the meaning of work, the role of jobs, and the sense of belonging that all humans derive from their work. This is the seminal reciprocal relationship between humans and work.

Yet these trends are not new. Societies became aware of automation during and in the aftermath of War Wars 1 and 2. During the 1980s, car manufacturers began to embrace the use of machines to automate portions of vehicle production. An IBM machine – dubbed Deep Blue – famously defeated world chess champion Gary Kasparov in 1997, signaling an advancement in artificial intelligence. At the turn of the twenty-first century, many economically advanced nations had entered into the *Knowledge Economy* where generating ideas and services created significantly more economic value than did making things. Terms like "human capital" emerged amid the *Knowledge Economy*, meaning that companies could leverage the cumulative knowledge, skills, and abilities of their employees to create, nurture, and sustain competitive advantages in their markets. In the *Knowledge Economy*, people mattered. Companies quickly realized that the old stereotype of human resources management as a back office, pushing papers, and only adding to a company's overhead

costs did not mesh with a globally competitive business environment. As outsourcing to lower labor cost countries became more expensive and was paired with advances in robotics, artificial intelligence, and machine learning, human capital disruption in labor markets – people – became inescapable. This is the inevitable result of the *Knowledge Economy* ceding to the reality of what some have called the "Fourth Industrial Revolution" – one that is based on automation, artificial intelligence, and machine learning.

Meanwhile, secondary, vocational or technical, and higher education have tried to keep pace with preparing students to enter a workforce that looks remarkably different from the workforce that their parents entered. Science, technology, engineering, and math – STEM – programs at the secondary/high school level have sprouted up all over the world, teaching children at younger ages new technological advances and applications. Vocational or technical training programs have heavily focused on computer and technology-based courses. Automotive mechanics work as much now with computer terminals as they do with wrenches. In higher education, "analytics" now pervades general education requirements at colleges and universities. Formerly art-based majors like graphic design now minor or double-major in marketing. Accounting programs regularly include analytics courses instead of additional tax or auditing courses.

In the United States alone, college and universities enroll over 250,000 accounting majors per year and graduate just under 80,000 students per year with bachelor and master degrees. This supply of students feeds 42,000 accounting firms, who combined employ 1.3 million accountants. An additional 300,00 certified public accountants (CPAs) work inside of corporations as opposed to public accounting firms. These figures do not include people in the workforce who do not hold CPAs or even accounting degrees but work in accounting-related jobs like bookkeepers, payroll clerks,

corporate financial analysts, staff accountants, or accountants working with non-profits or all levels of government. The broadest estimate in the United States of the number of people working within the field of accounting nears 11 million people.[1] Globally, that number soars by multiple factors.

Over the past decade, accounting firms across the globe have invested billions of dollars into automation, artificial intelligence, and machine learning technologies. While firms might have in the past outsourced entry-level tasks to low-cost overseas partners, the economics of outsourcing increasingly yield smaller cost savings when compared to what an algorithm or bot can accomplish with greater volume. Outsourcing labor still provides cost-competitive advantages in some industries, but in the accounting industry, it appears that outsourcing does not provide the same advantages. Advances in data analytics, computing power and data storage, and analytic technical skills of talented data scientists have created disruption in the field of accounting.

Over the next 20 years, 40% of basic accounting jobs will be automated. Technologies like blockchain, which automatically leaves an audit trail, change how auditing functions within firms and companies will operate. On the audit side, estimates suggest that fewer than 100 firms in the United States will be needed to handle all of the auditing work that is now done by thousands of firms.[2] Add in that many companies – some estimates suggest over 30%[3] – plan to outsource their financial functions, which includes mostly entry-level accounting job duties, within their units, and the field of accounting looks likely to significantly contract over the coming decades. At the macro level, this means that millions of accounting jobs within the US workforce will be displaced over a relatively short period of time. A classic supply and demand mismatch warily looms on the horizon. Institutions of higher education produce thousands of

graduates that head out into an industry known for high paying jobs and long careers as that industry morphs into a smaller, more analytic, more technologically driven industry. The accounting industry will be alive and financially well in the *Fourth Industrial Revolution*, but it will likely not employ nearly as many people as it now does.

