

Chapter 1

The Big Picture

In digital culture, the term “killer app’ denotes a software application that is so exceptionally useful that it immediately displaces those which came before. A killer app is rapidly and often universally adopted because it enables those using it to achieve results that far outstrip what was possible before. A killer app is a disruptive technology, literally ‘killing’ old tools (and typically the professions of those who have mastered them) and replacing them with new tools (and those who have mastered them).

In the grand scheme of things, there have been three killer apps in human history, and no more. Three technologies that have changed the world like no others. Explaining these three killer apps - these technologies - and how they have shaped our world, is the purpose of this book. So let’s get started.

The three killer apps of human history are:

- spoken language
- written language
- electronic language

The common element among these three killer apps is clearly *language*. The reason that language is so important - more important than guns or penicillin or mathematics or navigation or democracy or any of the other other innumerable human inventions that have changed our world - is that language *enables* each of these other things to happen. Take away print and science disappears. Take away language and politics disappear. Take away language and industry disappears. *Take away language and human society disappears*. For without complex language we return to the status of beasts. It is language that sets us apart and enables all that defines human society.

And yet language is an abstraction. It is an idea. Because language can never really exist on its own. Language is always articulated using a specific technology, a medium. Language can take shape as writing, or as email, or as a spoken conversation, as a song lyric, on a tombstone or a map, as an indentation on a clay tablet, as a hieroglyphic scrawl on papyrus or engraved in living rock. But language must always be enacted via a specific communication technology, in a specific technological medium. And the technologies we use to enact language determine in many respects the character of what we communicate. In other words, ‘the medium is the message’. This book is about how the different media we employ to communicate actually shape our behaviour in all kinds of ways, from the kind of buildings we build to our political culture to whether or not we nurse our babies and for how long.

To understand how different media shape our behaviours let’s first look at how each of the three killer apps of human history actually works as a technology. Fortunately, this is not especially difficult to do.

Let's start with spoken language, for it is spoken language that gave birth to human society. It is spoken language that has shaped human understanding, human relations and human society for more than 99% of our history as a species.

So, how does speech work? What I mean is, if we consider spoken language as a technology (which it is, just like a humidifier or a boomerang) then how does that technology work? What are the conditions for its being used? (eg. it takes electricity for a humidifier to work, and a muscular arm to use a boomerang). What do we know about the conditions required for the technology of spoken language to work?

Well, among other things, for the technology of speech to work there must be both a speaker and a listener. We know this rationally, but we also know it intuitively. When someone is speaking to themselves, especially in public, we intuitively understand that something is wrong. In fact, we typically avoid people talking to themselves because they seem lost, or confused, or crazy or dangerous. And this is why, of course, the phenomenon of the bluetooth headset is so extraordinarily disconcerting. We know, intuitively, that we should not be speaking into thin air. But now, due to new technologies, we do. It's one example - among the many you will encounter in this book - of technologically-determined social behaviours colliding disconcertingly.

So, for the technology of spoken language to work there must be a human speaker and a human listener, or a *signal and a receiver*, in the familiar vocabulary of Psych 101. But in addition to this, speaker and listener are bound by certain very real restrictions. Specifically, they must be close enough in space so that the listener can hear the speaker. Typically, unless the speaker is shouting, this means that the speaker and listener will be only a few metres apart at most. Close enough to see each other's faces, to look into each other's eyes, often even close enough to smell or touch one another. On top of this, there is a temporal restriction to the technology of spoken language. Not only must the speaker and listener occupy a proximate physical space but they must occupy it *at the same time*. For if I teach a class today and you show up to hear my lecture tomorrow, the technology will not work. In other words, there must be a minimum of two people sharing the same interpersonal event, at the same time, in the same place, or else the technology fails. Thus the technology of speech is always enacted as an interpersonal *dialogue*, and we may properly conclude that the technology of speech consists more or less exclusively of interpersonal '*dialogues bound by time and space.*'

And for 99% of our history as a species, that is the only form the language we had: *dialogues bound by time and space.*

Now let's look at the second killer app of human history: the technology of the written word. Almost immediately, certain key differences emerge when it is compared to the technology of speech. Unlike spoken words, writers do not need to be in close physical proximity to their readers for the technology of reading and writing to function. Readers may be across town or across the world and it makes absolutely no difference to the effectiveness of the technology.

