How the Technology of Print Promotes
Abstract Thinking

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Ironically, the two most basic differences in how we experience the openness of the spoken word and the initial certainties that many readers derive from the printed word, are not given serious attention at any level of formal education. The printed word, from the earliest years, is represented as a more advanced and thus as more progressive and enlightened than reliance on the spoken word. This status difference is captured in the metaphors of literacy and illiteracy, as though the latter is a badge of dishonor and backwardness.

As print technology was first introduced centuries ago to record the shipment of goods, it has become a powerful, indeed indispensible, influence in advancing knowledge and providing ways for people to share their ideas beyond the reach of the traditionalist and reactionary forces that stand guard in too many communities. The uses of print have often opened doors of imagination and deep reflection often missing in oral communities where conformist/authoritarian thinking has taken over. While I am inclined to view authoritarianism as more likely to occur in print-based cultures, which I will explain more fully, there are deep personality issues that will never be fully understood by the cognitive scientists with their brain-centric reliance upon what MRI brain scans reveal. The continuing narrowing of life forces to what is occurring in brain, which excludes the ecology of communication occurring in all natural and cultural systems, continues to be shaped by the legacy of the 16th and 17th century.

Nietzsche, more than anyone else, understood the connections between the deep largely unconscious psychology of authoritarianism, which he understood as the more destructive expression of the will to power, and living in the world of becoming where the will to power is expressed in creativity and openness. Before examining more closely how print misrepresents the world in which we live, several of Nietzsche's insights need to be noted as they will help avoid adopting simple causal relationships that exclude the inner forces behind people's behavior. These include the following: "Knowledge works as a tool of power (1968, 266); "It is our needs that interpret the world; our drives and their For and Against. Every drive is a kind of lust to rule; each one has its perspective that it would like to compel all other drives to accept as a norm." (267); "Everything simple is merely imaginary, is not 'True." But whatever is real, whatever is true, is

neither one nor even reducible to one" (291); First proposition. The easier mode of thought conquers the harder mode; as dogma….to suppose that clarity prove anything about truth is perfect childishness. Second proposition: The doctrine of being, of things, of all sorts of fixed unities is a hundred times easier than the doctrine of becoming, of development—. " (291). And finally, "…every elevation of man brings with it the overcoming of narrower interpretations; that every strengthening and increase of power opens up new perspectives and means believing in new horizons…" (330). Nietzsche ends this passage by claiming that there is "no truth". As I will argue, there is no objective knowledge and data. So what is there in the taken for granted linguistic constructions of what is taken to be reality that leads to these fateful misconceptions?

Before turning to consider the characteristic of print that have been largely ignored because of the history of considering print as the technology essential to human advancement it is important to make several other observations that will help avoid placing print and data in the dichotomous world of good and evil. Taking account of different contexts (such as considering the impact of print on tradition-oriented cultures) and relationships (such as how it affects the exercise of ecological intelligence) needs to be taken into account in assessing when its use becomes an ecologically destructive force. With the life threatening changes in the world's ecological systems, as well as the massive threats to personal security and privacy—including the global threats to the nation's infrastructure and institutions that the computer culture continues to represent as the latest expression of progress, it is essential that relational thinking is part of the following discussion.

A superficial knowledge of other cultures, as well as one's own—including the thinking that led to important advances in knowledge are also part of why print has been so valued over the centuries. Gifted writers have been able to use the printed word as a mirror that enables us to see ourselves, and our conceptual and moral double binds, more clearly. And without print we would be limited to a barter economy, and to the uses of technologies that are learned through face to face mentoring relationships. These advantages are largely taken for granted by everyone who has graduated from higher education. But it is this one-sided view of print that has led classroom teachers and university professors to ignore engaging students in a serious and in-depth discussion of how print, for all its many uses, undermines the exercise of ecological intelligence that comes so naturally in many oral communities—yet remains a challenge even in our face to face interactions that too often reproduce the abstract thinking acquired from an

over reliance on print-based cultural storage and communication.

Deconstructing Print-Based Cultural Storage and Communication:

a. One of the paradoxes we now face, given the rapidly deepening ecological crisis that is leading to the endgame of widespread social chaos as billions of people struggle to survive the shortage of water, protein, and the complete breakdown **Print can only provide a surface knowledge of ideas, events, and processes**. Print is unable to represent of the multiple influences and relationships within the cultural and natural ecologies that constitute local contexts. The writer too often lacks a knowledge of the semiotic processes that make the emergent and relational nature of the information rich natural and cultural ecologies. Even if the writer were aware of the tacit and taken for granted cultural patterns she/he would not be able to fully translate them into print. Thus, what print provides is only a surface knowledge, which may be useful in certain situations. The surface knowledge, in turn, provides only an abstract understanding that too often becomes the basis of what is communicated to others. Twitter, texting, e-mails, and cell phone communications further reinforce the tradition rooted in centuries of print-based cultural storage and communication that held that abstract knowledge has higher status and is more efficient in guiding behavior and social policies than knowledge informed by what is being semiotically communicated through the emergent, relational, and co-dependent natural and cultural ecological systems—which is the world we interact with on the streets and other public spaces.

