EDUCATION ETHICS

AI ETHICS AND HIGHER EDUCATION

GOOD PRACTICE AND GUIDANCE FOR EDUCATORS, LEARNERS, AND INSTITUTIONS

10

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AI Ethics and Higher Education

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Erin Green / Divya Singh / Roland Chia (Eds.)

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Erny Gillen

Errors or Mistakes?

Errors are the daily bread of IT and AI developers and users. When in any computerised system an error code pops up, they know: something went wrong. Luckily *error codes* are sometimes themselves an error. A simple restart of the device magically solves the issue. But if *error codes* persist and the system cannot fix them humans or meta-systems must intervene with their specific degrees of freedom.

Decoding and retracing errors can be a fastidious job. You have to go back into the machinery of algorithms and rules to check why they deviated from their laid-out path or goal. The more complex the bugged systems are, the more difficult the task will be to properly address the *error as technical expression for a failure within the processes.* If, however, the origin of the error resides in the design of the deadlocked process, I will throughout this article consistently refer to it as a *mistake that in the end is related to intentions or objectives of the human designers and their free choices.* It is obvious that errors can be related to mistakes and that it is not an easy task to untangle them analytically.

The title of my essay also suggest that errors code the future. This is true as far as they require a human intervention implementing a change of course for a bugged system. Such meta-interventions are the result of choices and intentions for which humans are responsible and where the semantic field of *mistake* opens. In this article I will focus on moral

responsibility and moral accountability but not enter into the juridical aspects. The purpose of my essay is an epistemological one. There are no binding definitions for *error* and *mistake* and both words are usually mixed in discussions and papers; therefore, it seems best to first define what I introduce as distinctive characteristics. The here proposed distinction between *error* and *mistake* shall serve a better understanding of the different roles, functions and responsibilities in the chains of command of AI driven applications.

Humans between Nature and Technology

I am writing this article in the midst of the Corona pandemic, which reminds the human family drastically that it itself is *part of nature* and its lifecycles with their own rules and struggles for existence. Today's way of life in major parts of planet Earth certainly is the result of our relentless efforts to build an own specific and artificial - in contrast to natural - ecosystem for humankind. I will call the driver for our human evolution and emancipation from nature *artificial intelligence,* because of the way we outwitted and still outwit nature and its many expressions notably through the invention of *time as our history* in contrast to the recurrent cycles of renewal in nature.[277] To differentiate AI and IT driven systems as tools in the hands of human artificial intelligence I will consistently use the abbreviations AI and IT in the broadest way and not enter into the many distinctions.

When SARS-CoV 2 was finally recognised as a pandemic humans started first hiding in their homes and later hiding their faces. Back in

[277] See: Rovelli, Carlo. *The Order of Time*, Adelphi Edizione SPA:Milano, 2018; *Und wenn es die Zeit nicht gäbe*, Rowohlt Verlag : Reinbeck bei Berlin, 2018. In today's physics time has become a variable. Rovelli argues for more fundamental research and for more critical dialogue. He calls our experienced time the thermodynamical time. J.T. Ismael, How physics makes us free: Oxford University Press, New York, 2016.

our caves we used our accumulated and aggressively filled reservoirs to survive against an invisible and unknown enemy. We stopped our time to let the virus pass by and boosted research to come up with vaccines and medication in record time. With those tools under hand, we then were able again to impose our timeframe step by step on the virus's nature and our old equilibrium among humans with its inequalities and inequities even further deepened during that crisis.

What can we learn from the SARS-CoV 2 crisis for handling AI? Our technical skills as part of human artificial intelligence are still very powerful when it comes to defend our domination within nature. Nature, as we know it, has become a raw material at the service of human civilisations, and the former Gods and Goddesses a myth for those who need more time for the transition into the Anthropocene. Intentions, goals and objectives are reserved to the pure domain of humankind. Nature has its own laws and sub-laws, but no intentions, goals, or objectives. Through our artificial intelligence we are able to decode all elements and put them at service for humanity. Karl Popper coined the term "trial and error" for our way to dominate nature by building our technical interfaces. Dealing with nature and its laws we need phases of testing because our own intentions, goals and plans must first be checked against their feasibility and their capacity to become part of our artificial domain within nature. If our technique works our own habitat and our freedom grow (for those who live on the right side of power). If our trial does not work, we step back and prepare a next one expecting that this time no *error code* will pop up and block the intended path.

