What the Internet Makes of Us

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Abstract

Marshall McLuhan says our tools not only extend and shape us, but "work us over completely." And no tool in human history extends, shapes and works us over more completely than the electronic rectangles we use on our desks and laps, and carry in our pockets and purses. Through these we are now digital as well as physical, inhabiting a second world that is absent of distance and gravity. This new second world is the Internet. Through lenses provided by McLuhan, Emerson, Polanyi, Aristotle and others, this paper examines some ways we are being worked over, looks toward what we are becoming, and argues that while it is too early to know what our mature digital form will be, we can at least know that it will not be entirely human—and that our species' main challenge in a world mediated by the Internet is to retain and advance the best aspects of our human nature, including ones we may only discover as partly digital beings.

Becoming digital

As technologies go, railroad cars on passenger trains have changed relatively little since they came into widespread use in the mid 1800s. All are still boxes on wheels, filled with places for passengers to sit or stand. But passengers have changed, especially in the last few years. All are still people with places to go; but fewer now read newspapers or books. They also talk less to each other. Instead they busy themselves with reading, talking, watching videos, listening to podcasts and music, playing games—and doing all those things, plus much more, using mobile phones. This photo, taken in a New York subway by the author in July 2018, provides a telling example:

This change in passengers didn't happen in New York until the Internet became available through cellular data connections, which were installed in every one of the city's subway stations by January 2017.[1] By then the passengers had already changed, because their phones had become necessary parts of their lives. To be without a phone had become like being without shoes: you can along without one for a while, but not forever. Today the mobile phone had become a necessity for living a civilized life—and that life is rapidly changing in the process as well.

This change is non-trivial. People with phones and related digital technologies—computers, apps, smart speakers—are not the same as they were without them. This change goes beyond dependency. There is transformation at work. We are becoming digital as well as physical.

Extension

Humans enlarge their bodies with clothing, their spaces with buildings, their beliefs and ideas with churches, schools and libraries. This enlargement begins with technologies that extend the body outward. From stone tools to hammers, cars and airplanes, technologies extend and enlarge the self. When a driver speaks of "my wheels," a pilot of "my wings" and a carpenter of "my hammer," they each speak from a state of being that is larger than their bodies alone. To be human is thus to be more than a body, more than a mind, or the two combined.

 "The hand is a tool[2] of tools," Aristotle said.[3] Emerson added, "All the tools and engines on earth are only extensions of limbs and senses." [4] Marshall McLuhan (whose magnum opus, *Understanding Media*, was subtitled *The Extensions of Man[5]*), wrote, "All media are extensions of some human faculty — psychic or physical. The wheel is an extension of the foot. The book is an extension of the eye. Clothing, an extension of the skin. Electric circuitry, an extension of the central nervous system. Media, by altering the environment, evoke in us unique ratios of sense perceptions. The extension of any one sense alters the way we think and act — the way we perceive the world. When these things change, men change."[6]

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[1] "Cellular Connectivity in Underground Subway Stations One Year Ahead of Schedule; Wi-Fi Also Installed in Underground Stations Two Years Ahead of Schedule." *MTA Info*, January 6, 2017.
http://www.mta.info/news/2017/01/06/cellular-connectivity-underground-subway-stations-one-year-ahead-schedule-wi-fi-also

[2] The Greek ὄργανόν is translated either as "tool" or "instrument." Most translations use the former; Emerson uses the latter.

[3] Aristotle, *On the Soul, Book III, Part 8. Translated by J. A. Smith*. Internet Classics Archive.
http://classics.mit.edu/Aristotle/soul.3.iii.html

[4] *The complete works of Ralph Waldo Emerson: Society and solitude [Vol. 7]*
Emerson, Ralph Waldo, 1803-1882., Emerson, Edward Waldo, 1844-1930.
Boston ; New York : : Houghton, Mifflin, [1903-1904].
https://quod.lib.umich.edu/e/emerson/4957107.0007.001/1:11?rgn=div1;view=fulltext

[5] McLuhan, Marshall. *Understanding Media: The Extensions of Man*. Gingko Press, Critical Edition, 2003. (Prior editions: 1964, 1994.)

