

## Editorial: 25th anniversary volume 28.1

Karamjit S. Gill

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The theme of this anniversary volume, ‘A Faustian Exchange: what is to be human in the era of Ubiquitous Technology?’, reflects the very essence of the technology and society debates that have shaped the evolution of AI&Society since its launch a quarter of a century ago. As a part of the celebration of the 25th birthday anniversary of AI&Society, we are bringing out a special volume of the journal on this theme. In celebrating the 25th anniversary, AI&Society is also celebrating the contributions, commitment and networking support of thousands of our authors, reviewers, readers and well-wishers in participating in its evolution over the last 25 years. In the age of pervasive and streaming technologies, we get a deep sense that the more we get caught up in a process of self-commodification, the more we are threatened with the loss of our existential autonomy. We have become accustomed to perceiving and thinking in singularities and individualism, rooted deeply in the techno-industrial culture of competitiveness and the possibilities inherent in technology. Since its inception, the theme of Judgment to Calculation has been central to the ongoing debates in the journal. In the early days of AI, Weizenbaum in his seminal book, *Computer Power and Human Reason* (1976), warned us against instrumental reason and giving machines the responsibility for making genuinely human choices. There is a legitimate concern that further advances in pervasive technology could create profound social disruptions and even have dangerous consequences, forcing humans to learn to live with machines, which increasingly copy human behaviours. But, how is it possible to reconcile the widening gaps between constructed reality and the basic reality of the human

condition? The challenge is to recalibrate the spiral of judgment to calculation, moving forwards from calculation to judgment. We feel that the theme of this celebratory volume provides a forum for squaring the judgement-calculation-judgement circle, reflecting the complex, uncertain, multicultural and interconnected world we live in. Pervasive technology has great potential and possibilities in many realms of human society, including medicine, healthcare, agriculture, transportation, education, commerce, arts and culture, scientific research and discovery. However, we should remain vigilant about the profound implications of the mediating technologies on human life. Some of the issues covered in this volume include the consequences of man’s reliance on technology, the technology mediated world and frontiers of control, human extensions and extended mind, singularity and the notions of being, sorcerer’s apprentice, the ‘bipolar tendency’ of the market culture, instrumental technology and the technocratic fix.

Launched a quarter of a century ago, AI&Society provided a forum and networking platform for the human-centred vision as an alternative voice to the march of the techno-centric path that had been followed by many social structures and institutions in line with the evolution of machines and work organizations. AI protagonists in those early days claimed that ‘right’ thought and ‘rationality’ were divined in the intelligent machine, aiming to rule human endeavours and control the irrational emotional state, thus creating a well-ordered landscape of rational mind. Now that we are living in the age of pervasive and streaming technologies, multimodal and mobile intelligent technologies, immersive and embedded intelligent systems, and are seeking frontiers around biological systems, neurological cognition, emotional intelligence, ecological complexity and singularities, should we be concerned

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K. S. Gill (✉)  
University of Brighton, Brighton, UK  
e-mail: kgillbton@yahoo.co.uk

about the vision of our coevolution with the unique intelligent microworlds and the loss of our existential autonomy? Or should we extend our gaze beyond the techno-industrial settings to wider social, cultural and economic horizons and seek the plurality of symbiotic relationships between technologies, cultures and societies? When we consider the current advances in genetics, computational biology and computational linguistics or the neurosciences, we observe that they do not belong to a unified singular approach. Rather, there are multiple technologies with some of them orienting towards practical wisdom, whilst others are closer to rational descriptions. This is an emergence of a symbiotics of plurality. It is this commitment to diversity and plurality that the *AI&Society* journal has sought to promote, that is, multiple paths of technological innovations and an ethics of embracing multiple descriptions and technological actions. In the era of the novel technologies of personhood, cultural context and social relevance, it is more necessary than ever to set the discourse on the human condition. As we now enter the world of cyber realities and fragmented selves on the one hand and the world of cultural diversities and pluralities on the other, we ponder on whether a path of holistic symbiotics, involving an interplay of mind, body and brain, is becoming more relevant to the digitally mediated world that we live in than the dualistic symbiosis between human and machine.

