

interoperability to web3-based consensus networks - has been accompanied by a shift in agency. The relative standing of the individual with respect to community, institutions, and governments was shifted, for better or worse.

Each stage in technological development is inspired by social, political and economic aspirations, and understanding the next generation of learning and technology requires understanding Agency as choosing vs agency as creating

Each of the major developments in the internet - from the client-server model to platform-based - the forces that shaped them. So we close our enquiry with a consideration of issues related to power and control, to peace and prosperity, to hopes and dreams.

McLuhan said that technology is a projection of ourselves into the community, so we need to consider how human capacities are advanced and amplified in a distributed and interconnected learning environment. Our senses are amplified by virtual and augmented reality, our cognitive capacities extended by machine vision and artificial intelligence, and our economic and social agency is represented by our bots and agents.

We are the content - the content is us. This includes all aspects of us. How do we ensure that what we project to the world is what we want to project, both as teachers and learners? As content and media become more sophisticated and more autonomous, how do we bind these to our personal cultural and ethical frameworks we want to preserve and protect?

These are tied to four key elements of the new technological framework: security, identity, voice and opportunity. What we learn, and what makes learning successful, depends on *why* we learn. These in turn are determined by these four elements, and these four elements are in turn the elements that consensus-based decentralized communities are designed to augment.

Let me spend a few moments on each of these:

*Security* has not only the obvious meaning of safety and protection from violence, but is also a state of mind, feeling or sensation. A person needs not only to be secure, but to *feel* secure. It is this feeling that is most often violated and exploited by those seeking to reduce one's agency.

*Identity* includes the sense of self, community, expression and self-worth. Identity does not preclude being a part of a greater whole - and is often in fact defined in part by that - but it does preclude being *subsumed* by that whole. It is the sense that there is an individual volition, capacity for choice, and power to promote one's own needs and interests.

*Voice* is the capacity not only for expression, but for that expression to be heard, and to have an impact on the environment and community around oneself. Having a voice does not guarantee that one's own will will prevail, of course. But it means that the will of others cannot prevail until a process of speaking, hearing and consideration has taken place.

*Opportunity* is represented by the existence of a path or potential for one's dreams and ambitions to be realized. Opportunity does not constitute a guarantee of success, but it does require the removal of barriers and reasonably equal access to knowledge and resources that would enable a person to at least potentially fulfill their ambition.

Learning therefore demands more than just the transmission or creation of knowledge - it requires the development of a capacity to define and instantiate each of these four elements for ourselves. Our tools for learning will need to emphasize and promote individual agency as much as they need to develop the tools and capacities needed to support social, ;political and economic development.

It is difficult to imagine a world in which education is not solely about knowledge and skills. But as we transform our understanding of learners from social and economic units to fully realized developers and sustainers of the community as a whole, it becomes clear that education must focus on the tools and capacities for agency along with the knowledge, culture and skills that sustain them.

Ai ethics

Data rights