[6] McLuhan, Marshall, and Fiore, Quintin. *The Medium is the Massage: An Inventory of Effects*. Gingko Press, 1967. pp 31-40.

Michael Polanyi wrote, "… when we learn to use language, or a probe, or a tool, and thus make ourselves aware of these things as we are of our body, we *interiorize* these things and *make ourselves dwell in them*. Such extensions of ourselves develop new faculties in us…"[7] Polanyi calls this faculty *indwelling*. It is by indwelling that the driver becomes a car, the pilot a plane, the carpenter a hammer.

To be transformed by technology is not a minor matter. Father John Culkin, S.J., a Professor of Communication at Fordham University and a collaborator of McLuhan's there, wrote, "We shape our tools and thereafter our tools shape us." [8] This shaping extends outward into every human enterprise, in ways that that can be vast and profound. McLuhan again: "All media work us over completely. They are so pervasive… that they leave no part of us untouched unaffected, unaltered. The medium is the massage. Any understanding of social and cultural change is impossible without a knowledge of the way media work as environments."[9]

McLuhan wasn't just talking about *communications* media. He was talking about *all the things we make and use*—and which then make and use us. In *Laws of Media: The New Science*, Eric McLuhan (Marshall's son and collaborator) says that *media* (in the McLuhan family's lexicon) refers to "everything man[kind] makes and does, every procedure, every style, every artefact, every poem, song, painting, gimmick, gadget, theory — every product of human effort."[10]

To help understand the effects of all these media, the McLuhans provide a tool they call *tetrad of media effects*.[11] It says every medium has four effects, which refract in four directions that also affect each other. They explore these heuristically, through questions:

- What does a medium **enhance**?
- What does it **obsolesce**?
- What does it **retrieve** that had been obsolesced earlier?
- What does it **reverse** or flip into when pushed to its extreme (for example, by becoming ubiquitous)?[12]

Here's a graphic representation of them:

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[7] Polanyi, Michael, and Grene, Marjorie. *Knowing and Being: Essays by Michael Polanyi*. University of Chicago Press, 1969. p. 148.

[8] Al-Sheeshany, Haitham. "We shape our tools and thereafter our tools shape us." *McLuhan Galaxy*. April 1, 2013. https://mcluhangalaxy.wordpress.com/2013/04/01/we-shape-our-tools-and-thereafter-our-tools-shape-us/ Note that this quote is often and erroneously attributed to McLuhan, no doubt because it is something he likely would have said, and may in fact have said.

[9] *Massage*, loc. cit. p. 26. "The medium is the massage" is a play on "The medium is the message"—McLuhan's best known one-liner and the title of *The Medium is the Message*, written by McLuhan and illustrated (as is *The Medium is the Massage*) by Quintin Fiore. Published by Random House, 1967.

[10] McLuhan, Marshall and Eric. *Laws of Media: The New Science*. University of Toronto Press, 1988.

[11] A tetrad is a group of four.

[12] *Laws*, loc. cit., p.7.

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        ENHANCES        REVERSES

              MEDIUM

        RETRIEVES       OBSOLESCES
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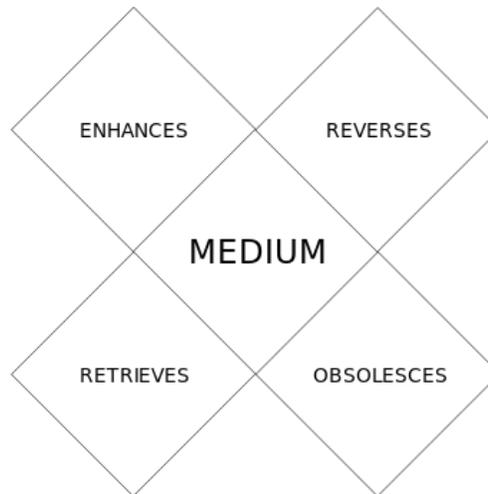
Questions are required because there can be many effects, and many answers. All can change. All can be argued. What matters is that there are effects in all cases, and those effects matter.[13]

For example, *sidewalks*—

- **Enhance** walking convenience
- **Obsolesce** dirt paths
- **Retrieve** stone paths
- **Reverse** into lost nature

Cars—

- **Enhance** convenience
- **Obsolesce** carriages
- **Retrieve** the shell, or carapace[14]
- **Reverse** into traffic jams (and much else[15])

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[13] Andrew McLuhan, "What is a Tetrad?" *Medium*, June 8, 2016. https://medium.com/@andrewmcluhan/what-is-a-tetrad-ad92cb44d4af Andrew is Eric's son and Marshall's grandson.