Our main tools to dominate planet Earth and already its Lower Orbit are our technical tools obeying to the different laws of physics. Our machines and engineering skills in materials and biology become our second nature with its growing but limited freedom (of movement, communication, healthcare, warfare, and so on). Our technologies are truly disruptive in the sense that they erupt us from our natural habitat

and the instinctive and intuitive connections we have with it to confine us into a world of its own governed by our artificial intelligence.

AI technologies now seem to become a turning point in the evolution of our self-created second nature. The disruptions caused by its applications seem to aim for its users. New myths and projections rise. They offer an old narrative now applied to our second nature: AI will have one day its own intentions, objectives and plans and thus govern humans, as humans formerly governed nature and animals. In the worst and dystopian visions AI will sooner or later exploit humans as resources for its own purpose. Theology is replaced by a new kind of Tech-logy. Technics and its priests talk, guide and impose on us their intentions, as formerly God and its theologians told people what to think and do.

One merit of Shoshona Zuboff's surveillance capitalism approach is the early demystification of this projection.[278] Behind AI as technology, there are people and deciders who hide themselves and their selfish intentions as far as possible behind algorithms. According to Zuboff, the authors and owners are about to build a sharp divide between those handled and observed by their AI, and themselves as the true winners of the new divide orchestrated through so-called AI applications.

Regardless of scientific and societal warnings, AI technologies become a new necessity in the political arena imposing its pace and rhythm to humanity.[279] The geopolitical competition further nurtures this sometimes-naïve accelerating.[280] There are even proposals by

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[278] Zuboff, Shoshona. *The Age of Surveillance Capitalism. The Fight for a Human Future at the New Frontier of Power*, New York: PublicAffairs, 2019.

[279] See for example the calls for a ban on face-surveillance in the European Union: https://epic.org/banfacesurveillance/

[280] See: Shaping Europe's digital future. Strategy for artificial intelligence following as first strand the aim to 'place Europe ahead of technological developments': https://digital-strategy.ec.europa.eu/en/policies/strategy-artificial-intelligence

lawmakers to invest some AI driven applications with an own legal personality[281] and in some EU documents AI is already considered as an agent of its own to be invested with trust by citizens.[282]

Right now, humanity seems to be locked between nature reduced to a limited resource and technology invested with the power to build a future for our species. This paradigm, notably promoted by Yuval Harari, is misleading.[283] It underestimates our human artificial intelligence and leads to a TINA mindset in a world where *there is no alternative* to violent but fruitless debates and manifestations or simply to resignation.

Errors and Mistakes Do not Code *the* End

Fortunately, neither nature nor technology simply determine our future as humans in our specific time as humans. They shape our habitat, condition our choices, and stop us with their *error codes* when we ignore their limits. Taming nature, physics and chemistry works best with our *trial-and-error* methods in labs and controlled experiments, before scaled up for industrial and large field applications.[284] Nature and

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[281] See proposal 59f of the Motion 2015/2103(INL) passed by the European Parliament: https://www.europarl.europa.eu/doceo/document/A-8-2017-0005_EN.html

[282] See the Introduction of Ethics Guidelines for trustworthy AI: https://digital-strategy.ec.europa.eu/en/library/ethics-guidelines-trustworthy-ai (accessed 16 August 2021) and my critical reflections about this approach: https://www.moralfactory.com/#blog, summarised in: Erny, Gillen, "Die Ethik-Falle", in: Frankfurter Allgemeine Zeitung, 10 January 2019, 9.

[283] Harari, Yuval Noah. *21 Lessons for the 21st Century*, London: Vintage, 2018. e.a.

[284] During the corona crises billions of inpatient people and thousands of politicians and scientists pressed hard to take shortcuts for quick wins, and thus allowed possibly the greatest large field experiments ever executed. This factual paradigm shift will certainly affect the ways AI applications will be generalised

technology react according to their own paces and cycles. Errors pop up when initiated processes meet the limits of a given system. Even if we forcefully can change nature to a certain extend and build innovative technologies, there are limits to our artificial intelligence and practical freedom. Sometimes those limits popup through technical error codes. But sometimes those limits also come from within the human family or important parts of it. They manifest their opposition and do not agree with the chosen pathways they consider being ethical mistakes. In both cases and in liberal democracies the authors of new ways will stop and look for technical respectively political-ethical alternatives.

Ideally societal deadlocks are solved peacefully and in dialogue. This is part of the *ruse* artificial intelligence also stands for.[285] Many political and ethical decisions are complex and based on accurate information provided by trustworthy researchers.[286] Thus, academic institutions and commercial tech camps become important influencers.

