
Google™ versus Me™: who owns the rights to my digital DNA?

GORDON FREEDMAN

National Laboratory for Education Transformation, USA

ABSTRACT The information giants, Google being the largest, trade every day and build high-valuation mega-polies on the back of very personal information without including their sources of value with any tangible return for their investment of exclusive data. The time has come to ask the question whether the grand bargain of ‘cool tools’ in return for the most personal information is the best corporate, public and personal policy. In the long-run, the bargain is lopsided and may not be in the best interest of the huge digital players themselves. We are in the era of Information Imperialism which has trumped Digital Democracy – we need to have this complex discussion about the conversion of personal information into corporate fortunes in the open air of informed public debate.

I like Google. I am a user of Gmail and I use Google search all the time. Yet, there is a nagging voice that whispers to me in the background and asks, like the European Union did: Is Google really good for me? Also, there is a bigger question that looms. The Internet is a fast-growing pan-human organism. It exists, expands, gets more complex and figures out how to do things virtually in hyper-time that were once done physically in human time. All these changes happen so quickly that it is not only impossible to keep up with them, but it is nearly impossible to understand what they mean for us little people, the one-by-ones who go marching through life.

Google, by all counts, is a historic phenomenon, the likes of which the planet has never seen. It has taken the output of billions of minds and makes it readily accessible with a couple of keystrokes. And it does this for free? Or does it?

The crux of the question is a little bit dicey. In order for me to get the best and fastest (for argument’s sake) access to the information most directly of interest to me, I have agreed (have I agreed?) to let the information in my query form a hypothesis about my interests or needs, which is telegraphed to a database of advertisers who would like to get my attention. In the process, my identity – or at least that of the computer I am using and bits of my past behavior in Google, and likely elsewhere – has been exchanged as part of the bargain. Do I care? Is it worth it for me? The search seems innocent enough, the advertisements are unobtrusive (let’s say polite), and I am spared flashing advertisements and other annoyances. So far so good, but my search history is now sitting on the Google servers, presumably to make it easier for Google to assist me when I return with another query. Is the trade-off still worthwhile? There are arguments about what is an appropriate period of time for Google to keep this information. But appropriate for whom?

That query string, or my personal-search DNA, has now become the property of whom? Google, the advertiser database and anyone else? At this junction, I have no rights over, or to, my accumulated search algorithms, which are unique to me. Is this fair? I do not think so. My info-DNA, and everyone else’s, forms the bricks that build the Google empire. I am helping to operate Google’s (or Yahoo!’s or Bing’s) business by contributing not just one search, but a string of searches that build up to a form of ‘inquiry-and-identity DNA’ which is associated very specifically with me and my computer or smart devices, my geographical position, who I associate with, where I have shopped and the words I use. My information is easily tied to a physical place, a semantic

realm, a community of interactions, and a book of communications and transactions. I am not thinking that the Federal Bureau of Investigation (FBI) will find me; I am concerned at a societal level that this is not a consensual arrangement whose consequences I or anyone else can fully imagine. Google seems to be saying, 'We are good guys, trust us', which is backed by its internal motto, 'Don't be evil'. I do not suspect Google of being evil, by the way. Evil is not the issue at hand.

Rather, Google's behavior smacks of what I call 'information imperialism'. Think about it. It is the almost opposite of digital democracy. It is 'almost' because no one requires me to use Google, and Google itself is not outwardly nasty or evil like Russian or Nigerian cyber scam artists. Rather, there is a resemblance to the old British Empire or the Soviet state in terms of holding and using nearly everyone's information without their knowledge of its true use or access to what is in its files about that Google user. Can I have access to the breadcrumb trail?

The imperialistic Brits and the communist Soviets held all the cards. In information imperialism the same holds true, except that very interesting rights to do very cool things – digital food, if you will – are handed out at the same time as my information is collected. Consider YouTube, for example.

This may be all well and good. Most of us might be willing to live with the Google this-for-that trade-off. However, we would not do this in the physical world where the information is far more benign and likely to travel far less a distance. In Google's world, personal data is aggregated, mined and utilized, as the dynamic fuel in its engines is what the company is all about. It is a voracious data consumer. It relentlessly combs for trade-offs and tidbits of information that are associated with my identity. This habit has to be fed with increasing information and, in the feeding frenzy, many ethical borders are being crossed without reflection. Lawsuits ensue and governments wrangle with the info-beast, but popular dialogue does not ensue. All is quiet on the Western Front.