[14] Phil Patton, in "The Car as Medium" (*McLuhan Galaxy*, June 29, 2011) cites McLuhan in *Understanding Media*: "The car has become the carapace, the protective and aggressive shell of urban and suburban man." p. 224-5.

[15] In *Understanding Media*, McLuhan presents a long roster of reversals: "It broke up family life, or so it seemed, in the 1920s. It separated work and domicile, as never before. It exploded each city into a dozen suburbs, and then extended many of the forms of urban life along the highways until the open road seemed to become non-stop cities. It created asphalt jungles, and caused 40,000 square land to be cemented over… The motorcar ended the countryside in which the car was a sort of steeplechaser. At the same time, the motor destroyed the city as a casual environment in which family could be reared. Streets, and even sidewalks, became too intense a scene for the casual interplay of growing up. As the city filled with mobile strangers, even next-door neighbors became strangers." p. 224.

The custom among McLuhan scholars is to place the medium in the middle square, and put answers in or outside the four corners. So, for **social media**, the answers might be these:
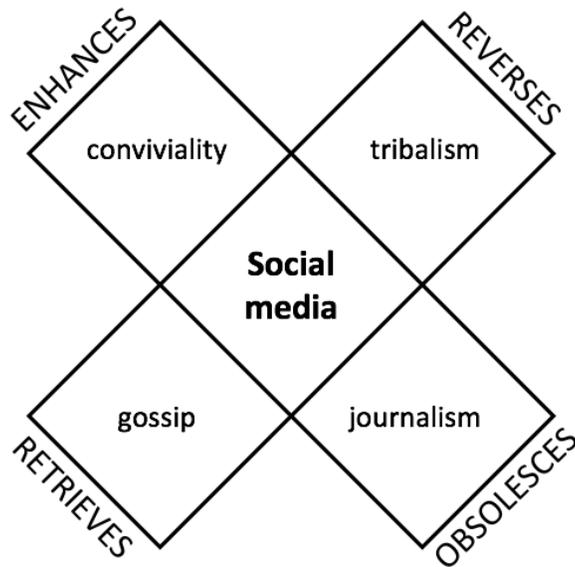
In the ENHANCES corner, social media make everyone more social, in the purely *convivial* sense of the word. Its success at this also misdirects attention away from effects in the other three directions.

Social media RETRIEVES hundreds or thousands of "friends" (Facebook, Swarm), "followers" (Twitter, Instagram) and "contacts" (Linkedin) by giving them efficient ways to *gossip*. In *Sapiens: A Brief History of Humankind*, Yuval Noah Harari cites a theory "that our unique language evolved as a means of sharing information about the world. But the most important information that needed to be conveyed was about humans, not about lions and bison. Our language evolved as a way of gossiping. According to this theory *Homo sapiens* is primarily a social animal. Social cooperation is our key for survival and reproduction. It is not enough for individual men and women to know the whereabouts of lions and bison. It's much more important for them to know who in their band hates whom, who is sleeping with whom, who is honest, and who is a cheat."[16] Whether or not this theory holds true, social media clearly amplifies gossip beyond measure.

Social media also puts everyone in a position to report news as well as gossip, and a mix of both today comprises a huge percentage of society's news flow. This OBSOLESCES *journalism*. Twitter in particular has given politicians and celebrities (plus millions of others) a way to avoid the intermediary role that journals and journalists have played for a century or more.[17] This

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[16] Harari, Yuval Noah. *Sapiens: A Brief History of Humankind*. Harper, 2015. pp. 22-23.