These effects, of course, are not limited to the accounting industry. Artificial automation, intelligence, and machine learning will impact numerous industries. Across the entire US workforce, for instance, up to 73 million jobs – a full third of the US workforce – could be displaced by automation, artificial intelligence, and machine learning in the next 10 years.[4] Unlike previous industrial revolutions, the *Fourth Industrial Revolution* might not create new industries and jobs to replace those who are displaced. The question that this book tries to answer, in everyday business and not academic terms, is, how will the business field of human resources management – the people function – respond to these paradigm shifting changes and potential realities? We start by examining the importance of work for humans and societies that artificial intelligence, machine learning, and automation actively gainsay. We then explore how human resources management functions within businesses will adapt in the near-, mid-, and long term. Finally, we peer into a future of smaller full-time workforces where human resources management can be leveraged to potentially usher in a new Renaissance and what that might mean for people and societies. Obviously, no one can predict the future with exact certitude, but patterns and trends can be extrapolated. So, what happens to human resources management when there are no or fewer jobs? Let us start with the beginning and hopefully begin a discussion.

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THE EVOLUTION OF HUMANS AND THEIR WORK

Take a moment to think about who you are as a person. After saying your name, how do you describe yourself to others upon first introduction? Do you begin your description with a set of nouns that convey a set of relationships – are you a mother or father? Do you begin your description with a location – where are you from? Do you begin your description with words about belonging to groups, teams, or organizations – are you with these people; do you work for this company? Or do you often introduce yourself based upon what you do for work – are you a human resources management professional? Obviously, situations dictate to a certain extent how you will initially describe yourself, but chances are that you will refer to your work or for whom and with who you work when describing who you are as a person. Whether you like your work or your employer very much or not, your work is fundamental to who you are as a person. Our work not only gives us a sense of self and expression but also provides us with opportunities – opportunities to move, opportunities

to provide, opportunities for fulfillment, opportunities of relationships and love, opportunities of freedom. Or work can, similarly, restrict all of those opportunities.

Some might argue that work provides nothing more than a means to an end. With work comes money or remuneration. With money comes the ability to purchase goods or services that sustain life, such as food, shelter, and safety. With money comes the ability to live a life of status or esteem. That is, some argue that the money earned through work can satisfy both our needs and wants. However, work – one's own work – can be dissociated from money. Consider that some people never work a day in their lives for need of money because they have wealth from previous generations. Yet even those who have inherited wealth often choose to work or assume a vocation – derived from Latin to mean "a calling" – to not just occupy their time but also to find some sort of meaning in their lives.

Moreover, money itself holds differential meaning for people and even societies.[1] Before the advent of money, people engaged in barter – an exchange between goods or services that required a time-consuming and sometimes messy process of establishing comparative worth between exchanged goods or services – that rendered money largely irrelevant in most societies. Money, however, and the meaning ascribed to is still relative. In more individualistic societies, money increases the focus on personal goal attainment while money erodes communal behaviors in more collectivist societies. Simply stated, money disrupts cohesion and harmony between, with, and among people. People also vary in their attitudes toward money and the value they ascribe to money in terms of whether or not money is needed to live one's life the way one chooses to live that life. Inside of organizations, money is a known disruptor due to perceptions of equity or fairness in terms of how the organization distributes money in exchange for work. An employee can find perfect contentment in his or

her salary, which satisfies both that person's wants and needs. Yet when that employee learns that a coworker earns more money – for doing the same job or another job altogether – that employee will suddenly feel dissatisfaction with the employer, become frustrated with how the employer treats employees, and likely begin looking for a new job in another company. The simple knowledge that a coworker earns more money can radically alter not only how one views his or her employer but also how one assesses how much money is now needed to cover his or her wants and needs. To further demonstrate the relativity of money, try the following experiment. In your mind, think about how much money you need to earn to happily live your life. Put an actual figure on that amount of money. Now ask your friends, family members, and coworkers that same question and ask if they will tell you their figures. What you will likely find is that your monetary figure will increase upon hearing what others' monetary needs to live a happy life are.

