The Future of Meaningfulness in Work, Organizations, and Systems

Ruth Yeoman

When faced with global turbulence and system-level challenges, such as climate change, biodiversity collapse and violent extremism, claims that meaningfulness in life and work ought to be adopted into organizational design or public policy may be considered mistaken, self-indulgent, and overly optimistic. Even so, technological shifts and globalization are fuelling frustrations with the way we live, manifested in a rising sense of alienation - a loss of meaning and purpose in our lives that is strengthening populist tendencies and impacting health and well-being outcomes. Given the empirical connection between meaninglessness and ill-being, I argue that meaningfulness does matter for reasons of social justice, and increasing our collective capacity to create life value. This requires us to take seriously fears that the emerging human-machine world is unevenly distributing benefits and burdens, creating new vulnerable groups as well as reinforcing existing fault lines of inequality. I use technology as the 'keyhole' to examine the future of meaningfulness in work, organizations, and life. I show how meaningfulness itself – as a moral value and a subjective experience – may be evolving. This takes us beyond distributive proposals, such as regards a citizen's income, to an assessment of normatively desirable work, potentially arising from human-machine interactions, that is relational, ethical, complex, and power sharing. However, such work is likely to be created only when we develop inclusive institutions and organizations capable of mobilizing democratic power around anxieties that our lives lack value, dignity and meaning. This means paying attention to the moral and emotional experience of meaningfulness at an organizational and system level, as a necessary precondition for reconceiving citizenship and the nature of our contribution to social cooperation.[1]

I proceed by firstly, describing meaningfulness as a moral value in practical reasoning that is co-constructed by meaning-makers, and can be used in collective action to solve complex problems. This requires each person to be an equal co-authority in contributing to meaning-making, which is secured by a social architecture of democratic processes, institutions and diverse sources of meanings (Yeoman, 2020). Secondly, assessing ethical concerns of technology and the organization of work to which meaningfulness is relevant. Thirdly, proposing that everyone has access to real-time citizenship as a form of work embedded in organizational work-regimes. Fourthly, outlining the features of the organizational landscape

[1] This chapter includes material from Yeoman (2020). Reproduced by permission of the Taylor & Francis Group

needed to enrich, activate and disseminate the sources of meanings that enable people to craft new kinds of meaningful work.

Underpinning my account is the observation that technological civilization increases our dependence upon others, often distantly located and with whom we are indirectly connected in complex systems of collective action, such as globally extended supply chains. Connections of this kind provide for our needs, but they also increase our sense of vulnerability. This leads to heightened anxiety, and hence to demands that states decrease complexity, for example, by pursuing programmes of economic nationalism. To counter these tendencies, I argue that we take seriously the importance that people attach to life and work meaning. We can harness motivations stimulated by the need for meaning by applying the value of meaningfulness to the design of work processes involving human-machine interactions. I propose a concept of real-time citizenship where all those who are affected by an organization's activities have an entitlement to contribute to designing human-machine interactions (including interactions with big data and machine learning), and determining the framing rules governing those interactions. Finally, my account shares Dewey's (1917, p.9) view of pragmatic idealism in social progress, of which he says: 'We pride ourselves upon a practical idealism, a lively and easily moved faith in possibilities as yet unrealized, in willingness to make sacrifice for their realization.'

The value of meaningfulness in practical reasoning

The search for meaning is a fundamental human drive (Frankl, 2004). However, this dimension of human behaviour has been neglected in economics, politics, and social sciences (see Karlsson et al, 2004). Yet we know from psychological studies of meaning in life that meaningfulness matters to people, and research into meaningful work shows that people will strive to find meaning even in poor quality and precarious work (Yeoman, 2014). As a form of practical and moral reasoning, the search for personal meaning depends upon inter-subjective and relational processes through which people collectively construct sources of meanings and enabling institutions. To varying degrees, the relational conditions of collective action enable or disable the capability of people to craft and evaluate meanings, and to incorporate ethically desirable meanings into their lives and work.

Wallace (2019) has recently argued for a relational morality that addresses our contemporary condition as beings who are directly and indirectly connected to others through a shared world made up of complex, risk-prone systems. Wallace describes the moral dimensions of relationality using the idea of the moral nexus, or 'complex of directed

obligations and claims' (p. 97), by which we are connected to 'each of the persons who might potentially be affected by what we do' (p. 1). We affect the lives of people with whom we are indirectly connected through our participation in social processes that may produce injustices, such as exploitation of labour (see Young, 2011). When responding to these injustices, Wallace (2019) says that we need to adopt a conception of other people as equally real, and inhabiting lives that are just as important as our own. Seeing others as having lives that matter motivates efforts to distribute the resources people need to craft meaningful lives and work. Persson and Salvulescu (2012, p.110) argue that unequal access to the goods of meaningfulness means that 'some people's lives are often less meaningful than the lives of others through no fault or voluntary choice of their own. Under such conditions, it seems unfair or unjust that the former lead less meaningful lives than the latter'. The value of meaningfulness provides a reflective standpoint from which to evaluate social processes and structures that may adversely affect those lives. The poverty of meaning resources for some is particularly acute in technological and economic transitions. Given this, just transitioning involves duties to 'seek fair terms of cooperation' (Zwarthoed, 2017, p.253), including equal participation in creating and maintaining the sources of publicly available meanings that frame legitimate social cooperation. Meaning-making is therefore a public and not simply a private activity. This leads me to argue that equal access to public meaning-making may be facilitated by democratic practices, operating in a multi-level system of democracy through which people wrestle with meanings, bringing these to bear upon complex problem-solving in collective action.