This is obviously a significant difference, but it is not the only one. For writers and readers may not only be far apart in space, they may also be far apart in time without any impact on the technology of writing. As we all know, we can read magazine articles written weeks ago, or books written centuries ago, and the technology of writing holds up just fine.

But there are social implications to these technological parameters. For not only do writers not need to be in the same place at the same time as readers, but they almost never are. And why would they be? If you're standing next to someone and want to communicate, then except in the rarest of circumstances, you talk to them, you don't write them a note. No, readers and writers are almost universally far from each other in time and space. And what this means is that when someone communicates by writing on paper, a rapid response is almost never expected, as it is when you speak to someone. On the contrary, often no direct response of any kind is *ever* expected, nor any direct interpersonal interaction with a reader. You'll recognize this is so if you think of how many books you have read, and how many articles, by authors whom you have never contacted, never seen and never met, and never will.

In other words, the technology of writing is *not* dialogical. In fact, writers are often socially awkward, self-absorbed misfits who absolutely *loathe* meeting their readers. They might respond to a poor book review with a letter, but that is about as far as they are willing to go when it comes to dialogue. No, it must be concluded that unlike the technology of speech, which is all about dialogues, the technology of writing is monological. Writing is all about *monologues*.

Now it might be argued that some writing is dialogical. Letters between friends, for example. And, moreover, it may be argued that while writers may often avoid engaging their readers in interpersonal dialogue, on a more macro level, printed materials engender diffused social conversations that percolate far and wide, and that often result in written responses both direct and indirect. And I agree that this is so. But none of these are dialogues in the same sense that spoken conversations are dialogues. At best I would call them a form of serial monology. In other words, they are monologues aimed at each other, sometimes more conversational in tone and sometimes less, but always distant in time and space, always written and read in solitude, in silence, in stillness. They are at best monologues that cross paths.

No, despite the fact that epistolary monologues may mimic dialogues, the inescapable fact is that the technology of writing consists almost exclusively of *monologues that transcend time and space*. Simply put, *books don't talk back*. You can't ask your tax form a question or discuss politics with a newspaper. Writing is all about *monologues*. Paper talks and we listen. There is no dialoguing with print.

The third killer app of human history is of course the Internet, the electronic word. And as we enter the datazoic era, what can we know about the technology of the electronic word?

Like literacy, the electronic word transcends time and space. It doesn't take too much thinking to grasp this. We've all sent emails around the world and looked at web pages created seconds, days, months and years ago. But does this mean that like literacy the electronic word is also

monological? What do *you* think? Seriously - think carefully about this question before you read my answer and come up with your own. *Do you think that the web is monological or dialogical?*

Yeah, I agree. The web is dialogical.

But the networked digital media is not dialogical in the same way that oral media is dialogical. For while the dialogical technology of speech is (as we have seen) *bound by time and space*, the dialogical technology of digital networks clearly *transcend time and space*. Like literacy, digital networks work equally well regardless of where and when user use them. In fact, digital networks seem to disrupt familiar notions of time and space altogether.

So where does that leave us? It leaves us here:

	Speaking/Listening	Reading/Writing	Uploading/Downloading
Logic	Dialogues	Monologues	Dialogues
Time & Space	bound by time and space	(that) transcend time and space	(that) transcend time and space

Now that we have charted these basic characteristics of the three killer apps of human history, we can step back and examine in more detail exactly what they mean for us as individuals, as communities and as societies.

As I explained earlier, communication technologies are the killer apps of human history because language enables everything else that is human. Almost any social activity that we may choose to undertake - and by 'social' I don't mean getting together with friends but rather anything involving more than one person - is facilitated by language and impossible without it. The only exceptions to this rule are those activities that are primarily - or better yet *primordially* - embodied, like fist-fighting, dancing or climbing a tree, though even these can be - and often are - socially circumscribed by language technologies. ("Oh yeah, you and whose army?"; "I.D. please"; "No Trespassing.")

Apart from these few exceptions, language enables *all* forms of social interaction. So it stands to reason that individuals and communities seeking to create more secure and satisfying social arrangements for themselves should order themselves so as to take the best possible advantage of the powerful and essential organizing tool that is language.