Think about this. I, as a student or member of the public, wander into a physical library and ask for the help of a real librarian, and he or she helps me find many books, articles and websites that fit my interest – say, perennial flowers. I would not expect the librarian to pick up the phone and call all the gardening establishments or bookstores in the area and announce that so-and-so from this address is interested in perennial flowers, come bombard him with offers. Nor would I expect, more passively, that the librarian would not only bring me the information, but would also bring a list of places where I could buy the type of seeds or bulbs I might want. What if, on the other hand, since libraries are having a tough time of it in the information age, I was asked if I wanted to sign up for a special service where I could get commercial and non-profit information and marketing on my interests – what if I could opt in? Well, I might just do that. I might opt in. And, if I did, I would automatically 'highly qualify' my interests and my likelihood of buying from sellers or their commercial community. Hold this thought, because it is important.

Now let's say that my discussion with the librarian turned a little more scientific and I was inquiring about nitrate fertilizers and ammonia production, the constituents of many home-made bombs. Would the librarian have an obligation to call the local Homeland Security office and suggest to its agents that I might be a possible terrorist suspect? Remember, it was librarians who opposed the US government's ability to search the records of library-goers who FBI agents were investigating as possible terrorists. So, two cases arise in this personal-information scenario: where does my information go and what are my rights in reference to commercial interests and in reference to police agencies?

Going deeper, I am an avid user of Gmail. So are many of my friends and colleagues. We are interlinked in many ways by Google toolsets whose cross-correlations are well known to the automatic semantic and natural language mechanisms of Google. Who has access to the search categories, interrelationships and subject matter in my searches and email communications? Let's say that all of this is actually on the up and up. What right does a single company have to so much information about humanity – personal and universal – which is essentially locked inside its commercial embrace?

If I use Gmail to send attachments of documents or media I have created or am interested in, this is subjected to Google bots, which look through it, ostensibly to create better search algorithms that better match my interests with those of advertisers. What if, in addition to Gmail, I use Google Docs to store my work, Google Maps to plot my travel and Google Chrome as my

browser, and I watch a few YouTube videos, and, in so doing, I record my thoughts, actions and instant-messaging interactions with others? To effortlessly gather this kind of information on millions of people would have been the mother lode for the Soviet KGB or the old FBI, or a major anthropology department.

Let's go back to the library for a moment. Say a particular library had storage lockers where I could keep personal papers and books I was reading, or let's go even further and say that, because libraries are on hard times, they also had archivists who would catalogue my personal and professional work and important papers. Again, would I readily let them read my materials and then call commercial establishments and say, 'You might want to advertise to this person?' I do not think so. If I knew that they might also call the police if I was writing an article on the origins of modern Middle Eastern terrorism, would I keep the material there?

Trust on the Internet is a huge open-ended question, replete with bad actors from Nigeria to Siberia. Google has come out of the gates as the good guys – Stanford students turned entrepreneurs in sunny California who are doing the right thing. How do I know if I write derogatory missives about Google that they will not be detected by a bot that someone has been internally trolling for such information? And since such behavior is clearly against company policy, how would I know that a renegade employee is not doing this? How do I know that the FBI, Central Intelligence Agency, the follow-on to the KGB or China's official hackers are not tapping into Google without its knowledge or have not secretly inserted employees into the company?

The answer is that we cannot know this. Human nature is what it is – no matter how good, or non-evil, a company's intentions are. Time, personnel, the political climate and government regulation can and do change at almost a predictable rate. The conditions of the present do not stay static across time. Thus, what is built into an information fortress like Google can become captive to changing circumstances or future players who do not practice 'Don't be evil'. Even when files are deleted or are on an auto-delete function on prescribed cycles, how do we know what is deleted? I would guess my information-identity-place DNA gets smarter in Google's system, even if my corporeal information is deleted. Why can I not just get a read-out of all my data?

I am not suggesting that Google is not a thoroughly good citizen of the Internet, but I am raising the question that human nature rarely changes, no matter what technology exists. In fact, each new technology is undoubtedly richer and affords new opportunities for ill and for good. From the time the first clay tablets were pilfered in ancient Babylon to the break-in of Daniel Ellsberg's psychiatrist's office on orders from Richard Nixon's White House, humans find clever ways to take advantage of each other for someone's gain. What does one suspect Vladimir Putin's new KGB is up to in the information space? In the old Soviet Union and the new Russia, the modus operandi has pretty much stayed the same: if that government wants something – information, to coerce someone or to take the life of a critic – pretend guarantees of Western democratic life mean little.

