Editorial

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Humans and machines. This is a dichotomy that has existed for centuries, if not millennia: in Western culture, automation dates back to the 1st century CE, when Heron of Alexandria conceived mechanisms based on steam and falling weights to open and close the gates of a temple. Fast forward to today and humanity is still dealing with machines, with some commonalities with the times of Heron, but also with radical differences.

Not everything has changed; for instance, we are still struggling to part ways with combustion to automatize movement: we may not be using water and steam anymore, but oil and gas are still necessary to move cars and fly planes around, with the consequences on climate we all know. However, the invention of electronics and its application to computing in the 20th century have given an unprecedented push to the diffusion of a new kind of machines all over the world, so widespread that many scholars consider the advent of digital technologies as impactful as the industrial revolution, if not more.

The digital revolution is not only a technological revolution: if channelling subatomic particles were the milestone we focus on, then we would include electricity, lasers and X-rays among other things in the discourse, but we do not. The rise of digital machines does depend on the electronic and photonic bits stored in memories, manipulated by processors, and moved around the world through cables, together with the long-standing machine-related problems of pollution, resource exploitation, and unfair distribution of wealth. Still, the impact of these bits on our lives does not only derive from the physical infrastructure that sustains them: it also feeds on the meanings that we, as social groups, as tech companies, as consortia, as governments, have associated with them.

From this perspective, rather than seeing the digital revolution as a further step of the industrial revolution with its production and transportation machines, it makes more sense to view it as the extremization, in terms of microscopic apparatuses, geographical interconnections, and overall speed, of all the tools that humanity has used throughout the millennia to record, elaborate, and spread its views and thoughts on the world. This is why digital technologies matter so much: they usher in a cultural revolution.

One might argue, and they would be completely right, that every step in technology in history has had an impact on culture: think of paper, pigments, or printing, to name a few pillars of human culture. However, the latest trend in digital technologies, that is, the resurgence of Artificial Intelligence in the form of neural networks and machine learning, arguably has the potential for the biggest repercussions, because it aims for the very source of any cultural endeavor: humans themselves. By means of cutting edge AI technologies, we are now discussing whether machines can take the place of humans, not in menial tasks such as opening doors, but in those fundamental activities that require a human mind, with all its knowledge, experience, even idiosyncrasies.

So far, scientists have obtained successful results in very specific fields, like games and image analysis. The challenges of the future are, on the one side, the expansion of such success stories to more and more fields of human culture in a quest for a digital universalization and, on the other side, framing such expansion in a way that enables us to understand the full picture of this massive automatization effort.

Such framing is the central theme of this special issue of the Journal of Arts Science and Technology dedicated to the 2019 edition of xCoAx, the International Conference on Computation, Communication, Aesthetics, and X. Our selection includes scholars who have been studying the automatization of the arts and culture, and who can help us navigate the sea of

discourses in the media and in the literature on the impact of AI in a more knowledgeable way.

Sarah Ciston warns us that automation may speed up data processing, but if done without adequate control from different societal groups, especially underrepresented communities, it might lead to a future full of biases from the past.

Catherine Griffiths presents a similar intent, but from the perspective of data visualisation, calling for the use of visual design to stimulate critical thinking in the observers, and thus create new opportunities to address the issues in the algorithms in their role as highly automatized socio-political tools.

Rodrigo Hernández-Ramírez sheds light on the capitalist infrastructure that sustains this whole technological revolution, and argues that most of the benefits of the latest technological devices are not for their end-users.

Tsila Hassine and Ziv Neeman provide a skeptic take on automation, too, also with an eye on how the future can be defined in terms of data from the past, with a focus on machines reproducing the aesthetics of long-dead artists.

Image processing was indeed one of the earliest successes in machine learning, and Rosemary Lee argues that it is not a simple, one-way process that automatizes how humans perceive, evaluate and elaborate images: concepts on what an image is, and what it means to create it and work with it are, in turn, significantly impacted by AI.

The ambiguity of the intersection between human activity and highly sophisticated AI does not necessarily entail a Human-Machine contrast, but it may lead to synergies that allow humans to find new, interesting ways to revisit their traditional endeavours.

Gaia Tedone calls for a rethinking of online platforms as interconnections among users, data and infrastructures with a strategy to create new forms of curatorial creativity and cooperation, encompassing both humans and machines.

Vladimir Todorović and Dejan Grba are also in the search of new forms of creativity, focusing on machine-enhanced narrativity, with an invitation to reframe the errors and flaws in the machine, even those deriving from the inclusion of human bias in the stories, in terms of a playful enrichment of the repertoire of new media art.

Whether conflictual or collaborative, whether a technologically-enhanced remix or a technologically-enabled original, the meeting of humans and machines has received an unprecedented level of attention in the last few years. Many questions are still left unanswered, whether this revolution is beneficial or dangerous for humanity, whether it is economically and environmentally sustainable, whether it is here to stay, or it is yet another short-lived craze.

One thing, however, is sure: even if, for some catastrophic event, we were to go back to the technologically primordial times of Heron, with fire, water and steam, our discourses on art, culture, and the role of humans in them are never going to be the same.