During the 1970s, the era of industrial rationalisation and the ‘white of heat of technology’ (the very British idea of technological revolution), a number of socially conscious thinkers felt perturbed about the hold of the scientific method of Taylorism and its implications for working life in the industrialised world and by implication for the wider society. The concerns included the fear of the automation of production processes, the mechanisation and by implication dehumanisation of the work place, the loss of human skill and expertise and ultimately the replacement of the human worker by the robot, leading to mass unemployment and exclusion. There was further unease at the idea of venerating the machine to the point that there is no difference between humans and machines and between human thought and machine thought, and they recognised that humanity should take this risk seriously. Amongst the thinkers who critically examined the far-reaching social implications of the veneration of the machine and philosophical assumptions of instrumental reason, and contributed to the early evolution of *AI&Society*, are Cooley (1987), Rosenbrock (1990), Weizenbaum (1976), Toulmin (2003). They saw that human beings were being sidelined, and they warned of the potential for disaster inculcated by instrumental reason. Cooley warns us of the danger of the objectification of human knowledge and experience into information and data; this turns human judgement into

calculation and in the process, turns the human into a robot and an appendage of the machine. Rosenbrock warns us of the limitation and fruitlessness of the ‘one best way’ of technology design and provides a set of scenarios for an alternative vision that of ‘human purpose’. He challenges the view that there is no alternative to instrumental rationalism of the ‘one best way’ of science and technology design. Through his scenario of ‘Lu Shai Hills’, he argues that science and technology could have taken an alternative and equally valid path and achieved the same or similar human purpose. It could have taken a purposive path, had there been a different historical and cultural scenario. The question for Rosenbrock was as follows: Can we reject those aspects of our scientific and technological culture which lead to the damaging inhuman consequences we wish to avoid, whilst still retaining enough to escape the deprivations of the past? To Weizenbaum, the computer as a symbolic embodiment of instrumental reason was seen to go further than the machine, being made in the image of man, an imitation of a certain aspect of man in the sense that it ventured into the realm of the imitation of human thought. This was seen as a step towards the reproduction of some key aspects of human traits if not their replacement. We wonder whether this notion of reproduction exhibited more than instrumental reason as a tool, a sort of faith in absoluteness of reason. Toulmin asserted that absolutism fails to consider the field-dependent aspects of argument. Advocating a universal truth, absolutists believe that a standard set of moral principles, regardless of context, can solve all moral dilemmas. But, he purported that many of these standard principles cannot be applied to day-to-day life in the real world. After pinpointing absolutism’s dearth of practical value, Toulmin developed a new type of argument called practical arguments. He urged philosophers to apply their abstract theories to practical debates over real-world matters such as medical ethics and environmental policies. In her stimulating book, *ID: The Quest for Identity in the 21st Century* (2009), Greenfield explores how twenty-first century technologies such as information technology, nanotechnology and biotechnology are blurring or breaching every dichotomy: the real versus the unreal; the old versus the young; the self versus the outside world. She discusses how these technologies are, in essence, transforming our lives and the idea of the self itself, and asks whether in the cyber world we are losing a sense of where we ourselves finish and the outside world beings.

Could it be that the AI machine is a natural progression of the dominant techno-centric and reductionist worldview that is premised and anchored in calculation, measurement and exchange? In this worldview, when calculation and reason become the prevailing, and even exclusive, mediators of reality we lose the ability to perceive consequences

of automation, let alone perceive the nature of the symbiotics experience, an interplay between the realities of what is out there, and what is, so to speak, in here. The dilemma in general is the choice between a belief in exchange value or use value, and the challenge is how do we transcend the exchange culture to human oriented use value. Can a transition from the focus on efficiency to effectiveness go some way towards a new paradigm of technology design. Can we endeavour to cultivate reflective attitudes and evolutionary procedures as basic principles for designing systems and tools that subscribe to meeting human needs and to protecting ourselves from the Faustian omnipotence delusion of endless and effortless industrial wealth creation.

