Learning From Indigenous Cultures

Marc Steen
TNO (The Netherlands Organisation for Applied
    Scientific Research)
NL-2509 JE The Hague, The Netherlands

■ **WHEN WE TALK** about ethics in relation to the design and application of technology—or more specifically, of artificial intelligence (AI)—we often refer to traditions like consequentialism, deontology, or virtue ethics. Typically, consequentialism appeals to people with technology backgrounds. It involves evaluating the plusses and minuses of their choices and their projects' outcomes. Deontology is also appealing. It deals with identifying duties and rights that are at play and acting in accord with these duties and rights. Virtue ethics is also very useful. This tradition can play two roles: it can help professionals to cultivate relevant virtues, so that the technologies they help to develop can, in turn, enable people to cultivate virtues and live well together [13].

There are, however, other ethical traditions that we can also learn from.

In [3, p. 2], the IEEE Global Initiative on Ethics of Autonomous and Intelligent Systems has articulated an approach to the design and application of systems that aim to serve "humanity's values and ethical principles." Interestingly, the document's authors discuss not only the (mainly) Western perspectives just mentioned, but also perspectives from other continents and cultures; notably, Buddhism, Ubuntu, and Shinto [3, pp. 205–211]. Below, I will extend that line of argument and explore what we can learn from indigenous wisdom.

But first, I would like to look critically at the European Enlightenment.

Utilitarianism and deontology emerged in the European Enlightenment—although their roots can go back millennia and can also be found on other continents—and grew out of assumptions and ideals regarding objectivity, rationality, independence, and universality. Consequentialism assumes that one can objectively and rationally assess the pros and cons of action—or, in the words of Jeremy Bentham: *pleasures and pains*. Deontology assumes that each person is an independent individual and ought to follow universal moral laws. Immanuel Kant advocated following rules *(categorical imperatives)* that anybody, anywhere, and anytime would need to follow.

Let us look at British philosopher and statesman Francis Bacon (1561–1626), another Enlightenment proponent. He helped to create the Royal Society, an engine for Western science and technology. Bacon promoted a view of man as separate from nature and of nature as a resource that can be exploited. "Nature must be taken by the forelock," he notoriously wrote, invoking an image of a man assaulting nature. "Knowledge is power" is also attributed to him. We can subjugate nature and glean knowledge from her, to increase our power and control—over nature and other people.

This outlook has stayed with us and has become dominant. In the last 50 or so years, many people in Western societies have lost contact with nature. Do you know where your food came from? Do you know the logistics of cutting down forest to plant corn to feed pigs in factory farms to produce meat that many people do not really need—and that cause cardiovascular issues? Where and how were your clothes

manufactured? Many also think in terms of "us" in the North and "them" in the South.

Tragically and put rather bluntly, science, technology, and untethered neoliberalism have created a toxic mix and have led to colonialism, exploitation, the climate crisis, loss of biodiversity, economic inequalities, tensions between peoples and cultures, and global and intergenerational injustices.

We cannot "solve" these global crises by staying in the current trajectory. Rather, we would act wisely if we turn to alternative ways of thinking, other wisdom traditions, and learn from them.

Notably, we can turn to "Non-Western" and "Indigenous" cultures for alternative outlooks.

There are inverted commas around "Non-Western" to indicate the oddity of referring to cultures that have value in and of themselves in terms of what they are *not*. In addition, there are inverted commas around "Indigenous" to acknowledge that we cannot group these diverse and rich cultures into one category. "A single 'Indigenous perspective' does not exist," the authors of *Indigenous Protocol and Artificial Intelligence* [5, p. 4] point out; because indigenous "epistemologies are motivated and shaped by the grounding of specific communities in particular territories." Putting diverse indigenous cultures into one group would result in "ontological and epistemological violence, and a flattening of the rich texture and variability of Indigenous thought" [5, p. 4].

Despite their differences, indigenous cultures share a focus on *relations*: relations to other people, to nature, to nonhuman animals, and to plants. Also, they do not share the enlightenment ideals of objectivity, rationality, independence, and universality. Or they offer interesting, alternative views on these ideals. Therefore, they can help us to question common, taken-for-granted assumptions. For example, regarding the need for efficiency in domains like education or health care, where human-to-human interactions are at risk of being replaced by presumably "efficient" machines.

Below, I will make a rapid tour of several continents and cultures [12, pp. 101–104]—cognizant of the impossibility to do justice to the depths and widths of these cultures.

Our first stop is the African continent

Several cultures in sub-Saharan Africa follow some version of Ubuntu, a philosophy that recognizes the humanity of a person through that person's relationships with other persons. Ubuntu has been a key tenet in the work of the Truth and Reconciliation Commission in South Africa in the mid-1990s, and in Bishop Desmond Tutu's leadership. When U.S. President Barack Obama spoke at Nelson Mandela's memorial, he reminded us that Ubuntu recognizes "that there is a oneness to humanity; that we achieve ourselves by sharing ourselves with others, and caring for those around us."