The same goes for China and other rich, technically sophisticated, internally motivated nations or corporations. Why would these nations, or their official or renegade units, need to make deep investments in their own capabilities to violate personal freedom when a system is already in place that has trillions of files on people and their interests, locations, buying habits and communications? And those potential problems are from recognized nation states. What about groups that are operating on their own? When, for example, will a version of a terrorist group surface that is entirely Web-based? I am sure they are there on the Web and active, but are they inside the Web giants too?

The Internet is global; it is the proximate cause of the current version of globalization. Google is a fully globalized company with its headquarters in the USA, but it is completely operational in every hemisphere. Is it possible for it to police itself everywhere? Is it possible for it to operate with its high standards in every country? At some point, the trade-off – my information for advertising revenues – can put at risk something more fundamental for each of us. I even wonder whether, in time – say five years – the company could become more lax or whether, on the other hand, it could decide to put more pages on the screen before I get the return I am looking for, because it is better for the advertisers, which is something that has spurred US federal and European Union scrutiny. This would not be evil, but it is also not nice.

This for That

Two issues persist. One has to do with security and personal information – a legal risk – and the other has to do with whether the information I want will get to me as quickly as Google can turn it over – a business risk. These are very different issues that raise a core set of concerns. Is Google bordering on becoming a corporation that should be operated more like a public utility with real responsibilities to private parties? Or can it succeed with a simple business model, providing enticing services and sky-high financial returns, with no questions asked? Transparency – the buzzword in government over the last half decade – is the way such issues are dealt with in other sectors of the economy. Reveal my information to me, show me my DNA and maybe I, and the regulators, will be less wary.

Google and the giant search engines store our ‘cookies’ of searches and keep the breadcrumbs of where we have been, what we have looked at, who we contact, what we have created, who we are, where we live and what we search for – all the time. They turn all of this into strings of code that know me and my computer/computers and my Google accounts, and they park this information on their ‘secure’ servers and lend it out, minus me and for a price, to advertisers. In return, I get a really fast search capability and very cool tools. I can live with that. But I have to hope that is as far as it goes. If I live a clean life, I suspect I do not have much to fear from a government. But is that the case? Are mistakes not made that change lives? There is a sense of playing God here with humanity’s information – for the sake of advertisers. There is also the sense that this God returns results that are only as good as what people look for, which might not be good enough for me.

This begs the question: Can an advertising paradigm be the be all and end all of the Internet? Is the marketplace the only option for greatness on the Web? What if I want the solace of a chapel or the resources of a great library – where do I go without sellers hounding me?

A Change of Valence

Since it got going, the Web has been in a continual struggle. Like physical society, there is a battle between the rights of individuals and the rights of entities – governments, commercial interests and criminal syndicates. In the beginning, two decades ago, many of us danced around the digital maypole singing the songs of liberation. For a brief moment, some of you who are old enough will recall, we hung in suspension. It looked like the Web would be free of commercialization – it would be for the people, by the people. Those days were quickly subsumed by commercial interests – first, those offering services to the new netizens and, shortly thereafter, the myriad of physical entities that began looking for their place on the Web.

The great treasure hunt – now known as the dot-com era – took off with every sort of Master of Business Administration, technician or entrepreneur in tow searching for how they could ‘monetize’ the Internet. A few did, but most did not, and the promise of a digital economy based on ‘eyeballs’ versus dollar bills crashed. Those who survived, in what looked like the asteroid strike that wiped out the dinosaurs, were facile. They had ‘value propositions’ that could generate old-fashioned dollars-and-cents revenues. The survivors who built the next generation of the digital or information economy came in two or three flavors.

The huge operations survived that were well funded, even if not profitable. They had tremendous promise because they could operate at scale in order to survive – think of Amazon, eBay, AOL, Yahoo! and Google, which are all members of this mega-family. In some cases, these giants were even being confused with the Web itself.

Also, less observable than the business-to-consumer market were the pure business-to-business and supply chain operators which were changing overnight how parts, components, retail and wholesale catalogues operated. These business-to-business operations, in conjunction with the most successful early adoption of the Web by commercial and consumer banks and financial services corporations, became the big players who led the way to commercial globalization. The speed with which this moved outstripped the ability for any government or international regulatory body to control or even understand what was happening. In fact, the only ones who could do the decoding of what was going on were the entities themselves.