[17] Though it has been around longer, *journalism* is an industrial age word. Google Ngrams shows usage starting to increase in 1840, hitting a plateau in the 1920s, and rising again in the 1990s: https://books.google.com/ngrams/graph?content=journalism&year_start=1800&year_end=2008&corpus=15&sm

disintermediation has in the process also obsolesced the fact-checking and curation roles long played by journalism, and which provided society a canon of shared knowledge. Journalism and its primary print and broadcast outlets are thus now a center failing to hold.

Countless newspapers and magazines have shrunk or died since the Internet showed up, and the survivors have been transformed along with readers. For example, the online forms of newspapers and magazines no longer produce what their trade once called "editorial." Instead their main function is now "content production." In a 2017 *New York Times* story titled "In New Jersey, Only a Few Media Watchdogs Are Left," David Chen reported that the *Newark Star-Ledger*, the state's largest newspaper, "almost halved its newsroom eight years ago," and "has mutated into a digital media company requiring most reporters to reach an ever-increasing quota of page views as part of their compensation."[18]

This begs a question*: Why would the* Star-Ledger*, one of the country's leading newspapers, incentivize its reporters to maximize page views, rather than to report the news?* The answer comes from its business model: *adtech*, or tracking-based advertising[19]. With adtech, ads are aimed by tracking beacons (e.g. cookies) inserted in readers' browsers and apps. By design, adtech doesn't sponsor any publication for its own worth, as did old-fashioned advertising. Instead it chases marked eyeballs to wherever they show up. This encourages publishers to maximize the content it produces, so to cast a wider net for catching the tracked eyeballs adtech is ready to shoot with ads.

Refracted through the tetrad, here are some effects of adtech:

- **Enhances** personalization
- **Retrieves** surveillance
- **Obsolesces** sponsorship
- **Reverses** into creepiness

Another reversal is the overabundance of content on the Net. That's because adtech incentivizes content production, regardless of where it is published or whether or not it's false or biased. In fact, biased content tends to outperform the kind that tries not to be. For that we can blame both human nature and algorithms designed to increase responsiveness and engagement.

One of the things that make humans social is *homophily*: the tendency to care about and hang with people with whom one shares affinities. Social media algorithms and machine learning systems have from the start been steadily urging people into opposed camps by elevating

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oothing=3&share=&direct_url=t1%3B%2Cjournalism%3B%2Cc0. While that graph shows *journalism*'s appearance in books running flat until 2008 (when Google Ngrams timeline ends), Google Trends, shows a fairly steady decline in searches for *journalism* from 2004 to the present (at this writing, September 2019). Today the word is searched for about ¼ as often as it was in 2004: https://trends.google.com/trends/explore?date=all&q=journalism.

[18] David Chen, "In New Jersey, Only a Few Media Watchdogs Are Left." *The New York Times*, January 3, 2017.

[19] *Adtech* is more commonly used than *ad tech*, and thus the term used here.

placement of content and ads that play directly to readers' interests and prejudices. A helpful source of evidence on this is *The Wall Street Journal*'s Red Feed / Blue Feed site[20], which shows the completely opposed (and hostile) views of the world that Facebook's polarizing algorithms inject into the news feeds of typical readers on the political left and right. Here is an example from the last day the site operated, in August, 2019:

Another tetrad to explore is the mobile phone:

[20] "Blue Feed, Red Feed: See Liberal Facebook and Conservative Facebook, Side by Side." *The Wall Street Journal*, August, 2019. http://graphics.wsj.com/blue-feed-red-feed/
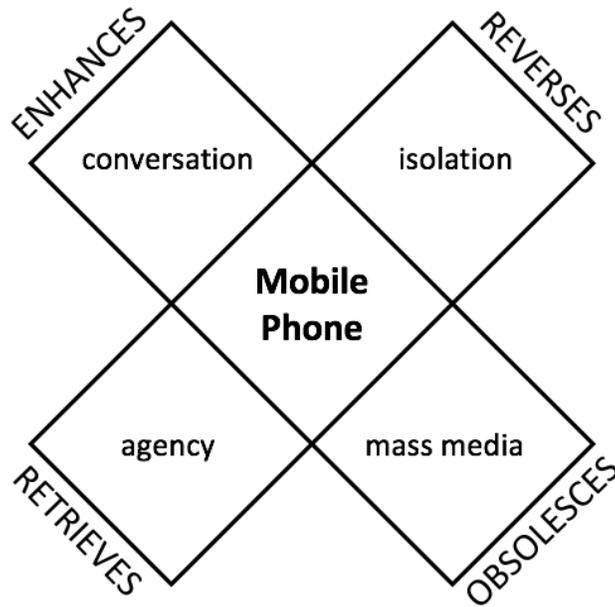
In the subway photo, nearly everyone in sight is using a mobile device. What we see here are effects of on the people whose lives and bodies they extend. Here is a quick sort of those, through McLuhan's tetrad:

- **Enhances** *conversation*, mostly through texting with persons elsewhere.
- **Retrieves** *agency*, with everybody able to do countless things through countless apps.
- **Obsolesces** *mass media*, since nobody here is reading a book, a magazine or a newspaper, except perhaps on their devices. Some are also consuming streams and podcasts from sources busy sidelining legacy broadcast systems.
- **Reverses** into personal *isolation*, or what Michael B. Crawford calls "self-enclosure."[21]

Those are just four in a range possible answers that leans toward the infinite. (In *Laws of Media*, the McLuhans devote eighty-three pages to refracting media through tetrads, with multiple answers in all four directions in nearly every case.[22])

According to Eric McLuhan, what matters more than the answers is recognizing that there are a number (possibly exceeding these four) of very different kinds of effects, all of which extend the individual and produce profound social, infrastructural, political and other changes. He also says the causes of those changes are far more important than the effects we see around tetrads—and a lot harder to explore and understand.

Causes

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[21] Michael B. Crawford. *World Beyond Your Head: on Becoming an Individual in an Age of Distraction*. Farrar, Strauss and Giroux, 2015.
[22] *Laws*, loc. cit. pp. 131-213.

While the tetrad is a way to look at *effects*, the McLuhans want scholars to look deeper, toward *causes*. This is hard, they say, because effects are *figures*, and causes are *grounds*, which are the contexts from which figures arise—and figures are what people see and know best. In fact, to see the figure is to *miss* the ground. This is demonstrated by the familiar vase-faces image:
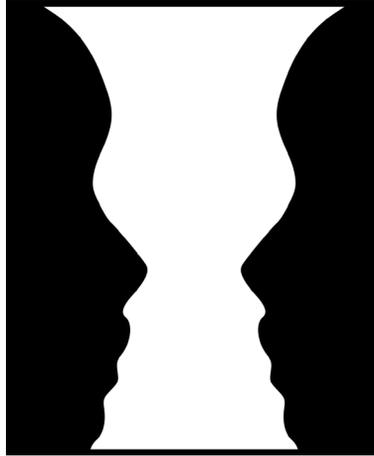
When you see the vase, the faces are the ground; and when you see the faces, the vase is the ground. Perceiving one requires not perceiving the other. Felix Stalder: "The ground, or environment, is not a passive container, but active processes that influence the relationships between all of the elements in it." [23] This ground, this active process, this environment, is one we take so deeply for granted that we almost can't help ignoring it. In *War and Peace in the Global Village*, McLuhan writes, ""One thing about which fish know exactly nothing is water, since they have no anti-environment which would enable them to perceive the element they live in."[24] In *The Relation of Environment to Anti*-Environment, he writes, "Any new technology, any extension or amplification of human faculties given material embodiment, tends to create a new environment… It is in the interplay between the old and new environments that there is generated an innumerable series of problems and confusions… It is useful to view all the arts and sciences as acting in the role of anti-environments that enable us to perceive the environment," adding, "An environment is naturally of low intensity and low definition. That is why it escapes observation." [25]

In other words, fish lack arts, sciences and other methods—*anti-environments*—to see their environment: one they not only take for granted; but is ground for all the figures they know in their world.