In a 2020 article, "From Rationality to Relationality," Mhlambi [6] proposed to apply Ubuntu philosophy to the design and application of AI. He critically discusses the "ideal" of individualism, which has led to colonialism, inequality, and instability, and turns to Ubuntu, for a relational understanding of personhood. He observes that the African Charter on Human and People's Rights is the only international treaty that aims to protect not only civic and political rights, and socio–economic rights, but also "third-generation" rights to solidarity, community, and cooperation.

Regarding automated decision-making systems (ADMs), Mhlambi criticizes the ways in which these are typically designed and used: marginalized communities are excluded from the design process; there are biases in the collection of data in the selection of features; the people involved in the design of ADMs typically view technology as neutral and fail to recognize the many and diverse relationships that exist in society; and ADMs can lead to harmful commodification and centralization of data and resources. Drawing from Ubuntu, he explores, for example, ways to create technologies "with a normative goal to eradicate inequality through the participation of the most disenfranchised" [6, p. 25].

Our next stop is Australia

Many aboriginal cultures understand the human condition as grounded in connections to others and to the land, to nature, and value relationships, notably kinship. Australian scholar and artist Yunkaporta writes about this in *Sand Talk: How Indigenous Thinking Can Save the World* [16]. He presents an aboriginal perspective to look at global issues; in particular, sustainability. His book is full of powerful storytelling. Moreover, he reflects on the processes of creating knowledge and of sharing knowledge and writing. He writes about how we can create, share, and store knowledge through action, interaction, and embodiment. For example, by taking a walk through the landscape, together, and talking

while walking. Or by coming together in a circle and sharing stories and knowledge, engaging in *yarn*, a process of collective sense making.

Yunkaporta discusses five different ways of knowing and invites readers to get a taste of embodied learning. He does that by inviting readers to connect these different ways of knowing to their different fingers, as tactile reminders of practical wisdom [16, pp. 145–152]. Your little finger then represents a child, to remind you of *kinship-mind*; the wisdom that comes from relationships. Your ring finger a mother, for *story-mind*; as a reminder of how stories can store and transmit knowledge. Your middle finger a man, for *dreaming-mind*; to use metaphors in creating and sharing knowledge. Your index finger represents your brother's child, for *ancestor-mind*; a cue to connect with a timeless state of mind. And your thumb, which can touch all the other fingers, can remind you of *pattern-mind*; to look at the whole and not just the parts. Reading this summary is, by the way, entirely different from engaging with the powerful storytelling of Yunkaporta [16]. These different ways of knowing can provide valuable alternatives to objectivity, rationality, independence, and universality.

Our next stops are North and South America

In her book *Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge and the Teaching of Plants*, Kimmerer [4] relays many stories. She writes, for example, about the wisdom of the "honorable harvest": to take only what you need; never take more than half; leave some for others; harvest in a way that minimizes harm; use it respectfully; never waste what you took; share with others; and give thanks for what you have been given. On the surface, this is about plants. However, you may apply this wisdom also to the design and application of technologies (a link that is not in the book, by the way); for example, in carefully collecting data ("take only what you need," "use it respectfully") or in developing fair and open algorithms ("minimize harm," "share with others").

One story is about corn, bean, and pumpkin. Indigenous people grow these vegetables in a mixed-crop fashion. The corn starts to grow first and fast and makes a long and firm stem. When the bean starts to grow, it can use this stem as a scaffold to climb. The pumpkin germinates last and grows large leaves, just above the ground. These leaves cover the soil and protect all three plants from drought. The plants support each other as if they are "three sisters." This way of growing is more wholesome than mono-crops. It can also teach us about the benefits of diversity and inclusion.

In South America, many indigenous peoples follow some form of *buen vivir*—or *sumac kawsay*, a neologism in Quechua, an indigenous language family in the Peruvian Andes. This translates into *good living* or *plentiful living*. This outlook recognizes the importance of our connections to nature, to *Pacha Mama*, and of living well together. It aims to combine feeling well, thinking well, and doing well. Ideas like this have informed political activism across the globe and have led to the Universal Declaration of the Rights of Nature by the International Union for Conservation of Nature in 2012, and to the inclusion of the rights of indigenous peoples and of elements of the natural environment in national legislations of several countries, notably in the Constitution of Ecuador. One form this can take is that a group of indigenous people acts as a legal custodian for one specific river or lake. This offers a very different perspective on nature—very different from exploiting it and destroying it.