Outsiders are unlikely to ever fully comprehend the information jungles inside the giant portals. Only dictatorships (North Korea) and full state-controlled economies (China) were able to erect barriers sufficient to stop the onslaught of the World Wide Web and the invasion of its brands of commerce and piracy.

Tim Berners-Lee and his colleagues in the Swiss research center CERN (the European Organization for Nuclear Research), who came up with the idea of adding a visual World Wide Web on top of the already existing data-driven Internet, conceived of the 'Web' as a semantic place, where ideas, concepts and organizational schemes that catalogued information and knowledge would freely interact with the individuals attached to or interested in that knowledge or information. A kind of mental e-utopia was envisioned. In such a place, those building 'websites' would need a 'browser' to make graphically visible the information on the websites. Such a browser was perfected at another supercomputing location: the National Center for Supercomputing at the University of Illinois at Urbana-Champaign. Shortly, Mozilla was born in this parallel non-profit universe. Not long after, Mark Andreessen and Jim Clark started Netscape, and the Web took off.

Web 1.0, 2.0, 3.0 – Oh My!

The early Web was not very smart. But it did some things well, like bring thousands and then millions of websites to your computer browser. At the same time as this building on the Web was occurring, early email companies popped into existence, using the Internet and Web protocols. Early and quick movers like AOL coupled search with the email service and, later, added 'content' channels. AOL was the starter edition for many of us – it allowed us to communicate, search for information, get in chats or groups with others and go to 'channels' that interested us. That all-in-one company ballooned in size, acquired Time Warner and proved rather conclusively that the Internet as the driver of traditional media was not in the driver's seat.

Meanwhile, in Silicon Valley, something else was brewing. While the East Coast giants like Time Warner/AOL, Viacom and the Cable News Network were lining up to convert their television and film empires, the brainy nerds – mostly from Stanford – had other ideas. Jerry Yang and David Filo formed Yahoo! Larry Page and Sergey Brin formed Google. At the heart of what they were doing was code – deep, mysterious, all-knowing code. While the content world was a conversion of past delivery to new digital marketing systems, the Silicon Valley code-based operations were essentially the science fiction of an all-knowing brain coming to life, which is where this story really begins.

The code that was exchanged on the early Internet and used in the early websites is now known as Web 1.0. It was non-reflective information that had no knowledge of itself or its owners. It was simply published, consumed and maybe exchanged. To find the files of someone to make advertising hay out of them or to pass them on to government agencies had to be done through simple Boolean searches by keywords or numbers, or combinations of both. In the 1.0 world, a web system developed by Company A would not likely be able to talk to the database structure of Company B because each of the development teams did their own thing. Time was short in getting product to market, and the idea of writing to someone else's system specification was cumbersome, time-consuming and expensive. There were no common standards yet. So there were natural walls or barriers not only between information exchanged on the Web, but also between the entities operating them. This was all the prologue to the coming digital Tower of Babel, the Old Testament rewritten on modern parchment.

Enter Web 2.0; this is where the DNA or genetics of information begins to come to life. Powered by a new language for websites – Extensible Markup Language (XML) versus the older HyperText Markup Language (HTML) – the Web suddenly had information that had some knowledge of itself or at least the way it was going to display itself. XML had the ability to carry 'metatags', or meta-information about the information. It could also carry the instructions for what the website should look like or how any particular page might display itself, because 'style sheet' information flowed with the XML. The phase that made 2.0 the powerhouse it became was Web services – the ability for software classes to 'talk' to each other and exchange data and metadata with XML code.

Now to come back to the earlier discussion about Google, Gmail, Google Docs, Google Earth, Google Space and whether Google™ is good for me™? Employing the very latest Web 3.0, Google has the ability to literally have me construct a very complex picture of who I am, what I am doing, who I am doing it with and when I am doing it, all the time, in real time. In Web 3.0, I am the one with my information. Identity, information and place merge. This is frightening because it is likely just the first step into a world we do not know yet. But, by taking this first step collectively, we – the users of Google products – are powering its business to unbelievable heights and unimaginable connections. We are also not participating in its financial success, nor do we have any ideas where the boundaries of protection are that separate us from both the scrupulous and unscrupulous in business and government, and the tangle where the two might actually be joined.