Struggles over meanings, and the interaction between personal and public meanings, influence workers' prospects for crafting meaningful work. Van den Heuvel et al. (2009, p.510) define meaning-making as 'the ability to integrate challenging or ambiguous situations into a framework of personal meaning using conscious, value-based reflection'. In their examination of how sustainability professionals experience their work, Mitra and Buzzanell (2016, p.19) show that meaningfulness arises from a tension-centred process of everyday negotiation in meaning-making, based on 'circumstances and factors that were both enabling and constraining, stemming from a variety of organizational, professional and political structures' (see Yeoman, 2020, p. 88-89). Increasingly, these processes are mediated by new technologies, including artificial intelligence in machine learning and big data, collaborative human-machine interactions, and robotics. Meaning-making shapes technological innovation, dissemination, and adoption through which people grapple with the impact of technology upon the intersubjective experience of self, others, and objects, and the ways in which the socio-technical practices arising from these struggles shape identities and conceptions of living. With

this in mind, Pink and Lanzeni (2018, p.7) propose embedding an ethics of big data in emergent processes of everyday living as 'generative sites of meaning' that require moral evaluation and judgement. This is potentially a new kind of work, where real-time citizenship is instituted as a pathway for the meaning-making required to produce ethically-enabled technology. Such work of real-time citizenship involves practical reasoning, where people use meaningfulness as a moral value to judge how meanings influence the ways in which human-machine interactions are applied in work processes.

An ethic of care and the value of meaningfulness[2]

I adopt Susan Wolf's hybrid value of meaningfulness which unites objective valuation with subjective satisfaction, such that 'meaning arises when subjective attraction meets objective attractiveness' (Wolf, 2010, p.9). Wolf distinguishes meaningfulness from morality (duty) or happiness (feelings of goodness), where meaningfulness is 'a category of value that is not reducible to happiness or morality, and that is realized by loving objects worthy of love and engaging with them in a positive way' (Wolf, 2010, p.13). This accounts for the special ties we feel towards our 'ground projects', or projects which help us to answer the question 'what reasons do we have for living?' (Wolf, 2010, p.56). The significance for meaningfulness of ground projects comes from how they organize our values and frame our practical identities. Having ground projects provides us with the material for the narrative formation of our lives, directing us to the responsibilities we have to join with others to act appropriately towards the beings and things for the sake of which these projects exist. Thus, meaningfulness does not come from the aggregation of individual goods, but from long-lasting *appropriate orientations* towards particular objects, including persons, animals, or activities, where orientations may be judged to be appropriate when they point us towards the responsibilities we have to further the good for those objects.

Wolf is concerned with personal meaning and the focus of her attention is upon the individual. However, I take meaningfulness to be collectively construed from the materials of everyday living, and emerging at various levels of social organisation, such as families, communities, organisations, and states. To provide valuers with ethical tools for assessing different meaning-systems, I incorporate an ethic of care into the moral value of meaningfulness, arguing that valuers can use this as a standpoint for evaluating the meanings

[2] This section is adapted from Chapter Three in Yeoman (2020, p.83-85, 88-90).

they create through social processes (Yeoman, 2014a, 2014b). This is consistent with Frankl's proposal that meaningfulness becomes viable when we take up our responsibilities for the meaning-making needed to understand what we ought to do in given situations: 'Life ultimately means taking the responsibility to find the right answer to its problems and to fulfil the tasks which it constantly sets for each individual' (Frankl, 2004, p.85). By acting together on problems or objects of common concern, people create meaningfulness for themselves and others: 'These tasks, and therefore the meaning of life, differ from man to man, and from moment to moment' (Frankl, 2004, p.85). Through interactions between self and other beings and things, meanings are brought into view and re-interpreted, re-purposed, or rejected. We imbue meanings with moral significance when we apply the value of meaningfulness in practical reasoning regarding 'what we ought to do'. Schnell (2011) shows that life rich in meaning depends upon being able to access a diversity of meaning sources. She says that meaningfulness is created when a life contains a diversity of meaning sources, clustered across a density of meaning domains. Generativity is one of the most important meaning sources that enables people to integrate different kinds of meanings, where generativity is 'a concern for guiding, nurturing, and establishing the next generation through an act of care' (Schnell, 2011, p. 671). Incorporating care into the value of meaningfulness helps valuers to assess how integrations of meanings provides them with the understanding and knowledge they need to look after morally valuable beings and things. This involves valuers in meaning-making processes of reflecting, evaluating and judging that operate in the interaction between personal and public meanings, and through which valuers bring together the objective and subjective dimensions of meaningfulness. Axtell (2016) argues that objectivity cannot be captured by a 'single unified or 'core' meaning' (p. 7) and is characterized by 'irreducible complexity' (p. 8), whereby objects can be identified by and evaluated against different kinds of objective features that are manifested in varying combinations. Objectivity is a way of thinking about an object that constructs the object through 'objective world-talk' (p. 2), and makes the object of such talk part of our world. Objective world-talk talk depends upon sources of meanings being generated through democratic processes that encourage the production of diversity and difference (Yeoman, 2020).

With technological transition in mind, a democratically organized social architecture of meaning-making will attend to how people may be excluded or undermined in the meaning-making processes needed to co-create narratives of technology and work. This social architecture of meaningfulness includes: enjoyment of the equal status and capabilities required to be a valuer in meaning-making; access to and participation in interactive meaning-making

processes; immersion in action contexts constituted by diverse meaning-sources and democratic practices; and collective action structured by the goods of meaningfulness, which I identify as a minimum to be autonomy, freedom, and dignity (see Yeoman, 2014a). I have described these goods elsewhere as freedom as non-domination, autonomy as non-alienation, and dignity as being recognised as a particular person with a life of one's own to lead (see Yeoman, 2014b).