Not that people naturally talk about their earnings in social settings. Typically, the work one does will convey the social meaning of affluence or status. More to the point, though, is that people seldom describe themselves in terms of how much money they make. Money might provide the means to whatever ends a person wants or needs, but money does not provide the sense of self or belonging that one's job provides.

It is important to understand the pairing of "sense of self and belonging" mentioned above, as it helps to further explain why work becomes integral to one's sense of self. Humans by nature and evolution are primarily social animals, something obfuscated by pop – and quite frankly, junk – psychology that virally spreads through social media and the Internet. Even an introvert, someone whose natural predisposition is to prefer one-on-one or small group conversations as opposed to the extrovert's predisposition to prefer large group settings, is a social creature.

Humans have a primary motivation to belong to groups that they feel are attractive and important. Belonging to a personally attractive group reflects favorably onto the individual. If a person belongs to an attractive group, it must mean that the individual is an important or good or attractive individual. This explains why companies with high brand identity receive not just more applicants for job openings but also significantly better applicants. Working for a highly recognizable company boosts the self-esteem of the employees who work for that company. It says something about who you are as a person to work for such a well-known and esteemed company.

Delving deeper into the psychological power of belonging to groups and how belonging to those groups alters your sense of self, consider what occurs to individuals when the groups they belong to come under attack or scrutiny. Let us assume you proudly work for a company that you feel is considered an industry leader. Your LinkedIn and other social media profiles display your work affiliation. You own company-branded apparel that you wear outside of work. Your company is a good company, and you are a good person. Unrelated to your actual job or even division, a public scandal hits your company. Word leaks and spreads quickly through the Internet and news media. Instead of reading or hearing about how great your company is, you now only hear negative things about your company. How do you feel about this? Do you proudly wear your company-branded apparel outside of work? Do you shy away from discussions about work with friends and family? You likely feel cognitive dissonance – you are a good person but you work for a scandalous company. You will feel the need to alleviate this dissonance. Will you leave the company? Or will you double-down on your affiliation with the company? It is still a good company that employed people who did wrong, but that does not mean the entire company is bad. It does not mean you are bad.

This type of process plays out every day in almost every facet of one's life. This social identity process explains why groups of people have fought wars against each other for reasons that in hindsight appear trivial. Yet, when one's group is attacked – even verbally – it feels as though you as an individual are attacked. In defending your group's honor, status, or physical well-being, you are in fact defending your honor, status, and well-being. The levels of this social identity process can scale from a small unit of a group or team to a company to an industry or profession to a society. We see this social identity process play out in rivalries between sports teams, which can lead to physical violence among followers. We see this social identity process play out in labor relations settings. We see this social identity process play out in national politics, as political polarization continues to spread across the globe.

In terms of work, humans often identify with what they do for work, with companies and industries to which they belong, and with the professions to which they belong. It starts with what we do and scales to larger groups as societies scale in complexity. Consider surnames that provide hereditary links to previous generations. The English surname Wright derives from wood working. The surname Fletcher derives from the French word for arrows used by archers. The Italian surname Bagni derives from someone who worked as a bathhouse attendant. The Spanish surname Cervantes derives from those who worked as servants. The Greek surname Bakirtzis derives from coppersmiths. The German surname Farber denotes someone who worked as a dyer. The Chinese surname Zhang is believed to have derived from bowmakers. All of these examples demonstrate how powerful the connection is between work and an individual's identity. It is so strong that for some people, their work is their name. Your family may have been one that constructed wheels (Wheeler) or were primarily herdsmen (Buckley).