Our authors of this volume, the first of the four celebratory volumes, provide insightful articulations and often personal reflections on the celebratory theme. The arguments include whether the techno-centric ideology, which gave us the automated factory, robotics, the thinking machine, cyber worlds, computerised productivity and life of information, requires us to stop taking the human-centred path, reflecting on broader societal implications and impacts on the human condition. Perhaps the impact of automated technology on society is already eroding essential qualities of humanness as technology is turning human mediators from transformative agents into cognitive machines. Has the cost of technological progress been too high to pay? Can it be possible that the creation of the AI machine is giving rise to a culture of self-deception, denial and cognitive illusions, dispensing automated judgments on their fellow beings? Or can it be that the culture inhabited by ubiquitous technology is losing its ability to see the reality as it affects the human dimension and has lost its nerve to mitigate let alone challenge the consequences of the untold damage to the social and cultural fibres of societies? Moreover, how do we square the circle when it can be claimed that machines never make mistakes or lie, and where does the professional responsibility and moral responsibility lie? In the case, when an attempt is made to externalise responsibility, we may ponder whether such a claim culture has lost its moorings. It is, however, important to emphasise that technologies cannot in themselves be either determinants or mediators of our lives, and these are just one of many social and technological determinants which vary from society to society and culture to culture. The technological infrastructure may be global, but its applications and impacts can only be determined by the local human condition. It is this perspective of the local–global nexus, which provides a stimulant to seeing Faustian Exchange in terms of multiplicity roles of communication, interaction and collaboration in local, community, regional and local–global contexts.

In a paradoxical sense, in the age of ubiquitous technology, the technological focus is on reducing information complexity on the one hand, whilst its consequences are increasing the complexity of technology mediating environments. As these mediated environments become more and more complex, the tendency is to build more and more layered rule bound mediating tools to explicate the complexity. In this scenario, systems complexity gets transferred into rule bound complexity which is so opaque, context independent, and often bereft of common sense reasoning, that neither the gate keepers nor users have any effective control over their functions and outcomes, ultimately succumbing to the control of the market culture. The information overloaded societies thus face the challenge: how to transcend the ‘bipolar tendency’ of the market culture; how to ‘deal with the swings between prophesies of doom that serve only to paralyse us further, and the unbridled consumerism that makes things worse; and how to remain human when being mediated by technology in contrast to how we are in the presence of others. However, in the pursuit of terms of exchange such as flexibility, transparency and efficiency, the ambition is to develop and implement zero-defect technological systems and to eliminate the human being as a possible error source seems to remain a Faustian dream. This undermining of the evolving symbiotic relationship between the human and machine either subordinates the role of the human to that of the machine or leaves the human with no role at all. Perhaps the cost of technological progress is already becoming too high to pay for this exclusion. There is thus an urgent need for a reflective examination of this rule bound information society, and for finding a way forwards to create meaningful systems based upon humans as cultural, valuing beings. The consequence of the failure to sustain the symbiosis between the human and the machine may result in a self-fulfilling prophecy of the Singularity hypothesis in which everyone behaves like a machine. In this scenario, the very focus of technology in reducing information complexity may lead human beings to become dependent on prediction-driven machines and to behave like them, and thus further lead to the process of transferring responsibility from the individual to the machine. We may ponder on what ways the Internet is invading our identities beyond the traditional moral, ethical or cultural contours. Can we reconcile with the Faustian paradox of exchange that at times makes us feel displaced, distracted and fragmented in the cyber space, but also invites us to see our identities in newly responsible, intricate and open-minded ways, opening up dimensions of diversity and contingency? Or are we just being seduced to seeing our identities in the cyber-mirror as infinite rows of the same image multiplied? It may be argued that our identities are not threatened by the pervasiveness and ubiquity of computers

but by the lack of ensuring that humans never emulate or succumb to the meekness of the electronic circuits but remain engaged in creating appropriate tools and instructions to safeguard the diversity and richness of human identities. We may ask in what ways new information frontiers are shifting our human capacity of remembering to building a straight jacket that does not allow society to forget anything? There used to be an information frontier beyond which the past was a *tabula rasa*. But, what happens when the boundary between past and present is blurred, and there is no past to fall back onto and learn from?