Technology and Loss of Meaning

The new A/IS (autonomous and intelligent systems) technologies of our invention, including big data, robotics, artificial intelligence, and genomic engineering (IEEE, 2018), make us uneasy. We fear that technologically-induced unemployment will strip our lives of value, meaning and dignity, leaving us with nothing to do which really matters, whilst living in an incomprehensible world that has escaped our control. Our anxiety is sharpened by the lack of justice in economic and technological transitions, which ratchets up the harms done to those 'left behind' by economic shocks. After the expansion of Chinese imports to the US (1990-2007), wages and labour force participation remained depressed and unemployment rates elevated for more than a decade, leading to poor health and social ill-being (Autor et al., 2013). Harms extend to what Case and Deaton (2017, p.398) call 'deaths of despair', where a loss of meaning in life renders people vulnerable to poor mental and physical health outcomes. If human work is eliminated, we fear this could become a universal experience, excepting those who own capital.

In the US and the UK, Bakhshi et al (2018) find that, as a consequence of investments in machine learning, one tenth of occupations are likely to grow, and one fifth are likely to decline, with high levels of uncertainty regarding the impact on seven out of ten occupations. Rather than substitution of human work by machines, complementarity between human and machine abilities may increase productivity and augment human capabilities. Within occupations, machines may substitute human skills, but enhance human contributions, such as judgement, creativity, and emotional intelligence. However, the extent to which machine learning, robotics, and AI in general is used to enhance human capabilities depends on the underlying work regimes that structure power, values, and the place of work in a good life. In the UK for example, since the 1990s there has been a decline of work practices that promote task discretion, autonomy, and voice (Bakhshi et al, 2018, p. 100). Work-regimes that lack organizational voice systems accelerate tendencies towards precarious and poor quality work.

This increases the risks that human-machine work poses to our humanity on two fronts: firstly, increasingly divided work stunts human expressiveness and capability formation; and secondly, divided work makes us vulnerable to being treated as bundles of behavioural assets from which 'our personal experiences are scraped and packaged as the means to others' ends' (Zuboff, 2019, p. 10). We are familiar with the harms of degradedwork from previous cycles of industrialization and mechanization. When instituted into work-regimes characterized by high levels of voicelessness, alienation, and lack of collective decision-making, technology undercuts human knowledge, skill and craft needed to form cognitive capabilities, including evaluation, judgment and decision-making, and even emotional capabilities, such as empathy and social connectedness.

Workers can experience datafication as a reduction of 'their performance and bodies, to lines of code and flows of data to be scrutinized and manipulated' (Manokha, 2019). Work of this kind can engender the experience of alienation from our own activity, and from the world we have made.Jaeggi (2014, p.12) says that such experience marked by meaninglessness, understood as the undermining of 'the ability meaningfully to *identify* with what one does and with those with whom one does it', and powerlessness, understood as 'the inability to exert *control* over what one does – that is, the inability to be, individually or collectively, the subject of one's actions'. Breaking connections between activity, meaning and control denies people the resources they need for what Zuboff (2019, p. 11) calls 'effective life', hindering their ability to create meaningfulness for themselves and others, and leading to frustrations that have political and social consequences.

But it is not inevitable that technology's present 'economic orientation' must aid extractive logics such as surveillance capitalism. For instance, Zuboff argues that technology should not be viewed as an end in itself, but as an economic means. Under optimistic scenarios, it is claimed that technology will relieve us from dirty, dull, and dangerous work (Dellott and Wallace-Stephens, 2017). By taking on routine codifiable tasks, machines will increase human activities requiring problem-solving, adaptability, learning, judgement, and emotional and social expressiveness (Autor, 2015). Whilst some occupations will decline, others requiring high levels of social skills and cognitive capacities will grow. Bakshi et al. (2018, p.21) show that nearly all US job growth since 1980 has been in occupations high in social skills that supply the 'tools for the rich and versatile coordination which supports a productive workplace'. In other words, we have choices regarding how we deploy values, technology and human capabilities in the organization of work. This makes harnessing new technologies to serve human capabilities a necessary element of just transitioning in contexts such as de-

industrialization. But given the penetration of machines into human activities, capturing technology for human capability formation is viable only if we invent new forms of work within a reconstituted associational life. I use a social architecture of public meaningfulness to outline the contours of a reconstituted associational life in order to re-imagine the connection between work and citizenship.

People burdened with precarious, poor quality work do not abandon the 'existential labour' needed for meaningfulness (Bailey et al., 2016), including forging vibrant connections to technology. By conceiving of technology as malleable and susceptible to values and purposes, people can use meaning-making to smuggle human resistances and aspirations into machine processes. In a BBC report on African workers generating training data for self-driving cars, Brenda, who lives in the slum of Kibera, said: 'You get to do something unique … With my work that I'm doing, I believe I'm working for something that is going to help someone in future' (Lee, 2018). Brenda's reflective meaning-making highlights a dynamic interaction between herself, data and technology. Indeed, ethically reflective meaning-making has the potential to intervene in machine processes which continue to be vulnerable and dependent upon human acts of concern, attention and improvisation. Pink et al. (2018, p.2) argue that the incomplete and fractured character of data generates meanings of data as lively, organic, entangled, and susceptible to 'breakage, decay and repair'. To be made and grown, data needs us to engage in processes of meaning-making where data must be 'narrated' to make it serviceable by individuals and communities (Dourish and Cruz, 2018). Narrating helps stabilize data temporarily for use and development, particularly when meaning-making is incorporated into political practices of 'data activism' (Kennedy, 2018), thereby bringing multiple perspectives to bear upon claims of justice and recognition with respect to accessing, interpreting, and developing data. Just transitioning for vulnerable communities requires inclusive engagement with technology and data in sites of public meaning-making that are alert to how 'matter and meaning are mutually articulated' (Barad, 2007, p.152). Citizenship can be made part of meaningful work and lives through a social architecture of public meaningfulness that operates at the organizational as well as societal levels. This social architecture proliferates the discursive spaces people need as workers and citizens to explore and negotiate the meanings they ascribe to technology, data and effective life (see Yeoman, 2020, p. 64-65).