Enter the Future

As more of us use Google for most things on the Internet, it is possible that the company will cross a line where it is no longer a service, but a public good. If this happens, who will control what it does with my information? This is the question that the European Union, our global conscience, asked the search giant. My concern is that we have only seen rev one of information imperialism. What if information is received that is not that accurate from a search about me or is completely accurate but includes who I associate with and the details? This trade is lopsided in some ways and, in others, possibly a draw. In the trade, I get an *approximate good* (a semi-accurate search, advertisements and data-mining of my search) and Google gets an *exact good* (deep information about me and my connections). My secret fear is rev number two. What if Google has a very cool Web 4.0 platform in mind? My sixth sense tells me to look out for predictive and concierge recommendations that might not be mere suggestions, but actually a reordering of not only my Web life, but also my 'real life'.

Google Mind?

I would call this new Web 4.0 service 'Google Mind'. Say I agree to use all Google products for six months, including email; location services; Google Chrome; ordering food, pharmacy items and entertainment tickets; booking my meals out and travel; and Google's financial and calendar services. After six months of agreed constant use, Google will provide (and I will have agreed to receive?) its proactive choices for me without me even searching. It will suggest what movies I should see, who to go with and what books to read. It will automatically order my family's food and other consumables, and select birthday presents for friends and relatives. I will rate these choices and later subscribe to this service, which will be modified and constantly updated for me. At the 4.0 juncture, we will have moved from advertisers trying to get my attention to advertisers, with Google's help, essentially making up my mind for me. No doubt they may be able to do this well. Is this outlandish, or probable?

I am not suggesting that Google is doing anything truly wrong, just that the possibilities exist to build Google into what could easily be mistaken for not just the Web itself, but a psycho-Web that does not just process what my mind spits out, but programs very suggestively what my mind should do next! Those who study the brain will argue at this point that the brain's pleasure centers are activated in a way that can lead to habituation, addiction and taking the easiest path without bothering to ask too many questions.

'Don't Be Evil' Is Not the Same as 'Do Some Good'

Welcome to Web 4.0. Since Google is a private corporation, its level of conformity to the public good cannot be known. Most corporations exist first, and legally, as an obligation to their stockholders, not their customers. This usually means the highest possible financial returns for stockholders, not an obligation to an imponderable such as the public good or the 'trust me' creed of 'Don't be evil'.

It is interesting to note that Yahoo!, which has some unbelievable tools and services that are poorly coordinated for the consumer, does not appear to pose the same level of threat. Yahoo!, like

AOL before it, is trying to appeal to what people do – media channels, group activity, photo-sharing and music-sharing. In some ways, it is unfair to compare Yahoo! to Google, and unfair for Yahoo! that it has to see itself locked in an information supremacy battle with Google. Yahoo! could have an edge by putting in more user controls and some sense of how my data is being used – being transparent. It would be a good consumer play. Bing could do the same.

Google, on the other hand, is all about learning everything about me to power its business without sharing much back, except search returns and tools that tell Google even more about me. There is no way to escape the trap that new Google tools are also always more sophisticated ways to trap me in their system. It is like some evil twist of the universe – more coolness for more intrusion. Beam me up, Scotty.

Count Me™ In

How are we to deal with this? How about making ‘me’ a proposition other than search and surrender? I would argue the following: I think that Google needs to give me a cut of the action. It needs to disclose to me how my personal algorithms are being used and who has, and under what circumstances others have, access to this information. Certainly, some of this is in the fine print when I agree to use their tools that I ‘signed up’ for.

So, if I am willing to be a really good user of Google and agree to give Google highly qualified information about myself – much better than it can get by only data-mining of me – I would want in return something more than more free tools that learn more about me. How about an information rebate program? If I provide more and better information, maybe I can get a fraction of a share of stock or accrue frequent-user credits that are redeemable with certain advertisers. Put ‘me’ in the game, Google. It will be better for you in the long run. That long run is more than a stock price. It is a better life for us all. ‘Be good’ is more positive than ‘Don’t be evil’.

I think putting Me™ into the equation is for Google’s own good. I think it should bend over backwards to make clear to the public how seriously it takes the responsibility and obligation and the safeguards it has in place to protect individuals. By actually contracting with its users, the users are then implicated in or part of the actions Google takes. This is a very different kind of bargain and one, as awkward as it might be, that is a more ‘appropriate’ balance between information imperialism and digital democracy working together as a market, not just a service based on a flimsy this-for-that trade – beads for Manhattan.