A contrarian view of Faustian exchange argues that it is not the technology which shapes and reorients the human destiny; it is the people who invent and innovate technical languages, tools and machines, and these then “drive” modern or postmodern societies. Moreover, ubiquitous technology is more than a technical revolution. It is a cultural revolution with dramatic and far-reaching impacts that are reshaping the role of social institutions to cope with the electronic revolution. This perspective sees the future in terms of cultural flow, in which neither culture nor technology travel undisturbed towards their own outcomes. Whatever the nature of technology, there always exist cultural entrepreneurs, ‘cultural demons’ Negrotti (2012) who are active in trying to exploit or even bypass technological restraints and boundaries in creating unexpected novelties. Moreover, in many ways, it is our deep feelings which lead us to transcend these boundaries and enable ‘cultural demons’ to serve as pathfinders, acting as pre-paradigmatic signs that are important to notice. In this sense, our worlds are not driven by the deterministic process but rather by a permanent remixing of chances that makes the Faustian prophecy implausible. An inclusive development approach pioneered by Amratya Sen (1999) allows us to perceive cultural demons acknowledging the role of social values and prevailing mores, which can influence the freedoms that people enjoy and have reason to treasure. The exercise of freedom is mediated by values, but the values in turn are influenced by public discussions and social interactions, which are themselves influenced by participatory freedoms. Seeing development as the dynamic interconnections of knowledge, culture and communication, enables us to seek commonalities whilst valorising differences that impact upon cross-cultural discourses and intercultural interactions. This idea of development necessitates the identification and recognition of cross-cultural gaps and finding ways to bridge these gaps through cross-cultural and cross-disciplinary networking. Some of the conceptual tools which can facilitate the crossing of these gaps and build common interaction spaces are the notions of *actuality*, *symbiosis*, *ying and yang*, *keyosei*, *swikriti* and *valorisation* (Gill 2009) that in a

way seek a holistic symbiotics for inclusive development. By mapping these notions to local–global interaction architectures, leads first to understanding the nature of these interactions and then to designing interfacing tools. Maiara (2012) makes us envision this symbiotics beautifully, when he says that something comes into being when things connect and make relationships with each other that did not exist at the level of the individual. And it is in this coming together, the interplay of actuality–reality, ying–yang that lies at the core of holistic symbiotics. This interplay enables the cultural demons to cross the boundaries of the instrumental reason and appropriate transformative tools of relationality. We are further reminded that the transformation occurs when the relational qualities of balance, proportion, rhythm and harmony come together so acutely that we are awed, moved, absorbed, humbled, teared, excited, delighted, transported and even transformed (ibid.). It is this beauty of relationality, which we call holistic symbiotics, that makes AI&Society a transformative journal.

On this 25th anniversary occasion, we pay special tribute to our authors, reviewers, readers and well-wishers the world over, who continue to support AI&Society through their writings, review comments, critical observations and constructive suggestions. Our sincere thanks also go to the publishers Springer, especially the London Management team, Beverley Ford and Rachel Roberts, who continue to support and promote the journal in sustaining and expanding its place as the internationally known and respected publication, and to Monicka Mary (Production) in facilitating and smoothing the production process. It is also time to fondly remember the personal and professional support of our founding members, Joseph Weizenbaum, Harold Rosenbrock, Stephen Toulmin, Yuji Masuda, Fumihiko Satofuka, and David Noble, who have recently passed away, leaving a rich legacy of humanistic traditions of science, technology and society. Since its foundation in the 1980s, it has been a pleasure to share the cultivation of the journal with the most hospitable, intellectually stimulating, professionally dedicated and personally committed members of the editorial and advisory boards of the journal. I warmly treasure the personal generosity and friendship of the founding editors, Mike Cooley, David Smith, Massimo Negrotti, Richard Ennals, Satinder Gill and our international editors, Victoria Vesna, Toyoaki Nishida, Sha Xin Wei, Zhouying Jin, and Parthasarathi Banerjee who have been steering the journal to wider horizons of arts, science and society. Special thanks to our authors of this volume, Abbe Mowshowitz, Albert Borgmann, Bo Göransson, Helena Granström, Peter Brödner, Mihai Nadin, Paul T Durbin, Mark Coeckelbergh, Massimo Negrotti, Lars Mowitz, Daniel Memmi, Ajit Narayanan, Larry Stapleton, Francesco Garibaldi, Emilio Rebecchi, and Fred

Kile who have risen to the challenge of articulating and reflecting the theme of the anniversary volume, insightfully and thought provokingly beyond the traditional horizons.

A reflection over the last quarter of a century of AI&Society debates brings to our attention that no concept or practice is totally independent of context, and that all actions have an important contextual component. This is what makes the ethos of a holistic symbiotics a living phenomenon, with its hospitality to accommodating the plurality of rationalities and cultural diversities. It is within this spirit of hospitality and accommodation that *AI&Society* continues its own reconfiguration, from journal of machine intelligence in 1980s, to journal of human-centred systems in the 1990s, and now at the turn of twenty-first century, journal of knowledge, culture and communication.

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