Complexity, anxiety, and meaning-making

In organizations and work, public meanings are sourced from the culture and history of the organization, professional and occupational values, sector associations and trade unions. These provide resources for people to craft personal meaning-systems, narratives, and identities. However, the modern organization of work frequently undercuts workers' meaning-making capabilities, impoverishes their common-pool sources of positive meanings, and permits some to appropriate meaning-making for their own interests. The lack of voice at work regarding what meanings constitute narratives and ideologies – the cultural pathways by which technology is incorporated into work design – generates mistrust and fear that translates to wider concerns, including resistance to greater inter-connectedness. Runciman (2018, p. 113) describes the 'dread of interconnectedness' arising from our vulnerability to system-level failures that exceed our powers of control.. This includes how we are inter-related by 'a shared ecosystem, by complex chains of energy supply, by intertwined financial markets that move faster than human beings can think, by transport systems that run at the edge of full capacity all the time' (ibid, p. 114)). Sennett (2018, p.6) counters these fears by associating the 'virtues of complexity' with the capacity of open systems to generate enriched experiences of living together, as well as the freedom and power to initiate new social, political and economic formations. When connected to struggle, resistance and effort, complexity is developmental, fostering environments which are 'ever richer in meaning' (Sennett 2018, p.6).

A multi-level system of democracy activates capabilities for meaning-making when discursive practices are designed to proliferate meanings, and to make these accessible for crafting meaningful lives and work. Lives rich in sign meanings are also rich in life meaning, and where one lacks 'the interest, knowledge, or attention necessary to derive meanings from one's experiences, one is likely to feel estranged from the world' (Repp, 2018, p.413). Action contexts that secure our equal status as co-authorities in meaning-making are generative of ethically viable meanings and facilitate real-time citizenship as problem-solving. Arendt (1954, p.310) connects understanding and knowledge building to meaning generation: sign meanings translate understanding into knowledge through evaluative judgements that 'prepare a new resourcefulness of the human mind and heart'. However, systems such as surveillance capitalism have the ability to distort our capabilities to achieve understanding and knowledge of ourselves and the world in which we live, depriving us of the tools we need to act into the world.[3] They do so not just by using ideological formations to mould self-understandings, but also by undermining the search for meaning itself, whereby 'our quest for meaning is at the

[3] My thanks to the editors for making this point.

same time prompted and frustrated by our inability to originate meaning' (Arendt, 1954, p.313). When meanings are diminished, co-opted, and imposed, meaninglessness ensues, since '[w]ithout our meanings, all is silent and dead' (Hansen, 2004, p. 14; see Yeoman 2020: 41-42. I understand this to mean that people can find themselves deprived of access to the full range of meanings, and of the ability to make judgements between morally viable and unviable meanings. Therefore, it is not the technologies *per se* that constrain meaning, but rather specific social practices and systems, which we have allowed to exploit our mutual inter-dependence and shared vulnerabilities, and to open up democratic voids in our associational life.

Evolving meaningfulness – responsibility and lives of ethical care

Evolving meaningfulness is a human task that takes place in multiple domains of acting and being. Here, I am concerned with how organizational and system-level processes of meaning-making may activate latent meanings or generate new meanings that people can use as justifications in struggles to incorporate technology into new forms of work that are consistent with meaningfulness as a moral value. Méda links new work to the objective of 'ecological conversion' and a process of creating jobs without growth that secures fair transitioning 'by pooling the gains and losses and developing real solidarity among all the members of society involved, so that the cost of the transition should be equitably shared by everybody' (Méda, 2016, p.22). Such a shift of economic values demands that we concentrate upon the quality and durability of products, and not only the distribution of productivity gains. Duties of care requiring production to 'obligatorily *care for and care about* our natural heritage, social cohesiveness and human labour' (Méda, 2016, p.24) connects citizenship to mobilizing around caring for objects of common concern. In other words, new work must emerge from the multi-level, multi-stakeholder social cooperation needed to bring human, material, and technological resources to bear upon the creation, protection, and enhancement of life value, which Noonan (2012, p.8) describes as those facilities we need to 'maintain and develop life and its sentient, cognitive, imaginative and creative-practical capacities.'. Life value refers to what is needed to develop and maintain valuable beings and things, including their natural and artificial ecosystems. As embedded members of ecosystems made up of other beings and things, we may occupy different roles simultaneously, requiring us to consider a complex web of responsibilities, tensions, and values that may be incommensurable. For example, shifts towards circular and sustainable economies, enabled by new technology, may make being a consumer a form of work. Thus the category of work extends to include a range of activities

beyond paid employment, and indeedwork itself may become less central to what is considered to be a good life.