b. **What is committed to print immediately becomes outdated in the ecological world of constantly changing relationships and multiple levels of message exchanges:** What is committed to print can be constantly updated, but it can never reproduce the dynamic nature of ecologies which carry forward influences from the past and are constantly changing. To test out this generalization, give a printed account of an ongoing conversation or the action of ocean waves, and then assess what was omitted in a printed account. Both are examples of the changes in patterns, the multiple influences on these patterns, and the inability to represent them fully in print except in a highly abstracted and static manner. The problems connected with print-based cultural storage and communication are further compounded when readers

impose on what is written their culturally influenced interpretative frameworks, which often lead to another level of abstract understanding or becomes entirely distorted by the reader's taken for granted interpretive framework. As the level of abstraction becomes increasingly removed from the patterns and messages of living ecological systems, there is an increasing loss of accountability for what the printed word represents.

c. **The abstract thinking fostered by print too often becomes interpreted as having a universal meaning**. In being able to represent only a surface knowledge of events, ideas, and so forth, as well as its dated representation of what ecological systems have already moved beyond, the printed word marginalizes awareness of the hidden cultural influences on what the writer thinks is important. This process has become especially acute in the West where print has become the basis of high-status knowledge, and will become even more so as people increasingly find it more convenient to engage in digitally mediated communication. As we are witnessing in how digital communication is changing patterns of thinking, including attention spans, the historical influences on what is becoming only surface knowledge is increasingly slipping into the realm of silence. Without this historical knowledge of the forces shaping the present, turning abstractions into universal truths become easier for both the writer and the reader.

d. **Print reinforces the conduit view of language that undermines awareness that words are metaphors that carry forward earlier cultural assumptions**. Print simply serves to hide the misconceptions and hubris of the writer by creating the illusion of objectivity and factualness. The conduit view of language as a sender/receiver process of communicating objective data and knowledge further undermines the reader's awareness that words have a history, that most are metaphors whose meanings were framed in earlier eras when there was no awareness of the limitations of ethnocentric thinking and that there are ecological limits to the western approach to progress. These understandings should be part of the formal education of everyone, including environmental scientists, computer engineers, and the people who write the software and create the video games. The conduit view of language can be addressed by introducing phrases and information that foster an awareness that the meaning of words has a history, and that their meanings can be reframed by adopting

ecologically and culturally informed analogies. (Bowers, 2012, 107-166)

e. **Print reinforces the western myth of the autonomous individual who relies primarily upon a visual relationship with the external world.** As most patterns of communication in the West do not make explicit that words are metaphors whose meanings were mostly framed by analogs chosen in the past, most individuals assume they are making independent judgments about the events, ideas, and so forth represented in print. The static yet constantly updated world of print is profoundly different from that of oral cultures where participation leaves less room for standing back as a supposed external observer who makes objective and critical judgments. The printed text also introduces an asymmetrical power relationship between the writer and the reader, with the reader (or teacher and professor) reproducing this same asymmetrical power relationship when conveying to students what was in the printed text. This power relationship also reinforces the illusion of being a rational and self-directing individual. Again, the failure to introduce students to how being socialized within culture's largely taken for granted languaging processes, which computer-mediated learning is unlikely to address, perpetuates the misconception that rational thought, critical inquiry, and thus individual judgment are free of cultural influences.

f. **Print is inherently ethnocentric.** Orality involves responding to multiple relationships, influences past and current, messages both tacit and explicit, and what constitutes the appropriate moral behavior in a world of changing relationships. Print, which has been the dominant technology in colonizing other cultures through the creation of maps, written treaties and contracts, as well as linguistic/ideological impositions, has led to treating oral cultures as backward, illiterate, and thus easily exploitable. The current promotion of digital technologies in predominately oral cultures is a continuation of the colonizing agenda of bringing these cultures into the realm of literacy and a market economy that relies upon individualism and the destruction of the local cultural commons. At the most basic level, print cannot encode the multiple messages communicated in the living moment, and within and between the cultural and natural ecologies. The cultural practice of relying upon all of the senses, memory, and the openness to negotiating a

change in meanings as speakers speak, listen, and read the body language of each other is more often found in oral cultures. Tacit knowledge also plays an important role in oral cultures as well as a metaphorical language that is influenced by changes occurring within the interacting ecologies.

g. **Most writers and readers are unaware of the taken for granted cultural assumptions that influence their interpretations of the world that take on the appearance of objectivity when encoded in the printed word.**

of moral norms of which hackers are the now the leading edge, is the growing influence on globalizing the mode of communication that marginalizes awareness of local contexts. Like all technologies that amplify and reduce cultural patterns that, in turn impact human experience, print and data have the following inherent limitations.