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[23] Felix Stalder, "From Figure / Ground to Actor-Networks: McLuhan and Latour": A paper given at *Many Dimensions: The Extensions of Marshall McLuhan Conference,* Toronto, October 23-25, 1998, and published on the Web at http://felix.openflows.com/html/mcluhan_latour.html.

[24] McLuhan, Marshall; Fiore, Quentin; Agel, Michael. *War and Peace in the Global Village*. Bantam Books, 1968.

[25] McLuhan, Marshall, "The Relation of Environment to AntiEnvironment." In: Matson, Floyd W.; Montagu, Ashley (Ed.). *The Human Dialogue: Perspectives on Communication*. New York: Free Press, 1967a. p. 39-47. See *Internet Archive*: https://archive.org/details/humandialogueper00mats/

Fortunately, humans are not fish. We can use the lenses of art, science and research to study ground on which we perceive figures such as social media, mobile phones, and all their effects. This means we shouldn't be satisfied to say that social media and mobile phones have effects in the four refracted directions of the tetrad, but should also look at social media and mobile phones as *figures* on the *ground* of— what?

For answers the McLuhans look to Aristotle's four causes—and one in particular:

> **Material** — what something is made of.
> **Efficient** — how one thing acts on another, causing change.
> **Final** — the purpose to which a thing is put.
> **Formal** — what makes the thing form a coherent whole.

The first three are obvious ones. Those are the ones we're usually talking about when we seek or discuss the causes of anything. The fourth, *formal*, may matter most, but is hardest to see. That's because formal causes are to which we turn our *inattention* when we are busy paying *attention* to figures (e.g. social media and mobile phones) and their effects (whether refracted through the tetrad or otherwise observed).

"People don't want to know the cause of anything", Marshall said. "They do not want to know why radio caused Hitler and Gandhi alike. They do not want to know that print caused anything whatever. As users of these media, they wish merely to get inside…"[26] In *Understanding Media*, Marshall adds, "Any technology gradually creates a totally new human environment", adding, "Environments are not passive wrappings but active processes….The railway did not introduce movement or transportation or wheel or road into society, but it accelerated and enlarged the scale of previous human functions, creating totally new kinds of cities and new kinds of work and leisure. This happened whether the railway functioned in a tropical or a northern environment and is quite independent of the freight or content of the railway medium."[27] Jane Jacobs, the great authority on cities, wrote: "Current theory in many fields— economics, history, anthropology—assumes that cities are built upon a rural economic base. If my observations and reasoning are correct, the reverse is true: that rural economies, including agricultural work, are directly built upon city economies and city work….Rural production is literally the creation of city consumption. That is to say, city economics invent the things that are to become city imports from the rural world."[28]

To sum that up, the city and the countryside are figure and ground for each other, and the city gets insufficient credit as both a ground for agriculture and a formal cause of it.

The automobile and the airplane have also had causal effects on cities and countryside—and on railroads. Marshall McLuhan: "The airplane, on the other hand, by accelerating the rate of

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[26] McLuhan, Marshall and Eric. *Media and Formal Cause*. NeoPoiesis Press, 2011.
[27] *Understanding*. loc. cit. p.8
[28] *Laws*. Loc. cit. (need the page)

transportation, tends to dissolve the railway form of city, politics, and association, quite independently of what the airplane is used for.[29]

Now let's return to that subway car, and why all those people are "on" (that's the preposition we use) devices that are clearly extensions of themselves, and they operate expertly. If we restrict our inquiry to material, efficient and final causes, we might say all this usage owes to Apple, Google, apps from those companies' stores, and phone companies providing data services. But while any of those things might be necessary, they are also insufficient: just effects with effects. There must be a formal cause: a ground toward which we direct our inattention while we attend to those effects.

The most obvious candidate is the Internet, which clearly makes all of these effects possible. What made the Internet possible, however, is digital technology: binary code, semiconductors, integrated circuits, miniaturization. Or *digital*, for short.

When we are extended by our computers and mobile phones, we become digital as well as physical beings. This is very different than what we are when our bodies are extended by speech or writing, or by operating mechanical extremities such as bicycles, cars and screwdrivers. It is also very new.