Caring for ensembles of beings and things is work that creates life value. To become skilled in the work of life value creation, we must learn to reframe complex problems, so that they are inclusive of multiple interests and contributions. This extends to deliberating together on *who* must be involved in bringing to light and interpreting the meanings implicated in complex problems. Dewey defines the public as the domain of 'all those who are affected by the indirect consequences of transactions to such an extent that it is deemed necessary to have those consequences systematically cared for' (Dewey, 1927, pp.15–6). Dewey makes public officials the responsible agents, but under conditions of complexity and hybridity the range and number of responsible agents is diversified beyond state officials to the many members of private, public, and civic organizations, as well as affected members of communities, NGOs, and voluntary associations. Hence, caring for consequences is not the sole responsibility of state agents but lies with all of us who, as workers and citizens, are simultaneously the deciders, producers, and users of the goods and services necessary for survival and flourishing. Expanding the circle of responsible agents mobilizes unexpected constituencies of meaning-makers; for example, as a consequence of the school strike movement, new alliances of businesses and activists are emerging in public spaces of protest and social change. Constituencies such as these are repositories of meanings. When harnessed into collective action structured by democratic process, and directed at the moral imperative to care for public things, these meanings can be excavated and made productive for innovation. By bringing the value of meaningfulness into practical reasoning regarding 'what we ought to do' to solve the complex problems of life value creation that confront us daily, we produce evaluations that challenge the narratives supporting current economic systems (Shiller, 2017). When using the value of meaningfulness in practical reasoning, people unearth morally viable meanings that they use to construct new norms and principles. For example, Chang (2016) argues that we are seeing the emergence of a strong sustainability norm for 'reciprocity-based corporate sustainability', which directs business, government, and social organizations to securing multiple environmental, social, and economic objectives. From a pragmatic idealist perspective, norm changes and related shifts in organizational and economic practices, such as the movement of capital towards sustainability objectives, combine already existing knowledge and practices with an expanded moral imagination of what human beings can be and do.

In a social architecture of public meaningfulness, an ethic of care provides a standpoint for evaluating meanings and assessing our responsibilities towards those beings and things that

we have incorporated into the meaningfulness of our lives. The widespread acceptance of a new sustainability norm based upon an ethic of care has the potential to generate new kinds of work and conceptions of living, and thereby stimulate pathways for people to craft meaningfulness. But to make living a life of ethical care a serviceable route to meaningfulness we need to bring to public prominence some undervalued and latent sources of meaning, including stewardship, repair, empathy, and love. An ethic of care also helps us to identify limits to meaningfulness. When we incorporate morally valuable persons or other valuable things into the meaningfulness of our lives, this does not mean we can do anything we like to them. Meaningfulness directs valuers toa concern for how well things are going for those valuable objects. Accepting responsibilities to look after valuable beings and things involves evaluating how well we are doing in these caring activities, which gives us important reasons for action. For Frankl, '[h]uman behaviour is really human to the extent to which it means acting into the world. This, in turn, implies being motivated by the world. In fact, the world toward which a human being transcends itself is a world replete with meanings that constitute reasons to act and full as well of other human beings to love' (Frankl, 1985, p.269).

This implies a particular kind of responsibility to seek out the problems that trouble the worlds we make and inhabit. The responsibility for identifying and framing problems, thereby rendering them actionable, entails a form of work and a mode of citizenship that necessarily harness technology and human capabilities. By exercising such capabilities, people convert formless complexity anxiety into knowable problems that are thereafter susceptible to resolution via plans, roles, organizations, policies, and practices. This is real-time citizenship that expands our categories of work and is realized through activities of social cooperation, taking place in the activities of everyday living. Real-time citizenship is instituted when workers participate in the co-design of work-processes, and in the co-determination of the framing rules governing human-machine interactions. Indeed, an entitlement to share in the determination of processes and framings that order the human-machine world extends beyond workers to the multiplicity of those who are affected by the activities of the organization. This generates a demand for contributive connections that expands the range of activities people can claim as work, and enriches the meaning-sources available for meaningful work.

The purpose of machines in new kinds of work

Jobs are the visible subset of a much larger pool of work. This includes the quantity of work that escapes formal organizing and comes into view only when it is recognized as a new source

of public or private value. This dark matter of invisible work creates, repairs, and sustains the human and natural world, and is a fertile source of the problem-solving capabilities we need to meet our responsibilities of care. New types of formal jobs are distilled from this dynamically evolving resource of work. Indeed, the future of meaningfulness itself, as a moral value and subjective experience, will depend upon our being able to actively and consciously craft this dark matter of work so that it generates new sources of positive meanings which we can claim as legitimate for incorporation into our work and lives. This new work includes the work of real-time citizenship; the work of caring for others and for the natural world; the work of repair and cooperation at multiple scales and in multiple domains; and the work upon the self – to develop and care for one's own human estate. Care extends even to caring for technology. Well ahead of technology becoming sentient or even merely autonomous, we ought to have forged emotional connections to technological entities, giving them presence in the human world through our meaning-making. We can see examples of this already. For instance, Southend-on-Sea's local council acquired a Pepper robot to help with community engagement and reminiscence activities for older people with dementia and memory loss. Before appearing in public, Pepper was programmed and socialized in the home of the Council's Equipment Manager, Phil Webster, and his 84 year old mother – of whom Webster reported 'she absolutely adores him' (Purvis, 2017). Such vignettes hint at the work needed to design and socialize machines to be part of the human world, and how our meaning-making brings life to new technologies.