Identifying people based on they work they do or the profession they belong to dates to the Middle Ages. During this feudal time period before the age of enlightenment, work was largely based around serving the needs, wants, and operation of a local royal's kingdom or principality. The local royal owned the lands, resources, and means of production of all people living in that kingdom or principality. An array of skilled trade jobs and professions proliferated in feudal economic systems: multiple types of smiths working with different metals to produce products or military armament, tanners and cobblers working with animal hides to produce garments and shoes, masons and carpenters working with materials to build structures, millers and bakers taking farmed grains and creating bread, and falconers and grooms working with animals. What one did for his or her work on behalf of the royalty was passed down from generation to generation, often through heredity and an apprenticeship vocational training system, and guilds to protect and oversee trades. If your father farmed the land to provide food for the royal's kingdom or principality, his surname – perhaps Farmer – would denote that occupation. The farmer's offspring inherited that surname and likely worked the land for generations to come. As the Enlightenment, Renaissance, and Industrial Revolution came, the work or profession of one's offspring might change, but the surnames continued to pass from generation to generation.

During the Middle Ages and clear through the Enlightenment, Renaissance, and Industrial Revolution, Western religions reinforced the link between work and one's self.[2] Protestant denominations interpreted parts of the Bible as meaning that one's work on Earth could lead to salvation in the afterlife. The phrase *Protestant Work Ethic* captures this linkage between work and one described self, albeit through the mechanism of religion. In order to be "saved" by their

god, one must work hard in his or her daily life. Hard work became a way to demonstrate that one is a good person. Work literally fused to an individual's identity and salvation to the afterlife.

This leads to the question, though, of the identification of work to one's self being a recent evolutionary outcome. In the recent history – roughly 200,000 years – of human biological and social evolution, did humans begin to identify work with their sense of self only over the past 1,000 years? Anthropological research points to a longer period of time. The evolutionary ancestors of modern humans – *Homo erectus* – began organizing in hunting and gathering groups, likely family-sized units, more than 1.8 million years ago.[3] Instead of a nomadic lifestyle that followed migratory patterns of food sources and seasonal weather patterns that affected both animals and plants, some hunting and gathering societies migrated to areas where resources could be hunted and gathered in a single geographic area. Specialized tools and hunting and gathering techniques were created to sustainably develop and exploit this type of environment Modern humans – *Homo sapiens* – specifically evolved as hunters and gatherers and refined the hunting and agriculture techniques that allowed for the development of larger, more complex societies. However, even in these older human societies, the roles of hunting or fishing and gathering or farming were divided among people – largely based on biological sex – within the family units or societies. Men tended to be the hunters, while women tended to be the gatherers. In these ancient family structures and societies, what one did – hunting or gathering – was part of who they were.

We see the multiple factors that embed and reinforce work as central to one's identity. Evolutionary, social, familial, and religious forces have shaped the centrality of work to humans. Several outcomes, of course, occur as a result of the

centrality of work to humans and an individual's identity. This gets to the heart of the meaning of work for anyone. How anyone describes themselves is complex, as any individual has a complex self. We occupy many roles in our lives. We have myriad interests and hobbies. We maintain dozens of relationships; some close and some distant. Some of these roles, interests, and relationships are more or less salient to us at any given point in time. Based on circumstances – perhaps a wedding or a funeral – your role as parent or sibling can become more important or active in how you describe yourself. Yet that active role can become less important as circumstances change. Perhaps when sitting in the stands and cheering as your favorite football team battles its primary rival in a crosstown derby, your identity as a parent or sibling matters very little at that time. What is important to understand about the saliency of roles, interests, and relationships to one's self is that not only are these roles, interests, and relationships associated with positive feelings and emotions, but also that the more roles, interests, and relationships that one identifies with, the more one is open to having parts of one's self exposed to potentially negative outcomes. That is, the more the things you identify with, the more those things are open to being threatened or attacked. Recall that humans derive their identities, in part, through groups with which they identify. Those associations make us feel good about who we are. If an association is threatened or attacked by an outsider to that association, the attack is personal as if it happened to us. Now think about multiple roles, interests, and relationships in that regard. The more we identify with, the more we are exposed to potential identity threats.

Fortunately, humans have adapted to cope with the complexities of how we self-identify and threats to self-identity. Back to the point of saliency, some roles, interests,