Again, the corona-crisis has shown the heights and the depths of this delicate cooperation. Scientists became norm setters and politicians a kind of science explainers, while both mixed up their roles and functions. Science was understood as firm grounds and able to predict and manage the future. A similar situation is met with climate politics. When talking as politicians or journalists even highly regarded scientists avoid telling their lay audience that their work is based on models and hypotheses while interpreting data. When explaining scientific models and data politicians avoid telling citizens that their work follows *many,*

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quicker and quicker under the pressure of our linear time where acceleration seems the only way to gain time.

[285] Detienne, Marcel, Vernant, Jean-Pierre. *Les ruses de l'intelligence. La mètis des Grecs*: Flammarion, Paris, 1974. In this article I use the concepts of *mètis* as elaborated by Detienne and Vernant. The specific use of mètis by humans I call, for the reasons of thought provocation, artificial intelligence.

[286] In contrast to trustworthy machines or AI, which I would call in my semantics safe or secure.

told and untold, intentions and objectives while tackling the corona health crisis. In both scenarios scientists and politicians make use of their own artificial intelligence to package and sell their knowledge to the best of their interests. The pandemic was (and is) a brilliant showcase for academic and political manoeuvring. In a nutshell and within a limited timeframe we could (and can) observe the strategies of trial, errors and mistakes. Classic Greek philosophy has labelled this kind of practical intelligence as *mètis*, a kind of ruse or stratagem to achieve one's goals.

Mètis as practical intelligence within the world of the living hides the predators' goal, thus equipping for example a weak hunter with ruse to overpower its prey by deceiving it with a lure and surprise. Those deluding stratagems are present in nature and serve a given species to go beyond its limited constitution. Indeed, in ancient Greece the fox and the octopus were admired for their ruse or *mètis.* I call them artificial intelligence, because they offer some animals a contextual window in the natural struggle for existence to achieve more than their physical boundaries would allow without ruse. The human species is certainly the master of *mètis* within the natural world as well as within inter-human cooperation and disputes.

Mètis deals with errors and mistakes not as the end of a journey, but as starting point for a new attempt to achieve its goals. Among humans, mistakes are therefore an important discussion point because there is no common agreement about what is to be considered a mistake. Here opens the whole field of ethics and politics to discuss and to fix, at least temporarily, what a powerful majority and even a powerful minority considers as mistake. In that moral and political struggle for the *right way* the *mètis* of the ones and the others plays an important role.

Necessity and Tech-logy

Introducing a kind of necessity into ethical or political discussions is a well-known stratagem to try to end them. With that mindset, our continues production of carbon dioxide is for example no longer a matter for human freedom, but an existential threat. Where necessity is proven or accepted the free will ends. The same stratagem works with AI. The thesis that the champion will take it all, states that the race to be the first and ahead of all as a necessity within a world of competition. Necessity seems to be the last resort argument accepted by a vast majority. Therefore, it is an important stratagem within the discourses of politicians and even academics.

In the framework of necessity *error codes* become the anonymous language of power framing and limiting human agency instead of unleashing it. Epistemologically speaking, those real, virtual, or faked *error codes* are coding the future by closing it down for further explorations. Confronted with the many *error codes* produced by the climate of planet Earth humans are told to listen to nature and to change their lifestyles. After centuries of intensive agriculture and industrial technologies nature itself becomes again a hard frontier no longer at the service of humanity and its artificial intelligence.

In this narrative the human project to dominate planet Earth has failed. Our calculations were wrong because they did not take into account the limited resources of nature and our care for the next generations. As we seem blocked in our evolution some invest into their escape to further planets while others are willing to entrust the future of humanity to AI because of its massive calculation power able to include present and potential human activity as data.

In this last scenario, humans risk to become objects of timeless and tireless calculations of AI systems. The former subject of history risks to become an element of nature and technology. For the sake of their endangered existence humans seem willing to accept to be taken care of

- this time - by their *last invention*, as some like to call AI.[287] The promoters of the human family's way ahead enabled by AI are already building their strategies by labelling and promoting their systems of trustworthy[288], good[289] or human centric AI.[290] In those narratives, ethics and politics will in the long run be taken care of by anonymous, neutral and omniscient systems.

But remember the warnings of Shoshona Zuboff: behind any AI we should expect some members of our own species who prefer to share the limited resources with a few observers, while sacrificing the rest of humanity.