So how did the West take the turn way from the face to face and co-dependent mentoring lifestyles that kept starvation at bay by giving close attention to the cycles of emergent and relational changes occurring within their bioregion? There are many explanations, with most reflecting the modern mindset of identifying the adoption of new technologies such as the printing press, the scientific method, the agricultural revolution that replaced the scratch plow with the moldboard plow that had a metal cutting edge that turned the soil over—thus increasing crop yields. The increase in population centers lead to the need to rely upon the printed word for understanding ongoing events and for reading about one's place in the universe. It is important to note that the early reliance upon the printed word as did not take account either of the emergent, relational, and co-dependent nature of the life supporting natural and cultural ecologies, or that the human relationship to these ecologies involved historically layered patterns of interpretation.

These silences were reinforced by the elevation of abstract thinkers to elite status. Those who mentored others in how to grow and prepare food, in the crafts and uses of community-scaled technologies, and in the patterns of mutual support within communities, relied upon face to face communication— and not on the printed word. Generally overlooked today, is the role western philosophers and social theorists played in establishing not only what constituted high status knowledge, but also the abstract ideas that continue to underlie the misconceptions that are now taken for granted by the current elites whose agenda is to digitize and thus to further expand the consumer-oriented culture now being globalized as the model of human progress. If one can avoid becoming caught up in the tribal

debates between the western philosophers and the efforts of later generations of philosophy professors to promote this earlier tribal model of rationality among their students, it becomes possible to recognize other aspects of their legacy that now limit our ability to alter the ecologically destructive pathway we are now on.

Western philosophers were, with only a few exceptions, abstract thinkers who relied upon print for communicating with other abstract and ethnocentric thinkers about adopting their culturally uniformed agendas for guiding future social development. Plato's arguments against oral narratives, John Locke's justification for determining the ownership of private property, Adam Smith's discovery that there is such a thing as free markets and an invisible hand that ensures the survival of the most competitive in trucking, bartering and trading, René Descartes's insight that we can live a more rational existence if we ignore traditional sources of knowledge and view ourselves as separate from the world we think about and act upon, Roger Bacon's advocacy of using science to control nature for human benefit, John Stewart Mill's augment that everything should be questioned, and Herbert Spencer's discovery that all life is subject to Nature's law that ensures the survival of the fittest, John Dewey's pronouncements on the superiority of scientific/experimental inquiry over cultures dominated by "savage" (his term) and spectator approaches to knowledge. Not to be outdone in the realm of abstract and culturally uniformed thinking are Ayn Rand, Milton Freidman, and E.O Wilson. The latter argued that the brain is a machine---a problem in engineering. He also claimed that scientists should pass judgment on which moral and religious sentiments people should live by.

 As we enter the world being transformed by the digital revolution we find computer scientists such as Ray Kurzweil, Hans Moravec, and Gregory Stock carrying forward the Titanic mindset of these earlier elites who not only ignored the absolute dependence of humans on the viability of natural systems, other cultural systems of knowledge, and an understanding of the cultural traditions that should be intergenerationally renewed.

Today' current Orwellian use of our political metaphors can be traced to the ideas of this long-history of abstract theory and thinking. That is, abstract thinking is free of being held accountable for the variations, complexities, histories, and moral norms that exist in local face to face cultural contexts—which should not be romanticized. Many of the narratives that named the West as an advanced civilization also promoted gender, racial, and other prejudices, especially toward oral and tradition-oriented cultures.

Especially problematic is that many of today's leading politicians, economists, and now nihilistic populists activists have embraced the ideas of Ayn Rand who argued in *The Virtue of Selfishness* (1964) that individuals should exercise their rationality in order to achieve the most personal happiness and self interest.   Her own abstract approach to rationality led her to claim that governments should not provide safety nets for those in poverty, that altruism and empathy toward others were values promoted by the weak, and that governments have no right to tax what others had earned, carries forward the abstract thinking shared by today's capitalists who ignore that we live in a relational and co-dependent world that still includes the natural ecologies that are fast disappearing.