The Internet manifested in its current form in 1995[30], the app-filled mobile phone in 2008, and cheap-and-easy mobile Internet access in just the last few years. (In the New York subway's case, only two years ago.) We have hardly begun to understand the full import of what it means to be digital as well as physical beings. To us the Internet is now much like the ocean is to fish. And our terrestrial, bodily means for understanding and describing it are likewise inadequate. We need anti-environments to explore and understand what's going on and why. (The "how" we can see, though some of that may be obscure as well.)

For one example of inadequacy, consider the parts of speech we call *prepositions*: in, out, over, under, around, above, beside, within, through, across. We use these words to locate nouns, express relationships, and describe positions and movements in the physical world—or in a conceptual world modeled on the physical world. (When we say, "Am I getting through to you?" or "We're in this together," we are in a conceptual space, though one that is metaphorically physical, and therefore sensible to us).

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[29] *Understanding*. loc. cit. p.8

[30] The Internet is made possible by TCP/IP, a protocol that specifies the way data can pass between any two end points over any intermediary networks, including many different pathways, unencumbered by the need to specify the content or purposes of the data itself. (This is the original meaning of "network neutrality.") So, as long as any one of those many possible intermediary pathways forbid a certain kind of content or purpose, the Internet could not fully establish itself. One such network "backbone" was the NSFNet in the U.S., which forbid commercial traffic. So, when the NSFNet stood down on April 30, 1995, commercial traffic and purpose floodgates opened, and the Internet as we've known it since (with ISPs, graphical browsers and standardized email), was born.

Most of our prepositions don't apply because the Internet is not really a place. It manifests as non-place, absent of location, distance and gravity. When you talk or conference with somebody elsewhere in the world, however at least one preposition does apply: *with*. That presence, however, is binary: on or off, here or not-here. There is no model for that in the physical world, except perhaps for a trap door on a floor.

But we still need to talk about the Internet, which we do metaphorically, because we think and talk about everything metaphorically. Put simply, metaphor is what we think and speak "in terms of"—and we do this with everything. The thing we each think and speak most often (and unconsciously) "in terms of" is our body. When we speak of *good* as *light* and *up*, and of *bad* as *dark* and *down*, it si because we are diurnal animals that walk upright. And, because we are built for walking and running, we think and talk about life in terms of travel. This is why birth is *arrival*, death is *departure*, choices are *crossroads*, and careers are *paths*. Life in fact is a biological process, but it is almost impossible to talk about it without borrowing the vocabulary of travel.

On the Internet, however, we have no bodies, and this is a severe conceptual inconvenience. Still, we do have metaphors to make sense of it. When we talk about "sites" and "locations" with "domains" and "addresses" that we "browse" or "visit" on the Internet, we are talking in terms of real estate. When we talk about "writing," "authoring," "posting," "putting up" and "syndicating" things called "pages" on the Web, we are talking in terms of publishing. Yet the Internet in fact is neither real estate nor a publishing system. It is the environment where both take place.

Joyce Searls suggests that people will eventually adapt to weightlessness on the Internet, much as astronauts in space adapt to life without gravity; but that this will take far more time as digital beings than we have in these early years of digital life.[31]

Knowledge

[This section explores how we know things in the physical world (source: Polanyi in *Personal Knowledge*, et. al.), how the digital world is new and difficult for human minds to comprehend, even though they invented it (Weinberger in *Small Things Loosely Joined*, *Everything is Miscellaneous*, *Too Big to Know*, and Ev*eryday Chaos*), and how we are being altered in the meantime (Frischmann and Selinger in *Re-Engineering Humanity*).]