Whether we are already lured by any shadow games and fake news or not, there is a need for a global debate about the purpose of humanity. Who are we and where should our journey lead us as one human family? Those questions are existential, and they cannot be delegated to systems without our understanding of time and history, unless we give up our purpose and opt for a life as animals under the governance of a good AI, as Harari ironically puts it.

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[287] See for example authors like James Barrat, Nick Bostrom (Future of Humanity Institute, Oxford) or Max Tegmark (Future of Life Institute, Massachusetts).

[288] cf. notes 6 and 8.

[289] https://www.goodai.com (accessed 16 August 2021). Others, like Virginia Dignum promote responsible AI: https://ec.europa.eu/jrc/communities/sites/default/files/03_dignum_v.pdf (accessed 16 August 2021).

[290] This term attributing agency and action power to AI as far as it uses its so-called autonomy to leave humans at the center of its intentions and actions seems now largely used and accepted by the European Union. Cf. https://digital-strategy.ec.europa.eu/en/library/communication-building-trust-human-centric-artificial-intelligence (accessed 16 August 2021). The EU Commission herein defines the role of the Union no longer as protector of consumers, but as one of building trust within citizens into so-called human-centric AI.

Civilisation, Freedom, and Equality

In the living world the art of hunting and exploitation has evolved over centuries. Territories and species had to be protected and taken out of the hunter's scope. Only a few centuries ago humans were protected against other humans taken advantage of them: an equal dignity in each and every person was recognised. Hunting or exploiting humans became an important *error code* in our societal systems of legislations and democratic institutions. Our fragile civilisation is built on this self-imposed culture and at stake when *error codes* tell us that human dignity was hurt.

Western societies accepted to use their freedom within self-imposed norms derived from a shared humanity. The boundaries related to this paradigm are even somehow protected by international laws and institutions. But our civilisation is not recognised by all as the universal model as it produces enough *error codes* to disillusion other forms of living together. Wilderness among humans is back on the stage and new hunting and exploitation methods are underway.

Human artificial intelligence focusses more on the domination of other humans, nature and technology than on common achievements. Intentions and objectives are framed to lure counterparts and even partners to take them by surprise. In this sociologically difficult context academic freedom can become a lure itself. It can be bought, conditioned, alienated or mislead. The use of *mètis* among humans can be surprisingly creative to achieve their hidden and multiple intentions.

Responsible academics are alert about the dual and multiple use of their inventions and prototypes, but also depending on the funding of their activities. AI in the technical sense of the word seems to be a huge and complex domain promising a better future for the many. Governmental and commercial sponsors seek to get their part of influence by financing specific projects serving their interest. As long as the critical thinking of the scientific community about the intentions and

objectives of their sponsors is not excluded, academic freedom seems *prima facie* safeguarded. But very often the financially strong know more about the natural appetite of their prey, than the researchers would be willing to admit. Lucky slaves are great enemies of freedom and critical thinking often ends with one's own interests.[291]

It is not enough to state or manifest academic freedom. Against the potentially dramatic power of AI technics and the proven artificial intelligence of the mighty it is recommendable to openly debate about this freedom among researchers as such and together with their sponsors. Such debates can help scientists to unmask the lures and discuss at eye level with sponsors and politicians.

Integrating professional ethicists into such processes and honest debates can help both sides to build trust on true grounds. This will take time and cost money. It will slow down the rush but nurture common enthusiasm, thus breaking the artificial divide between citizens who pay and citizens who are paid.

Conclusion

Universities and research facilities should always be open for the unprecedented and thus not serve the mere goal to reproduce the present for the future. Whoever is funding research in AI should foresee ethical reviews on all levels, starting with the strategic governance where ethical questions are all too often relayed to the lower levels.

Researchers, developers, and designers in the waste fields of AI are often much more alert about the inherent and potential risks of their endeavours than those ordering or using their tools. The greater need for ethical awareness, formation and training is seen with those at the top

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[291] Beckert, Rudi. *Glücklicher Sklave. Eine Justizkarriere in der DDR*: Metropol-Verlag, Berlin, 2010. Beckert was the highest ranking judge in the Eastern Democratic Republic of Germany.

and those at the end of the chain of command. In my experience the scientific community is open and accustomed to productively deal with critical questioning. They are used to productively handle *error codes* and mistakes as teams if not unduly put under threatening economic pressure or constraints of predefined success in the current geopolitical rush to win the race of AI.

Coding the future is a sacred human activity where mistakes are possible. It seems better to exclude potential mistakes from our intentions, objectives and plans, than to meet and address them later in our achievements as *error codes* popping up from a hurt nature, a technical dead end or deceived populations.