It could also reflect that at least some portion of the huge profits Google makes is actually because it has an appropriate relationship with ‘me’ and my information. Maybe a quarter of Google’s profits belongs in the hands of the users who make the company what it is. Might is not always right. Some of these arguments belong in public discourse. If nothing more, the risks to individual users and individual stockholders need to be made publicly transparent. Otherwise, every stockholder in Google and every investor tied to companies that are supported by Google’s advertising revenue model could find themselves in a world of hurt when the first serious or continuous breaches occur. There will be more cases in the future like the Chinese hacking of Google. Given the law of probability, Google will be – and probably is already – compromised from the inside, from the outside, from a sophisticated hacking team or from another government.

Until such disclosures are routine or written into the legal code, Google will grow and acquire what is interesting at its periphery, and we will continue to use it because it is very good and it is very obviously tied into our lives. Why would I go to Ask.com, Grokker.com, Clusty.com (have you tried these?) or even Bing or Yahoo.com, if I am using Gmail and Google Docs? It is just not convenient. But if Google is making billions off of the billions of us, why are we not somehow in the transaction? Its success is proof that we belong in the deal somewhere. Why do we not earn redeemable Google Bucks™ from its advertisers or get Google shares the more we use the system? If I were contracting with Google, I might be more willing to let my information be used in a number of ways. Count me in, Google.

How About 'Do Good Things'?

I would be more willing to be forgiving if Google took its power to map the information and commercial and physical universe, and put some of that to work for the good of society and, in no small measure, the creation of higher-level consumers. Education – my specialty – is a huge problem around the globe. The transition from the twentieth to the twenty-first century, from mercantilism and production to the information and knowledge economy, is not going well for most nations, states, provinces or municipalities in terms of education. Students – digitally native, smart-phone-toting, instant-messaging, game-playing and aware – even if they do not have the funds to buy, are becoming disengaged from school and college. Their train has essentially left the twentieth-century institutional train station and is entering the info-world in ways that even surpass what Google provides.

The traditional methods and inducements for a strong education are falling by the wayside at the very time that globalization is thinning the margins on what people and nations produce, meaning that workforces have to become smarter more quickly in order to sustain themselves and the nation or state in which they exist. Ask any national or regional leader. Google, Yahoo!, Amazon or even eBay could be at the heart of an education transition. Yet they are on the periphery, trying to figure out how to 'monetize' every subgroup in the world, including education.

If any of us want our retirement funds, 401(k)s or pension funds to be worth anything 10 to 20 years from now, we should be making substantial investments in making education or personal learning better in any way we can. If we do not do this, the shrinking workforce will have a difficult time producing at the level large enough for their tax dollars to sustain the huge retiring community of baby boomers. My argument would be that these are fractional costs for the largest players like Google and, since we individually cannot be paid in money for the contribution we make to Google's stock, at least we could rest assured that it is investing not only in our children's ability to buy online, but also the ability of those young people to build the next economy that will sustain all of us.

Balancing Information Imperialism with Digital Democracy

Somewhere there has to be a balance, a way to get back to the original dream of being on the Web, safe, smart and secure as an individual. Google, in the eyes of history, will differ little from the Roman Empire. Its information imperialism will undoubtedly last for a long time, but, in some college dorm room or pre-initial-public-offering Internet start-up, the next big think is lurking. Whether that 'thing' will be able to scale the wall erected by Google is an open question. Yet, history tells us that everything follows an evolutionary trajectory, even on the Internet. History also tells us that human development is a balance between individual rights and the abuse of those rights by powerful political, technical and commercial forces. In this case, we little guys, at some point, need a few more choices than search and surrender.

What if my personal information – my Me™ – could work hand in hand with the information barons? That would be a Web 4.0 that was worth the forgotten hopes of the Web's founders. It will take such an engine – *me, us and them together* – to bring young people into the fold to create a really worthwhile next iteration of the Web and of ourselves.

GORDON FREEDMAN is a specialist in the evolution of knowledge, education and learning in the information economy. Freedman is founder and president of the National Laboratory for Education Transformation, www.NLET.org, a Silicon Valley based non-profit partnered with centers at the University of California Santa Cruz, University of Texas Austin, and the Los Alamos National Laboratory in New Mexico. Freedman began his career as a Capitol Hill staffer, investigating political corruption in the US government. This evolved into careers in the news media and the entertainment industry, where Freedman was the executive producer of the feature documentary *A Brief History of Time*, an award-winning film about Cambridge Professor Stephen Hawking. Freedman became interested in education, e-learning and society as the Internet took off.

Gordon Freedman

He was a global education strategist for the largest e-learning company, Blackboard, Inc., before he formed the non-profit NLET.org to explore the evolving dimensions of learning, technology and information. *Correspondence:* gordon.freedman@gmail.com