Skipping Antarctica and Europe, our final stop is Asia

There are many wisdom traditions in Asia, for example, Buddhism and Shinto, which also appear in the IEEE document [3] mentioned above. To supplement this, let us look at Confucianism. Named after Kǒng Fūzǐ, or Master Kǒng (c. 551–c. 479 BCE), this is a very rich tradition that is very much alive in today's China. It is also a diverse tradition. For example, Mencius (372–289 BCE) assumed that people tend toward goodness, just like water naturally tends to flow downhill, whereas Xunzi (310–c. 238 BCE) believed that people's nature is evil and that we need to make efforts to redirect our impulses [2, p. 50]. We do not need to be surprised by this diversity. "Few, after all, would assume that the Christianity of Thomas Aquinas was the Christianity of St. Paul, or that the Christianity of Ignatius of Loyola was the Christianity of John Calvin" [2, p. 48].

A recently edited volume [14] gives the floor to a handful of authors who develop Confucian ethics of technology. Here, I will focus on "one central aspect of Confucianism, namely ritual ('*Li*')" [15, p. 609]; *Li* refers both to ceremonial and formal rituals and to everyday and informal activities

[15, p. 614]. Moreover, such rituals need to be understood in line with a Confucian understanding of personhood as relational and developmental [15, p. 612]; people function in a web of familial and social relationships, and they mature and flourish by fulfilling the obligations that are associated with these relationships. Wong applies this understanding of ritual to the ethics of technology and proposes that a "shift to Li necessitates an examination not only of *what* values are embedded in technology, but *how* these values are, or can be, manifested through the use of technology and in technologically-mediated interaction" [15, p. 618]. Moreover, he draws attention to the communicative, formative, and aesthetic functions of ritual [15, pp. 618–622]. How one behaves communicates a lot about one's relationships. Furthermore, we can design products to support people in their moral development, for example, in refining their emotional experiences. And we can keep in mind that, from a Confucian perspective, "the ethical and the aesthetic are intertwined."

What we can learn and how we can collaborate

Now comes, almost inevitably, the impulse to *apply* these ideas—being aware of a tendency to put ideas to work and the hard-to-avoid risk to use indigenous wisdom and knowledge as raw materials.

What can we learn from these diverse cultures and wisdom traditions? Maybe you are involved in the design or application of a system that involves AI components or robots. *Ubuntu* philosophy can help to draw attention to social issues, for example, the horrors of colonialism, exclusion, and oppression, and to find ways to promote social justice. *Aboriginal wisdom* can help to apply diverse ways of knowing, for example, knowledge that is related to place, to kinship, to stories, to patterns—not only knowledge in books. The *Indigenous cultures and wisdom* of the Americas can teach us how to organize economic and political systems more sustainably and to develop more caring relationships with nature. And *Confucian culture and wisdom* can help to design and apply technologies in ways that support us as relational and developmental beings.

Surely, there is much more to learn, if we take a closer look at these cultures, or if we turn to other cultures. This can be a journey of curiosity, creativity, and collaboration. Critically, such learning will have to be conducted with care and with reflexivity [11]—one will need to be aware of one's own impulses, assumptions, and commitments. For example, the impulse "to put these ideas to work."

Carmel and Paul [1] give a great example of such reflexivity; of critically looking at assumptions and commitments that are otherwise taken for granted. They argue that the European Commission, despite their expressed intentions to promote "peace and prosperity," with the design and application of "trustworthy" and "human-centered" AI systems, is not fully aware of (or not communicating) the (neo)colonial tendencies in their political-economic policies. These policies actually prioritize the promotion of economic power ("the common market") over other values.

In addition, we would need to be mindful and careful with methodology. Which methods can we ("Western people") use best to collaborate, and learn from indigenous peoples ("Other people")? Sorry for the contrast, but it often works like this. There are many traps we would need to avoid.

On the microscale of doing research, we would need to be aware of the (implicit) belief that Western knowledge is superior to Indigenous knowledge. One way to counter that is to collaborate with indigenous people. Or, possibly even better: to enable them to conduct research. "When indigenous people become the researchers and not merely the researched, the activity of research is transformed. Questions are framed differently, priorities are ranked differently, problems are defined differently, people participate on different terms" [10, p. 193].

On the macroscale of scaling-up projects' results or implementing innovations, we would need to be aware of the potential undesirable, unintended effects. Helena Norberg-Hodge [7] provides a chilling account of the devastating effects of introducing Western notions of "progress" and "modernization" into Ladakh, a federal territory of India. She first arrived in Ladakh in 1975 and has seen the Ladakh peoples' ways of living deteriorate; from frugality, co-operation, and the usage of location-specific knowledge, to greed, divisiveness, intolerance, and pollution.