More specifically, oral people - that is to say members of cultures whose only language technology was spoken language - organized themselves to maximize the power of their language technology - speech. Literates in turn organized themselves to take advantage of the capabilities of writing. And the first micro-generations of digitalists are currently trying to reorganize the world in their own image, reordering themselves around the digital tools that enable their cultures and communities.

Back in pre-literate days, loners were dead meat, but strong tribal units with purposefully planned and carefully executed defenses - as well as a wealth of shared knowledge - were much more likely to survive when faced with human attackers, wild animals, illness, drought, harsh weather and other deadly threats. Understanding full well that their ability to speak to one another was an invaluable tool, and an enabler of survival, oral peoples organized themselves socially to maximize the utility of their linguistic capabilities, which - as we have seen - consisted of dialogues bound by time and space. And so, unsurprisingly, members of oral communities became very good at having dialogues that were bound by time and space. They became expert speakers and singers, and equally expert listeners. They became excellent facilitators of group discussions, excellent verbal improvisers, excellent storytellers. They became experts at using their killer app, and as we shall see in more detail in subsequent chapters, they created a way of life that was fundamentally dialogical. And they did this because the killer app they were using made those interpersonal dialogical behaviours supremely valuable, just as it made *not* behaving dialogically a quasi-suicidal pursuit.

Literate peoples, like oral peoples, also optimized their social structures to take advantage of the monological time-and-space-busting capabilities of *their* killer app, the written word. And the results were extraordinarily successful, because the tool they were using - the written word and above all the mechanically printed word - was fantastically good at enhancing efficiency.

For example, human literacy gave birth to human engineering and to all of our remarkable scientific knowledge. It gave birth to cities, to wind turbines and clean energy, to cars and petrodollars, to universities, modern medicine, Shakespeare and the Italian Renaissance and air travel and the New Deal and IKEA and AK-47s and Einstein and a billion other things besides. How? By employing written records, maps, calendars, plans, timetables, equations, inventories, ledgers, schematics, patents, policies, reports, manuals, blueprints, degrees, bills, orders, stocks, deeds, patents, contracts, constitutions, forms, licenses, treaties and more.

By enabling humans to fix life's unstable processes on paper, by abstracting and circulating knowledge beyond time and space, the technology of reading and writing precipitated the extraordinary feats of resource management that have made possible the all-consuming administration of our planet. *Paper and ink built the empires that rule our world.*

Yet despite achieving so much, despite organizing and building so effectively, despite engendering so much literate human life (the global human population, which stayed relatively stable during the previous two million years, has skyrocketed by 6,800% since the invention of print just a few thousand years ago!) literacy also brought death to countless oral cultures.

In Asia, in the Americas, in Africa, in Europe - wherever they met, oral and literate cultures fought. And wherever they battled, oralists were conquered. More specifically, they were assimilated or annihilated. Or assimilated *and* annihilated.

Because literacy is more efficient than orality. And evolution rewards efficiency. It's as simple as

that.

It really is.

In the grand scheme of things, efficiency wins. Literacy wins every time. It provides the ability to make a thousand copies of a new invention or a plan of attack, and to share it beyond time and space among one's troops, allies, students, neighbours, descendants; to define and refine and then transcribe, document and share agricultural and industrial techniques over decades and over centuries amongst thousands and millions of readers; to administer the vast surpluses this knowledge produces; to calculate, inventory and distribute resources according to inscribed timelines and time zones and timepieces that are synchronized to the second across the world; to create extremely specialized professional disciplines in which every innovation is preserved, certified, aggregated, copied, added to and transmitted across time and space in textbooks and manuals and diagrams. All this and more, when placed against pre-literate technological capabilities - fragmentary, personal, local, bound by time and space, contingent upon individual experimentation and utterly dependent on individual memories - resulted in the global conquering and colonization of oralists by literates and - ultimately - in multiple genocides.

Do I really need to give examples? No matter what country you happen to live in, if you reflect on your history you will find that this is so. Are you Australian? Canadian? American? Mexican? Brazilian? South African? Congolese? Irish? Papuan? Hawaiian? Japanese? French? Historically, how did the indigenous oral cultures in your land fare against literate outsiders? Maybe you live in England? How many of the peoples who were conquered and assimilated into the British Empire were literate? The correct answer is - almost none. How many were oral cultures? Almost all. I live in Canada, and I can tell you that here, oralists were annihilated and assimilated, that genocide has been the norm, and that the few remaining descendants of those apocalypses remain profoundly scarred and disabled by the imposition of literacy and the destruction of their oral heritage. And that is how it is around the world.