All of us can use their human artificial intelligence for the common good and the global commons. These open concepts can make a difference for our own freedom of action while courageously exploring new territories of cooperation and innovation. When freedom of action grows for many, humanity is on the right track: more fields for its inherent artificial intelligence or *mètis* will become accessible and offer new and even better opportunities for an open future.

interrelation and interconnection of man and machine, in such a way that the components of each part interact fully to generate new characteristics, absent for each one of them separately.[499]

Responsibility must be emphasised, which concerns to health professionals, the institutions that decide to incorporate AI into their services, and the governments, which will ultimately be the ones to regulate and control its use. The dialogue between these three actors: professionals - institutions - government must ensure the protection of the autonomy of all citizens and in particular ensure the interests of patients and the safeguarding of their rights.[500] We must insist that the only way to guarantee the improvement of our survival, on Earth or on another planet is education. Education is information accompanied by reflective thinking. A challenge for scientific societies is the inclusion of bioethical dialogue and the generation of consensus or guidelines to guide the correct performance in future situations, where all contributions are considered.

It is also urgent to establish dialogues with patients, especially with those who may be exposed to more vulnerable conditions. It is important in these dialogues to work from sincerity and common sense. This dialogue will be beneficial to advance later in the informed consent process, with a better predisposition of patients to consent to new technologies.[501] It is important to note that the bioethical aspects have more to do with the data than with the technology itself. Perhaps if we understand that data is in cyberspace a representation of people in the

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[499] Elenko, E., Speier, A., Zohar, D. "A regulatory framework emerges for digital medicine". *Nat. Biotechnol*, 2015; 33(7):697-702.

[500] Rigby, M. J. "Ethical Dimensions of Using Artificial Intelligence in Health Care". *AMA J Ethics*, 2019; 21(2):E121-124. DOI: 10.1001/amajethics. 2019.121.

[501] Ohno-Machado, L. "Data science and artificial intelligence to improve clinical practice and research*". Journal of the American Medical Informatics Association.* 2018; 25: 1273-1273.

physical world, we understand that data should be protected just as we protect people.

It is essential to encourage dialogue and training on issues of Biocyberethics and Artificial Intelligence in future health professionals, at least insisting on the use of critical thinking and common sense. It is important to fight for regulatory policies, assumed with transparency and responsibility. Philosophers, bioethicists, scientists and doctors must work together to guarantee the safety of the use of Artificial Intelligence in Medicine and tend to safeguard the autonomy of patients, inevitable users of new technologies.

The enthusiasm for the scope and possible benefits of the use of AI in medicine has generated a significant number of articles describing the possibilities of using AI in medicine, however there are few articles that dedicate a thoughtful look at the possible ethical consequences, including cultural and social aspects. The use of AI in medicine generates infinite possibilities for convergence and many other bioethical nuances and details, which opens the door to responsible debate on the advances and scope of AI in medicine.

How near is the day when through virtual reality programs surgeons can locate themselves inside the patient's body and be able to see the exact cell that must be cut or killed to heal the patient? Nothing seems too much science fiction, everything seems possible.[502]

Artificial Intelligence and its Ethical Implications in Higher Education

There is a strong emotional and subjective influence on the learning process. As a general rule, students learn better when they feel that their

[502] Kurzweil, R. "We are going to live forever." *The NYT*, 2013. https://www.nytimes.com/2013/01/27/magazine/ray-kurzweil-says-were-going-to-live-forever.html

teacher cares about them and their learning, that is, when teachers are involved in this relational contract that is the teacher-student bond.

This relational aspect can work in the same way in the presence as in virtuality, if in both cases authentic and personalised communication channels are established. When everything indicates that in this digital age we are a "bag of data" and the "loot" of digital companies, we all feel special when another person pays attention to us and dedicates her/his time to us.

The change in productivity does not imply replacing people with machines, but empowering people with machines, for this reason some prefer to speak of augmented intelligence instead of AI. The teacher must change her/his role as presenter, content reader; text repeater and retained data evaluator. The biggest challenge is realizing that we have to change the way we are educating.