These examples are meant to learn from, to find ways to collaborate, and to respect local cultures. This can help to counter some of the worst effects of the Enlightenment; notably, to move toward more sustainable and more equitable societies. Ideally, people with different backgrounds and outlooks, both "Western" and "Indigenous," can collaborate and combine the best of both worlds.

LET US CLOSE with a positive example. Regenbrecht et al. recently wrote about a project in which they implemented "a mixed reality telepresence system to connect a diasporic Māori community to their historical, cultural, and geographic mātauranga (knowledge)" [9, p. 32]. Their project was based on principles of partnership, participation, and protection. On reflection, they found that "forming partnerships between a diverse range of stakeholders and project members is challenging and requires tolerance, a willingness to listen and learn, and the ability to constructively criticize. True participation demands effort and energy to be put in from all partners and the development of mutually agreeable methods of taking part in the analysis, design, implementation, and evaluation of [their] system. Protection is required for all parties involved and includes physical and mental well-being, respect for culture and privacy, and intellectual and other property rights." ∎

■ References

[1] E. Carmel and R. Paul, "Peace and prosperity for the digital age? The colonial political economy of European AI governance," *IEEE Technol. Soc. Mag.*, vol. 41, no. 2, pp. 94–104, Jun. 2022.

[2] D. K. Gardner, *Confucianism: A Very Short Introduction*. Oxford, U.K.: Oxford Univ. Press, 2014.

[3] *IEEE Global Initiative on Ethics of Autonomous and Intelligent Systems, Ethically Aligned Design: A Vision for Prioritizing Human Well-Being With Autonomous and Intelligent Systems, Version 2*, IEEE, Piscataway, NJ, USA, 2017.

[4] R. W. Kimmerer, *Braiding Sweetgrass: Indigenous Wisdom, Scientific Knowledge and the Teachings of Plants*. London, U.K.: Penguin Random House, 2013.

[5] J. E. Lewis, Ed., *Indigenous Protocol and Artificial Intelligence*. Honolulu, HI, USA: The Initiative for Indigenous Futures and the Canadian Institute for Advanced Research (CIFAR), 2020.

[6] S. Mhlambi, "From rationality to relationality: Ubuntu as an ethical and human rights framework for artificial intelligence governance," Carr Center Discussion Paper Series, Cambridge, MA, USA: Harvard Univ. Press, 2020.

[7] H. Norberg-Hodge, *Ancient Futures: Lessons From Ladakh for a Globalizing World*. San Francisco, CA, USA: Sierra Club Books, 2009.

[8] S. Pitt et al., "No app is an island: Collective action and sustainable development goal-sensitive design," *Int. J. Interact. Multimedia Artif. Intell.*, vol. 6, no. 5, pp. 24–33, 2021.

[9] H. Regenbrecht et al., "Ātea presence: Enabling virtual storytelling, presence, and tele-co-presence in an indigenous seting," *IEEE Technol. Soc. Mag.*, vol. 41, no. 1, pp. 32–42, Mar. 2022.

[10] L. T. Smith, *Decolonizing Methodologies: Research and Indigenous Peoples*. London, U.K.: Zed Books, 1999.

[11] M. Steen, "Slow innovation: The need for reflexivity in responsible innovation (RI)," *J. Responsible Innov.*, vol. 8, no. 2, pp. 254–260, May 2021.

[12] M. Steen, *Ethics for People Who Work in Tech*. Boca Raton, FL, USA: CRC Press, 2022.

[13] S. Vallor, *Technology and the Virtues: A Philosophical Guide to a Future Worth Wanting*. New York, NY, USA: Oxford Univ. Press, 2016.

[14] P.-H. Wong and T. X. Wang, Eds., *Harmonious Technology: A Confucian Ethics of Technology*. New York, NY, USA: Routledge, 2021.

[15] P.-H. Wong, "Why confucianism matters in ethics of technology," in *The Oxford Handbook of Philosophy of Technology*, S. Vallor, Ed. Oxford, U.K.: Oxford Univ. Press, 2022, pp. 609–628.

[16] T. Yunkaporta, *Sand Talk: How Indigenous Thinking Can Save the World*. New York, NY, USA: HarperOne, 2020.

Marc Steen is a senior research scientist at TNO (The Netherlands Organisation for Applied Scientific Research), The Hague, The Netherlands. His mission is to promote the design and application of technologies in ways that help to create a just society in which people can live well together. He is the author of the book *Ethics for People Who Work in Tech* (Boca Raton, FL, USA: Routledge/CRC Press, 2022). Steen has a PhD in industrial design engineering from Delft University of Technology.

■ Direct questions and comments about this article to Marc Steen, TNO (The Netherlands Organisation for Applied Scientific Research), NL-2509 JE The Hague, The Netherlands; marc.steen@tno.nl.