I propose that the general purpose of machines is to help us act together to take care of the life-value of human and non-human beings, and the natural world. At first glance, this looks to be an impossibly radical proposal for the ethical purpose of new technologies, and the role they play in re-ordering our economic life. However, care and stewardship are becoming part of the corporate lexicon. For example, Royal Dutch Shell's 2018 sustainability report makes respecting human rights and caring for people part of their supplier policy.[4] Adopting a pragmatic idealism perspective, we can recognise the emergence of systemic shifts towards using technology to solve sustainability challenges, whilst acknowledging the difficulties of transforming whole systems at the scale and speed that is needed. To succeed, we must use of all our cultural and ethical, as well as technological and organizational, resources, including our desire for meaning in work and in life. Our under-valued need for meaning can motivate the design of just and workable transitions where technology is mediating factor in developing

[4] See Royal Dutch Shell 2018 Sustainability Report. https://reports.shell.com/sustainability-report/2018/

the capabilities we need to fulfil our responsibilities to care for worthy or valuable objects. The IEEE Global Initiative on Ethics of Autonomous and Intelligent Systems (A/IS) proposes that an ethical purpose for machines can be achieved through ethically informed 'value-based design methodologies' and 'the recognition that machines should serve humans and not the other way around' (IEEE, 2018, p.8). I expand this perspective to include the care and flourishing of all kinds of valuable beings and things, orchestrated within a multi-level system of democracy. In light of that, I advance the following statement of ethical intent:

> Machines must be designed to help us enhance our ethical, relational, and specialist capabilities so that we are equipped to identify, frame, and respond to complex moral and practical problems in the human and natural world. The moral object of complex capabilities, afforded by human-machine interactions and learning, is to enable us to fulfil our responsibilities to take care of ourselves, persons, animals, ecosystems, and other valuable entities. By looking after what really matters, or what has genuine moral and ethical value, we create meaningfulness in our work and lives. To realize our equal need for meaningfulness, each person is entitled to access activities structured by the goods of meaningfulness (freedom, autonomy, and dignity), and to forge contributive connections to associations (preferably democratically organized) directed to the production of life value.

'Looking after' includes all manner of ethically oriented activities which we undertake jointly or individually. New kinds of work must have a core emphasis upon building morally valuable relationships between intelligent and feeling beings who contribute to building the human and natural world. Specifically, this work should include ethical, relational, voice, and complexity work. *Ethical work* translates moral values into practices; *relational work* orchestrates joint efforts by building trusting, mutually inter-dependent relationships; *voice work* involves all sharing in decision-making power; and *complexity work* uses knowledge and technology to generate innovations in operating practices (Yeoman, 2018).

Associational variety and contributive connection

Realizing the ethical purpose of new technologies requires not only technological innovation, but also an associational revolution (see Smith's (2017) review of the expansion of voluntary associations during the industrial revolution). Keohane and Victor (2011) characterize as a Cambrian explosion the bottom-up initiatives and transnational institutions that constitute the

governance system of an emerging sustainability regime. This associational revolution multiplies the variety of organizational forms, stimulates contributive connections, and reconfigures our organizational estate as an interdependent ecosystem of multi-stakeholder, open-source organizations. These open-source organizations can be distinguished from what Watkins and Stark (2018) call 'the möbius organizational form', or boundary-less organizations that extract and consume public, private, and civic assets from their environment, including knowledge, information, and data. With this in mind, the direction of openness needs to be reversed. Rather than organizations demanding the society opens up to their extraction of resources,, organizations make themselves open to the influence of citizens. This constitutes a type of open-source publicness, where *open-source* refers to the availability of the organization to those who have an interest in its activities, and *publicness* refers to how the means and ends of the organization include and impact valuable beings and things Organizational development pathways that are high in publicness include organizational forms such as platform cooperatives, social enterprises, or multi-constituency mutuals.[5] Integrating these organizations into collaborative governance systems enhances the prospects for making life value creation the target of organizational activity. Associational life can be augmented by inclusive meaning-making when organizations are prompted to recognize how they are made and maintained by many interested parties. An entitlement to contributive connection can be translated into membership options ranging from full responsible member, with decision-making rights and obligations, to observer-advisor status. Multiplying the ways in which people can contribute to the organizations that affect their lives, and which are focussed upon life value creation, addresses their interest in having something serious to do that matters (see Yeoman, 2020, p. 208)).

Real-Time Citizenship and Problem-Solving

I propose to re-imagine new technologies as enablers of real-time citizenship that has problem-solving as its target, and help us fulfil our responsibilities to care for valuable objects. Civic, public, and private organizations must collaborate at a system-level, if they are to bring ethically-enabled technology to bear upon complex challenges. These associational ecosystems

[5] Ethically enabled technologies should help us transition to ecological societies, and the production of life value. Organisations that do not contribute to life value should not be afforded a social license to trade. All organisations (public, private and civic) have a part to play in creating life value.

require real-time citizenship, as a way of conceiving the contributions of diverse, multiple participants who are related, but also separated, by culture, power, and distance (see Yeoman and Mueller Santos, 2019). Bringing people into collective action as co-designers of work processes and co-legislators of framing rules counters the unequal impacts of technological transition. To accelerate change at scale, an associational revolution needs to connect informal social movements and economic alternatives with sympathetic interests *already* present in formal organizations, whether these are shareholder, private equity, family, co-owned, public, charitable, or civic. Clegg et al. (2006, p.389) argue that power structures may be challenged by an 'insurgent consciousness within the professional niches of the corporation', generated amongst managers and workers in alliance with new types of professional groups situated inside and outside the organization. As state power acting alone proves insufficient for solving complex problems, we are called upon to make our contributions not only as citizens, but also as specialists, professionals, workers, family and community members, volunteers, investors, and organizational leaders. Many people work inter-organizationally in boundary-crossing roles, including cross-sector partnerships or multi-stakeholder initiatives (MSIs), for example the Forest Stewardship Council involves NGOs, communities, producers, and suppliers.[6] Indeed, what might be considered relatively ordinary jobs increasingly require people to work systemically, stitching together disparate entities or assigned to temporary projects; for example, in integrated health and social care initiatives, or managing environmental eco-services. However, to avoid new forms of organizing, such as alliances and MSIs, being co-opted by managers and corporations to serve private power, associational ecosystems need to be held to public account using mechanisms of collaborative governance. This includes instituting voice as co-legislation, and using meaning-making to make visible diverse and plural understandings of the interaction of people with technology.