There are some studies that demonstrate the value of AI in predicting the degree of dropout of university students with great precision, as well as other student's variables such as academic performance throughout their educational experience, being able to offer alternatives to improve that performance on time. On the other hand, some commercial educational companies have quickly focused on different technologies that could be exploited in educational settings by both teachers and students. There is vast and diverse potential in the field of AI to transform our teaching practices and student learning experiences. However, due to the traditional academic inertia, that culture of resistance to change, the university spirit always runs (or walks, or crawls) behind technological advances. This *doxa* of creating technology confronts to the *paradox* of resisting its use and *just* in education. It may be the lack of interest, the distrust, the lack of policies to train teachers and many other obstacles that threaten the implementation of an authentic process of change.

The problem is to believe that using AI in education is limited only to improving content presentations with new apps and automating evaluation. The problem is putting the focus on the *how* and forgetting the *what* we want to teach. Teamwork between designers, developers, teachers and students is required more than ever to enhance creativity in problem solving and also the constant and necessary practice of reflective thinking. The challenge of higher education today is to prepare future generations of professionals to solve the unexpected, the accumulation of data and academicism must be put aside: data springs from cell phones! Teachers have to get more involved in this change, without waiting for the university to move the first token to start the game.

A big problem adds to this dilemma: social networks and the big internet companies (Google, Facebook, Instagram, WhatsApp, YouTube) can offer in the context of higher education a great free access to knowledge, added to the knowledge that students themselves generate and share and even some teachers who are encouraged to give classes and tutorials through the networks.

Therefore, we have to educate the teacher again. But… will everyone want to?

Will the University, the Queen of knowledge, be able to maintain its deeply rooted values such as trust, legitimacy, truthfulness, scientific integrity, autonomy?

AI in education is at the moment a kind of potential Trojan Horse, in the wrong hands it could cause disasters, but if we are vigilant and with an open mind we can avoid this unwanted collapse. Meanwhile, the Queen is in check!

The future of higher education is intrinsically linked to the developments of new technologies and the computational capabilities of new intelligent machines. Education is clearly influenced by the digital world with unlimited possibilities. Some companies estimate that within

3 years, by 2025 about 50% of all the world's stored data will reside in public clouds. The use of data is the new *Big Bang* since it is a process that has no limits and continues to increase. It is estimated that in 2025 the Datasphere (what is produced in real time) globally will be about 175 ZetaBytes (10^{12} Gigabytes), as mention before.

The same process of automation that is causing a break in the current workforce in the industry is making knowledge itself the main article of production and consumption. Hence the folly of the unemployment alarm. Paid apprenticeship is already becoming the main workforce and new source of wealth in our society.[503]

Collective intelligence can be seen as an alternative source of media power. We are learning to use that power through our daily interactions within the culture of convergence. New media technologies have made it possible for the same content to flow through very different channels and assume very different forms at the point of reception.[504]

More specifically, in the modern liquid context, to be of any use, education and learning must be continuous and even span a lifetime. No other form of education and/or learning is conceivable; it is unthinkable that people or personalities can be *formed* in any other way than through continuous and eternally unfinished retraining.[505]

Some questions we need to discuss seriously are: What could be the ethical and social implications linked to the advancement of new technologies in the university context? Can social media help create knowledge in ways other than traditional ones? How does knowledge circulate in the era of the 4th revolution? Is there copyright in teaching? Should knowledge circulate freely?

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[503] McLuhan, M. *Understanding Media: The Extensions of Man*. New York: Signet Books, 1966.

[504] Jenkins, H. *Convergence Culture: Where Old and New Media Collide.* New York: New York University Press, 2006.

[505] Bauman, Z. *Liquid Life,* Cambridge: Polity, 2005.

We are, then, at a critical inflection point with respect to copyright. If in this age of communication, knowledge should flow freely through the web, then how is the fact that there are companies or private companies that quickly saw knowledge as a profitable market resolved?

If we are a *bag of data* and data is the gold of the moment, imagine how much data linked to knowledge is worth. In this context, in what position are Universities to face this enormous tide of data coming and going through social networks? Could it be that its inertia will become its stigma? Will Universities evolve or disappear? Will they be able to keep their hegemony? Are we in time to react?

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AI ETHICS AND HIGHER EDUCATION

Artificial intelligence (AI) is exerting unprecedented pressure on the global higher educational landscape in transforming recruitment processes, subverting traditional pedagogy, and creating new research and institutional opportunities. These technologies require contextual and global ethical analysis so that they may be developed and deployed in higher education in just and responsible ways.

To-date, these efforts have been largely focused on small parts of the educational environments leaving most of the world out of an essential contribution.

This volume acts as a corrective to this and contributes to the building of competencies in ethics education and to broader, global debates about how AI will transform various facets of our lives, not the least of which is higher education.

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