INTEGRATED CULTURE
What the Merging Dynamics of Human and Internet Mean for our Global Future

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ABSTRACT

Researchers have often treated modularity and integration as mutually-exclusive. A module was defined as a stand-alone system, whereas integration required a single ecosystem. Today, however, we recognize that ecosystems often contain independent modules that are interrelated to create the system. Much like land, sea and air combine to create a livable planet, we are seeing a similar symbiosis occur between man and machine, with the internet as the connector of the independent human modules. Technology has become such an integral part of our daily lives that our culture – who we are as individuals and a society - is being affected. As we continue to create devices that blur the line between what is "us" and what is "the internet," the idea of symbiosis – the merging of human and internet - becomes more and more real. What we are witnessing today is the melding of human creativity with the common platform of the internet protocol (IP) creating a unique global culture. This new ecosystem of man and machine is what is called Integrated Culture, and is the focus on this paper.

1. INTRODUCTION

In 1895, Frederick Taylor defined scientific management and developed the "first man" theory (Taylor 1895). Taylor believed that management (business) could be boiled down to a single ecosystem with properly trained humans as "cogs" within the system. By plugging the appropriately trained and motivated human into a properly designed system, a symbiosis would occur, creating a system that was synergistically better than either a man or machine system alone could create. This concept, applied to business, became known as "The Four Principles of Scientific Management", as explained by Taylor in his paper and presentation at the First Conference on Scientific Management at The Amos Tuck School, Dartmouth College, October 1911 (See Classic Readings in Operations Management, pp 23-46, 1995).

As early as 1928, Ludwig von Bertalanffy posited the idea of General Systems Theory, based on the concept of open systems (von Bertalanffy, 1967, 1972; Principia Cybernetica Website accessed November 12, 2020). An open system is a system that has external interactions, taking the form of information, energy, or material transfers into or out of the system boundary, depending on the discipline which defines the concept. An open system is contrasted with the concept of an isolated system (or modular system for purposes of this paper) which exchanges neither energy, matter, nor information with its environment. I think for the purposes of this paper, most would agree that the internet is an open system.

Von Bertalanffy believed that all open systems, however different had similar underlying organizing principles, and a unifying theory would result in a richer understanding in these diverse areas. He wanted this way of looking at systems to extend to cover societies and cultures as well.

In the 1960's Kenneth Boulding expanded systems theory to include human, economic

and other behavior embedded in a larger interconnected system. Boulding identified many diverse types of systems. Examples include:

- Star systems in the universe
- Circulatory system in the body
- Closed systems of computer programming
- Open systems of living organisms

Boulding expanded his thesis to include a system populated by post-humans - beings whose basic capacities so radically exceed those of present humans as to be no longer unambiguously human by the standards of the 1960s. (Boulding, 1956, 1964).[1]
Post-humans in this definition could be a symbiosis of human and artificial intelligence, or uploaded consciousnesses, or the result of making many smaller but cumulatively profound technological augmentations to a biological human such as shown in the table below.

Table 1. Human Augmentations

Genetic Engineering	Psychopharmacology
Life Extension Therapies	Neural Interfaces
Advanced Information Management Tools	Memory-enhancing Drugs
Wearable or Implanted Computers	Cognitive Techniques

As you can see from Table 1, this concept of integrated post-humanism is less science fiction, and more a function of today's biological and technical advances. However, we are just starting to deal with the cultural consequences – the ethical and moral questions raised by augmented humans. For instance:

- Why is it okay for a MLB pitcher to have Tommy John's surgery – where a tendon from one part of the body is reattached to a shoulder, allowing a pitcher to regain his earlier form (and often better performance) – but it is not okay for a pitcher to replace his "dead" arm with a bionic one?

- Why can't an Olympic athlete utilize artificial limbs that are significantly better than real human limbs to compete?

While these two examples may seem extreme, let's look at two examples that have become commonplace in today's society.

- Smart calculators (and smartphones) connected to the web are used to solve math or statistics problems in high school and college classes around the world.

- Digital cameras and similar technology linked to smartphones gather information about images we see in everyday life and provide meta-data on time, date, location, etc.

Unlike the nameless, faceless cog in the great machine concept popularized in science fiction (think Borg Collective from Star Trek™), Integrated Culture defines a world in which each component is capable of independent action, but is also connected to a greater whole, which makes available data, information, knowledge and/or wisdom to the individual module at the request of the module. (see Savoie, 2016 for more discussion)

This concept goes far beyond the command and control structure so prevalent in today's network and takes into the world of intelligent networks, where decisions are made throughout

[1] For more background on Boulding's ideas, see Boulding, Kenneth Ewart (1910-1993) in the Biographical Dictionary of American Economists, edited by Ross B. Emmett, London: Thoemmes, 2006, pp. 73-79. Available online at http://www2.york.psu.edu/~dxl31/research/otherstuff/boulding2.html

the network and the human become another element (arguably the most important element) in the system.

2. EXAMPLE OF INTEGRATED CULTURE

The concept of Integrated Culture is a not new, but has evolved and grown over time. Today's smartphone is a great example of an integrated culture device. As of today (and we recognize that this may soon change) your phone cannot drive your car. You, on the other hand, do not have the ability to map out a route in your head to a place you've never been. But combine the phone with the human and if you want to go to an address you've never heard of, you simply type or talk the address into your phone and it gives you a map or, if you want, turn by turn navigation that takes you directly to the location. You can even use apps that navigate you around traffic accidents and road construction.

This is a great example of the merging of human and internet. The phone is not just a connection between the internet and end user. Instead it allows the capabilities of the internet (specifically GPS and traffic information) to work symbiotically with us (as we drive the vehicle). Together, this ecosystem of human and machine achieves a goal that neither module (human or internet) alone could achieve. We – humans – are now part of the network.

It is important to recognize that how humans interact with technology has changed over the years. The issue is not that the internet has become our equal, but rather has the internet become such an integral part of our daily lives that our culture – who we are - is being affected by it and to what extent. As we continue to create devices that blur the line between what is "us" and what is "the internet," the idea of symbiosis – the merging of man and internet - becomes more and more real. A great read on the physiological effects of consistent internet use is Nicholas Carr's book The Shallows: What the Internet Is Doing to Our Brains. (Carr, 2011)

3. WHAT DOES IT ALL MEAN?

Quite simply this means that a new framework – Integrated Culture – based on internet standards and human creativity is needed. Integrated Culture allows a wider and possibly richer view of ourselves in the world.
If humans are now part of the system, rather than the end user, what do we bring to the table? Rather than debating "artificial intelligence" and whether the internet is alive, maybe what we are really seeing is the melding of human creativity with the common platform of the internet – thus creating a new man-machine composite capable of significant advances beyond what either could achieve alone.

This new integrated culture needs further exploration and understanding if it is to yield positive results, such as major advances in treatments of diseases and elimination of global problems such as poverty, starvation, and pandemics. If we don't gain this understanding of this new culture, the concern is the opposite. We may see a world increasing run by machines, with less freedom, less liberty, less access to food, water, and medicine. A global system that utilizes the digital divide to expand the differences between the "haves" and the "have nots".

While we like to say that the future is up to us, the definition of "us" is changing. By understanding the concept of Integrated Culture and recognizing how this symbiotic relationship is changing the world we live in, we can direct our future more toward the positive results of this new culture.