Conclusion: narratives for a human-machine world

We need to create new narratives for the role of technology in the problem-solving needed for sustainable world-building. But the necessary moral imagination is unevenly distributed. When workers are asked about their experience of engaging with new technologies such as collaborative robots, they do not challenge the organization of work, but rather limit their

[6] Moog et al (2015: p. 470) describe the Forest Stewardship Council as 'a transnational non-profit organization, which runs a globally recognized timber and forest products certification and eco-labeling scheme'.

concerns to what tasks the robots can be permitted to do within existing parameters (Maurice et al., 2018). A recent Royal Society study of narratives and technology argues that human behaviour, action, and flourishing is affected by the 'narrative ecosystem' of AI, whilst acknowledging that the lived realities of new technologies are difficult to capture in 'compelling narratives'. This is not helped by how narrative formation is disabled by 'narrative injustice', where marginalized groups and individuals are excluded from authoring narratives or having their narratives taken up as the accepted version (Royal Society, 2018, pp.14–5). Depriving narrative formation of the full spectrum of meaning-makers has real-world effects on the potential of A/IS technologies to contribute to life value; for example, recruitment AIs are coded to reflect conventional models of success, freezing our world into existing frames of domination and exclusion (see Yeoman, 2020, p. 119).

The way forward is 'the perfecting of the means and ways of communication of meanings so that genuinely shared interest in the consequences of interdependent activities may inform desire and effort and thereby direct action' (Dewey, 1927, p.155). In other words, exercising communicative power must be understood to be a complex capability which requires meaning-rich settings for intersubjective encounters where each person is confident in their status and authority as meaning-makers. In the end, new narratives framing work do not lie in the substitution of humans by robots or even in the complementarity of human-machine learning, but rather in the associational revolution needed to establish meaningful work constituted by shared concern for the knotted problems of sustainability and life value creation. This will require new organizational entities, social practices, and technological tools to be combined with enhanced human capabilities. A social architecture for public meaningfulness will allow us to share with others an entitlement to jointly determine the design, creation, and care of our shared dwelling, ensuring that this world-building supplies us with the complex capabilities we need for meaningfulness in life and in work, and helping to overcome the alienating feeling that the world is not a home, or that we are not the authors of our actions (Jaeggi, 2014).

References

Arendt, H. (1954). 'Understanding and Politics (the Difficulties of Understanding)'. In: *Essays in Understanding 1930-1954*. New York: Harcourt Brace and Company, (1994), 307-327.

Autor, D. H., Dorn, D. and Hanson, G. H. (2013). 'The China Syndrome: Local Labor Market Effects of Import Competition in the United States'. *The American Economic Review*, 103(6), 2121–2168.

Autor, D.H. (2015). 'Why Are There Still So Many Jobs? The History and Future of Workplace Automation'. *Journal of Economic Perspectives*, 29(3), 3–30.

Axtell, G. (2016). *Objectivity*. Cambridge & Malden, MA: Polity Press.

Bakhshi, H., Downing, J. M., Osborne, M. A., and Schneider, P. (2018). *The future of skills: employment in 2030.* London: Pearson and Nesta.

Bailey, C., Madden, A., Alfes, K., Shantz, A. and Soane, E. (2016). 'The Mismanaged Soul: Existential Labor and the Erosion of Meaningful Work', *Human Resource Management Review*, 27(3), 416–30.

Barad, K. (2007). *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*. Durham: Duke University Press.

Case, A. and Deaton, A. (2017). 'Mortality and morbidity in the 21st century'. *Brookings papers on economic activity*. Spring 2017, 397–476.

Chang, S. J. (2016). Sustainable Evolution for Global Business: A Synthetic Review of the Literature. *Journal of Management and Sustainability* , 6 (1): 1–23.

Clegg, S., Courpasson, D., and Phillips, N. (2006). *Power and Organizations.* London: Sage Publications Ltd.

Dellot, B. and Wallace-Stephens, F. (2017). 'The age of automation. Artificial intelligence, robotics and the future of low-skilled work'. *RSA future work centre*, September 2017.

Dewey, J. (1922). 'Events and Meanings'. In: *Essays on Philosophy, Education, and the Orient 1921–1922, The Middle Works of John Dewey 1899–1924*, Volume 13, ed. Jo Ann Boydson. Carbondale, IL: South-ern Illinois University Press, 1988, 276–280.

Dewey, J. (1927). *The Public and Its Problems.* New York: Ohio University Press.

Dourish, P., & Gomez Cruz, E. (2018). Datafication and Data Fiction: Narrating Data and Narrating with Data. *Big Data & Society*, December: 1–10.

Frankl, V. E. (2004). *Man's Search for Meaning*. London: Random House

Frankl, V. E. (1985). 'Logos, Paradox and the Search for Meaning'. In: Mahoney and Freeman (eds.). *Cognition and Psychotherapy*. 259-276. New York and London: Plenum Press.

Hansen, D.T. (2004). 'John Dewey's Call for Meaning'. *Education and Culture*, 20(2), 7–24.

IEEE (2018). ‘Ethically Aligned Design: A Vision for Prioritizing Human Well-being with Autonomous and Intelligent Systems (A/IS)’ (2nd Version, 2018). Available at: https://ethicsinaction.ieee.org/ [Accessed 15 January, 2019]

Jaeggi, R. (2014). *Alienation*. New York: Columbia University Press.