Thus it is no accident that our generation - the most literate in human history - will witness the final defeat and death of 3,000 oral languages. That in our lifetime *half of all human languages will die*, all of them oral, each belonging to a people, to a culture, to a place. Each consisting of histories, geographies, laws, genealogies, songs and secrets. Each containing oral ways of knowing that the bookish world can never comprehend, an ancient oral consciousness it can never recapture.

And all of this is going and nearly gone. It is disappearing as we speak. This mass extinction of oral cultures, wisdom, languages and peoples is a tragedy of unspeakable proportions, rendered all the more colossally sad by the utter indifference with which we literates view it. For the most part we don't even notice it.

And yet this is not a pessimistic book about the tragic loss of our past. Or not only anyway. Not even mostly. It is mostly an analytical book about our exciting present. And above all it is a tentatively optimistic book about the world's uncertain future and our place in it.

Because we are evolving again.

Because a new communications technology has arrived on the scene. And the third killer app of human history is already laying waste to literate ways of knowing. For just as literacy's organizational efficiency enabled the slaughter of oralists – pitted roaring tanks against charging horsemen, machine guns against machetes, pipelines against calabashes – so is the hyper-efficiency of this new killer app poised to dispossess literate capitalism at a hundred teraflops a second.

And this is creating problems. Because as we shall see, literate structures of power do not welcome digital incursions. They fear them. And truth be told they have reason to fear. Because even today survival of the fittest often means survival of the best organized. Spoken language helped Homo Sapiens to organize themselves for survival with more efficiency than non-speaking Cro-Magnons and Neanderthals, and in due course Cro-Magnons and Neanderthals passed out of existence. Literacy helped some literate human cultures organize themselves with far greater efficiency than neighbouring oral cultures with whom they were competing for resources and territory, and in due course *those* oral peoples passed out of existence too. And now digital culture has come along, with hyper-efficient capabilities that are imperilling literate systems of knowledge, administration and exchange. Will literate institutions (like banks, universities, bureaucracies and hospitals) and ideas (like democracy, history, science and free will) soon pass out of existence too?

In the long run possibly. In the short run, we are at risk of living through some very unpleasant power struggles. Because no culture gives up easily. Everybody fights. And more often than not, a lot of innocent people get caught in the crossfire. One of the many purposes of this book is to help us all to avoid becoming collateral damage. More than that, I hope that the readers of this book - be they digitalists, literates, oralists or like most of us a mashup of all of three - will come to understand the need to build strong bridges between our three communication cultures.

Because we are living today at the epic conjunction of the three killer apps of human history. A conjunction no humans before us have ever experienced, and none ever will again. And so the stakes are very high indeed. In just a few decades, we - soft and grey - will be the only ones left who can recall a time before the Internet. A time before the world was a wide web. A time when there were more than a handful of spoken languages in the world. And then what is lost will be well and truly lost. The wisdom of our elders will either become utterly obsolete - dashed to bits in the new world wide web order. Or it may, if we make an effort, survive. Not unchanged, but transformed; vital, rooted and absorbed.

In the meantime we need to start understanding how these three killer apps of evolution are shaping our world today. How each of us is loyal to one of these three above all, and that our loyalty to one or another medium determines a great deal about how we live our lives. We also need to understand that in this strange multi-mediated world the majority of us are multi-media ourselves, existing as oral, literate and digital beings all at once. And we need to understand

how the conflicts between those three communication cultures play out within each of us, causing us to be confused, conflicted, and at cross-purposes in our daily lives. And that's also what this book is about. Because if we don't understand ourselves, we have little chance of understanding our world, and how to save it from our own increasingly contradictory impulses.

Now, this may all sound rather simplistic. And frankly, it is. Certainly my academic friends will have already pulled out most of their hair in frustration with such a simplified view of human history. But I like simplicity. And I happen to believe that the world is not as complicated as we often make it out to be. Nor do I think that we are as smart as we think we are, as important as we think we are, nor as in control as we think we are. I think that big truths can be couched in small stories, and that too often we seek small truths in big stories. If you prefer the latter, you may wish to leave off here. But if you like the former, stick around, and we'll see where this common sense leads us.