The irony is that these core libertarian ideas are widely referred to as conservative, while people concerned with conserving habitats, species, social justice achievements, linguistic and cultural ways of knowing, and the diversity of the world' cultural commons are identified as liberals. How this Orwellian misuse of our political language relates to the unconscious influence that print has had on the lack of accountability for how our political vocabulary is being used can be seen in how the abstract words such as conservative, liberal, tradition, emancipation, progress, indigenous, and so forth are being used as free floating labels that have no relationship to the cultural patterns of everyday life whose complexities cannot be adequately represented by these labels. If we were to do an ethnography— that is, a careful description of the lived cultural patterns that fit the core beliefs and assumptions historically associated with these different political metaphors— we would find that these abstract words fail to account for the range of traditions that people take for granted, the ways they struggle to reconcile cultural norms others take for granted with their need to challenge how their own lives are being constrained, and the complexity of their relationship with the natural environment.

Each individual's life is also characterized as emergent, relational, and co-dependent upon the information (semiotic) networks and support/ constraints systems of the natural and cultural ecologies within which they live. The abstract use of political labels, like the abstract nature of the printed word, ignores the complexities of the ecological connections with the past, with others, and with the possibility of ecological collapse as 9 billion people increase the demands on a environment whose capacity of self renewal is in rapid decline.

Summary of what is missing in how print is understood:
The following will help minimize the "immaculate conception"
way of thinking that print provides objective facts and information about a

world that supposedly is free of human interpretation.

    a. To reiterate: what appears in print always has a human authorship, which means that it represents a culturally influenced interpretation.

    b. Writers and readers, even the most gifted and thoughtful, cannot be fully be aware of the earlier patterns of thinking that are encoded in the metaphorical language they largely take for granted.

    c. Readers, who bring their own unresolved (perhaps not even recognized) psychological issues and taken for granted conceptual world to what they read, are part of yet another layer interpretation— and misinterpretation that may further imperil our future. Those in denial about the ecological crisis are examples of the latter.

    d. Writers are generally unaware of how print, whether in books or on the computer screen, makes it difficult to recognize that words have a history and thus reproduce earlier expressions of intelligence that encode the taken for granted assumptions of earlier eras.

    e. Most writers and readers take for granted that they are autonomous thinkers and thus are giving an objective account of that part of the world they write and read about.

    f. The inner psychological forces Nietzsche identified with the will to power that can also be referred to as hubris, which also includes the power play he referred to as ressentiment, are also aspects of the ecology of writing and reading.

    g. As the cultural, linguistic, and psychological influences on what is written are often hidden from readers, the printed word may be interpreted as stating an objective and universal truth. That print can never fully reproduce the multi-layered emergent and relational nature of the ecologies we misrepresent by referring to "contexts", which is another well intended abstractions, contributes to the sense of certainty valued by most writers and readers.

The main difference between print and data:

Because data is a construction of the scientific mindset that claims the mythical powers of obtaining objective knowledge free of all cultural/ linguistic influences, data now serves a number of important functions in undermining cultural traditions that have not been entirely colonized by the radically reduced conceptual world of the computer scientists, cognitive scientists, and libertarian/market liberals. The influences that operate in the ecology of print also operate in the world of data, and if understood would challenge the high status now accorded to data.

      The determination of what to collect as data is always based on

someone's interpretation— which usually means someone's will to power that reflects being socialized to take for granted the explanatory power of the root metaphors of mechanism, and its supporting root metaphors such as anthropocentrism, individualism, economism, and progress. The supporting vocabularies of these root metaphors (interpretive frameworks) exclude the vocabularies essential to understanding the diversity of cultural histories, their different approaches to ecological knowledge and daily practices, and their moral ecologies and wisdom traditions. The metaphor of "objective" also hides how the collection and use of data undermines awareness of the powerful role it plays in achieving different ideological ends. In the hands of environmental scientists, it serves to justify practices that conserve species and habitats, and to challenge the environmentally destructive practices of market forces and government policies that reflect the interests of powerful elites.

When used by libertarian and market liberal groups, which includes the rapidly expanding digital culture, the idea of objective data supports the current ideology that seeks to replace humans with algorithms and robots— and to bring all aspects of organic life, including humans, under the control of massively connected computer systems now being justified on the grounds that this form of progress needs to be understood as how the process of evolution is on the cusp of replacing organic life with super intelligent computers.

Whether used by environmental scientists and groups working to achieve a more socially just and ecologically sustainable culture or by those still under the control of the cultural myths that continue as the main legacy of the abstract thinking philosophers and social theorists who are now leading us down the path to a techno-fascist future, data is always interpreted. What is particularly difficult to grasp is why so many people now understand that nearly every aspect of their lives is being is electronically monitored and stored as data, which then is use by strangers whose values and political agendas are unknown except for how they are making the lives of more people economically insecure and subject to constant harassment by strangers promoting scams and the latest consumer opportunity. Is this because they have been conditioned by the legacy of the abstract thinking philosophers, social theorists and religious leaders to ignore their traditions of more face to face community-centered and thus less consumer driven lives?

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