Karlsson, N., Loewenstein, G., & McCafferty, J. (2004). The Economics of Meaning. *Nordic Journal of Political Economy* , 30: 61–75.

Kennedy, H. (2018). Living with Data: Aligning Data Studies and Data Activism Through a Focus on Everyday Experiences of Datafication. Krisis. *Journal for Contemporary Philosophy* , 1.

Lee, D. (2018). ‘Why Big Tech pays poor Kenyans to teach self-driving cars’. BBC News. 3rd November, 2018. Available at: https://www.bbc.co.uk/news/technology-46055595 [Accessed 5 January, 2019].

Manoka, I. (2019). ‘New Means of Workplace Surveillance’. *Monthly Review*, 70 (9). Available at: https://monthlyreview.org/2019/02/01/new-means-of-workplace-surveillance [Accessed 11 March, 2019].

Maurice, P., Allienne, L., Malaisé, A. and Ivaldi, S. (2018). *Ethical and Social Considerations for the Introduction of Human-Centered Technologies at Work.* ARSO 2018 - IEEE Workshop on Advanced Robotics and its Social Impacts, Sep 2018, Genes, Italy.

Méda, D. (2016). *The future of work: The meaning and value of work in Europe*. ILO Research Paper, No. 18. International Labour Office

Mitra, R., & Buzzanell, P. M. (2016). Communicative Tensions of Meaningful Work: The Case of Sustainability Practitioners. *Human Relations* : 1–23.

Moog, S., Spicer, A. & Böhm, S. (2014). The Politics of Multi-Stakeholder Initiatives: The Crisis of the Forest Stewardship Council. *Journal of Business Ethics*, 128: 469–493.

Noonan, J. (2012). *Materialist Ethics and Life-Value*. Montreal and London: McGill-Queen’s University Press.

Persson, I. and Savulescu, J. (2012). ‘The Meaning of Life : Science, Equality and Eternity’. Proceedings of the 2012 Uehiro-Carnegie-Oxford Ethics Conference, *Ethics for the Future of Life*, 109–124.

Pink, S., Ruckenstein, M., Willim, R., & Duque, M. (2018). Broken Data: Conceptualising Data in an Emerging World. *Big Data and Society* , June: 1–13.

Pink, S. & Lanzeni, D. (2018). Future Anthropology Ethics and Datafication: Temporality and Responsibility in Research. *Social Media and Society*, 4(2): 1-9.

Purvis, K (2017). *Meet Pepper the robot – Southend's newest social care recruit*. The Guardian, 16 October. www.theguardian.com/social-care-network/2017/oct/16/pepper-robot-southend-social-care-recruit [Accessed January 15, 2018].

Repp, C. (2018). Life Meaning and Sign Meaning Life Meaning and Sign Meaning. *Philosophical Papers* , 47 (3): 403–427.

Runciman, D. (2018). *How Democracy Ends*. London: Profile Books.

Schnell, T. (2011). 'Individual differences in meaning-making : Considering the variety of sources of meaning, their density and diversity'. *Personality and Individual Differences*, 51(5), 667–673.

Sennett, R. (2018). *Building and Dwelling: ethics for the city*. London: Penguin

Smith, D.H. (2017). The Global Historical and Contemporary Impacts of Voluntary Membership Associations on Human Societies. *Voluntaristics Review* 2 (5–6), 1–125.

The Royal Society (2018). 'Portrayals and perceptions of AI and why they matter'. Available at: https://royalsociety.org/topics-policy/projects/ai-narratives/ [Accessed 11 March 2019].

van den Heuvel, M., Demerouti, E., Schreurs, B. H., Bakker, A. B., & Schaufeli, W. B. (2009). Does meaning-making help during organizational change? Development and validation of a new scale. *Career Development International*, *14*(6), 508-533.

Wallace, R. J. (2019). *The Moral Nexus* . Princeton, NJ, & Oxford: Princeton University Press.

Watkins, E.A. and Stark, D. (2018). 'The Möbius Organizational Form: Make, Buy, Cooperate, or Co-opt?' *Sociologica*, 12 (1), 65–80.

Wolf, S. (2010). *Meaning in Life and Why It Matters.* Princeton, New Jersey: Princeton University Press.

Yeoman, R., & Mueller Santos, M. (2019). Global Value Chains, Reputation, and Social Cooperation. In. Deephouse, Gardberg & Newburry (eds.). *Global Aspects of Reputation and Strategic Management. Research in Global Strategic Management* , Vol. 18. Emerald Publishing, 69–91.

Yeoman, R. (2020). Ethics, Meaningfulness, and Mutuality. Routledge Studies in Business Ethics. Routledge.

Yeoman, R. (2019). The Meaningful City. In: Yeoman, Bailey, Madden and Thompson (eds.). *Oxford Handbook of Meaningful Work*. Oxford: Oxford University Press.

Yeoman, R. (2018). 'The Wonderful Machines'. *The Philosophers Magazine*, May edition.

Yeoman, R. (2014a). *Meaningful Work and Workplace Democracy: a philosophy of work and a politics of meaningfulness*. London: Palgrave Macmillan.

Yeoman, R. (2014b). 'Conceptualising Meaningful Work as a Fundamental Human Need'. *Journal of Business Ethics*, 125 (2), 235-251.

Young, I. M. (2011). *Responsibility for Justice* . Oxford: Oxford University Press.

Zuboff, S. (2019). *The Age of Surveillance Capitalism*. Profile Book Ltd: London.

Zwarthoed, D. (2017). 'Why Sustainability Principles should integrate Global Justice Concerns'. *Ethics, Policy and Environment*, 20(3), 251–254.