Environment

[This section unpacks two meanings of *environment*. One is the media environment as the McLuhans define it. Of particular interest here is their 1980 tetrad on the computer:

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[31] Joyce Searls is the author's wife, collaborator and source of much for which her husband gets the credit.
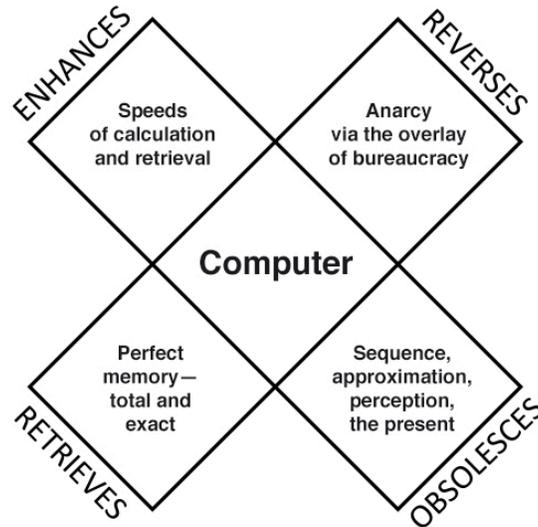
Here we look at the implications of "perfect memory—total and exact" now that we've had close to four decades of experience with computing since that time. (For example, we are now seeing not only our extreme dependence on outboard memory, but that memory's easily erased whiteboard-like nature, exemplified by data lost in hard drive crashes and cloud service discontinuance.) The other is the Internet environment, now fracturing by region and by dependence on platforms.]

Being digital

[This section looks at directions digital life might go, ranging from the utopian (sourcing Stuart Brand, John Perry Barlow, early *Wired*, *Cluetrain*, et. al) to the dystopian (Jaron Lanier, Evgeny Morozov, Andrew Keen, Everett Turner, Bladerunner, The Matrix), and between those extremes (Vinay Gupta, Buckminster Fuller, Neal Stephenson, Douglas Rushkoff). One angle here is McLuhan's *anti-environment*: the arts and sciences that illuminate the invisible ground under formal causes. Another angle is the vexing question of whether we are "spirits in spacesuits" (Sean Olaoire) or "conscious robots" (Yuval Noah Harari).]

Being human

[This section explores what humans will never stop being: embodied, social, heuristic, contentious, exploitive, honest, dishonest, inquisitive, kind, and so on. On the optimistic side, sources include Riane Eisler (*The Chalice and the Blade*), some cyberutopians and others. On the pessimistic side are Harari (*Sapiens*, *Homo Deus*) Morozov and others. Vexing questions for human and other forms of life are also on the table here: climate change, the geographical breakup of the Internet (O'Hara and Hall) and other issues.]

Conclusion

[This section is a call to research, because in fact everything on which this paper reports is to some degree speculative and to a much higher degree incomplete. The Internet and digital life are too important and new to allow final judgements about what either mean. The main question at this stage is how to approach the work, given how the Internet to connected humans like the ocean to fish: an environment in which they are deeply immersed and lacking in anti-environments with which to highlight and understand it.]

Author Information

Doc Searls is a journalist and author with a long background in business. He served almost a quarter century as an award-winning editor for *Linux Journal*, which was instrumental in the success of both the Linux operating system and open source as a concept and a software development method. For two decades he was a partner in Hodskins Simone & Searls, a leading Silicon Valley advertising and PR agency. He also worked in broadcasting, retailing and other businesses, including newspapers and magazines. He is co-author of *The Cluetrain Manifesto* (Basic Books, 2000), a business bestseller published in nine languages, and author of *The Intention Economy: When Customers Take Charge* (Harvard Business Review Press, 2012), both of which forecast a rise in personal power made possible by the Internet, and which is the subject of his study and work with ProjectVRM at Harvard's Berkman Klein Center, where he served as a fellow from 2006 to 2010. He has been a fellow of the Center for Information Technology and Society at UC Santa Barbara since 2006, of the RSA (Royal Society for the encouragement of Arts, Manufactures and Commerce) since 2016, and of the Center for the Study of Digital Life since 2016. From 2012 to 2014 he was a visiting scholar at New York University's Arthur L. Carter Journalism Institute. In 2005, he co-founded the Internet Identity Workshop (aka IIW), which has been gathering twice annually since then at the Computer History Museum in Silicon Valley. He and his wife Joyce also operate a business consultancy, The Searls Group, and are based in both New York and their home in Santa Barbara.

Sources

[The list here is long, and starts with what is footnoted above.]