Douglas Rushkoff [2010]
Program or Be Programmed 10 commands for a Digital Age

I. TIME

Do Not Be Always On

The human nervous system exists in the present tense. We live in a continuous "now," and time is always passing for us. Digital technologies do not exist in time, at all. By marrying our time-based bodies and minds to technologies that are biased against time altogether, we end up divorcing ourselves from the rhythms, cycles, and continuity on which we depend for coherence.

The beauty of the early net was its timelessness.

Conversations took place on bulletin boards over periods of weeks or months. People got onto the Internet by connecting their computers to phone lines, and then dialing in through a modem to a server. All this not only took time, but made going online an intentional act. Most of life was spent offline, and a few special moments or even hours in the evening were spent online, exploring files and participating in discussions.

Since everyone was logging in from different locations at different times, most online experiences were what we called "asynchronous." This meant that, unlike a regular conversation or phone call where we exist together in the same moment and speak back and forth in real time, these online conversations were more like passing letters back and forth. You would go online, find the conversation you were participating in, and then see all the posts that occurred between one evening and the next. After reading everyone's responses, you would then decide whether you wanted to add something—and either compose it on the spot, or write the response offline and then come back and paste it in later or even the next day.

These discussions took on the quality of playing a chess game by mail. Nothing was rushed. If anything, because our conversations were asynchronous, we had the luxury of deeply considering what we said. The net became a place for doing the kind of deliberation and contemplation that couldn't happen in the harried real world of jobs, kids, and automobiles.

Because online activities did not have to occur in real time, we ended up having all the time in the world. One actually thought before responding—sometimes a whole day.

This fostered a depth of engagement and a collaborative spirit that many of us had never experienced before. Even a heated exchange was pursued with finesse, combatants having the time to cool down and consider the best retort instead of simply lashing out. The point of conversation became the conversation itself, and the modeling of a new form of approaching problems as a group. No wonder then, that so many people saw the Internet as panacea to the world's many conflicts and intractable divides.

It shouldn't surprise us that this deliberate, highly sequential mode of behavior is utterly consistent with the programs and code underlying the digital universe. Digital technologies are biased away from time, and toward asynchronicity. Their operating systems were designed this way because, in most respects, computers think much faster than people. They can give themselves new instructions almost instantaneously. But they also need to be able to wait as long as necessary for instructions from a person typing through a keyboard. So programmers decided that computers shouldn't live in time at all. (Yes, there are clocks running in the background on all computers, but they take their orders regardless of the passage of time.)

Instead of operating in time, computers operate from

decision to decision, choice to choice. Nothing happens between the moments I type any two letters on the keyboard. As far as the computer is concerned, *this* word is the same as *this* one, even though I took one second to produce the first, and a full minute to produce the second. The machine waits for the next command, and so on, and so on. The time between those commands can be days, or a millisecond.

Because computer code is biased away from continuous time, so too are the programs built on it, and the human behaviors those programs encourage. Everything that we do in the digital realm both benefits and suffers from its occurrence outside time.

Maybe that's why the net's first true "killer app" was email. At first, email did not replace the letter so much as it replaced the phone call. Instead of having to find and catch a real person at home (cell phones were not yet very common), email found a person when he or she wanted to be found. Email was an activity one went and did, usually on a daily or twice-daily basis. (Before and after work, in most cases!)

Unlike the phone, which interrupts our day by unexpectedly ringing whenever someone wants to reach us, email was retrieved when we wanted to see it. And we were free to respond in our own time, on our own conditions. If we didn't have a response at the ready, we could come back later.

The underlying asynchronous quality of email and conferencing was much more obvious to us back then, because

we all saw the way these tools really worked. Back then, phone calls still cost money, as did our access time. So our computers generally went online, logged into a server, downloaded everything we were supposed to see, and then logged off again. We did most of our responding while we weren't even online. Then, the next time we went online, our computers would upload the email and posts we had written.

Was it slower? Perhaps. But it was also a more accurate reflection of the way the technologies work, and their bias away from real-time communication. Their strength was never their relationship to the "now," but their ability to slow down or break up the now.

The interactive urge itself—even before computers came into our lives—was consistent with this desire to break time. The first interactive device most of us ever used was the remote control. More than simply allowing us to change channels at the end of a TV program, the remote control gave us the ability to change channels *during* a TV program. The remote control allowed us to deconstruct the narrative of a show, or even a commercial.

Until interactivity, we were defenseless emotional targets for the advertiser, who could use a linear story to put us in a state of vulnerability. Think of almost any television commercial: A person gets in terrible trouble, the product gets her out. A girl gets a pimple before the prom. She tries all sorts of things to get rid of it, making matters worse. Just

when it looks like all is lost, she finds the miracle cream. It works, boyfriend shows up, happy prom girl. The continuous narrative arc is used to draw the audience into a state of tension. Only the storyteller—the advertiser—has the way out. To be released from tension, we must accept the storyteller's answer—meaning the advertiser's product. We may have understood that the people making us anxious were not our friends—that the stuff on television is called "programming" for a reason. But we were relatively powerless to do anything about it other than not watch at all.

Before the remote control, the only other way out of imposed anxiety was to get up out of the recliner, take the popcorn off our lap, manually change the channel, and maybe adjust the rabbit ears (an antenna that sat on top of the set for receiving terrestrial broadcast). The amount of effort outweighed the anxiety we were to endure by sitting through the rest of the commercial. But after the remote control, escape from the advertiser's spell becomes effortless. With a micro-motion of the thumb, we are gone. The interactive device introduces discontinuity into an otherwise continuous medium. And this discontinuity—this deconstruction of story—is a form of power.

Likewise, The VCR allowed us to record shows to watch later, and DVR lets us do not only that, but also "pause" shows during broadcast and fast-forward through commercials. Each step of the way, we use the asynchronous

bias of digital technology to take control of time. And a medium once celebrated for its ability to "program" the public becomes open to our intervention. Instead of only fostering social programming, the television also fosters a new, postmodern perspective on society's time-honored truths. From Bart Simpson to Stephen Colbert, conventions are turned on their heads.

The spirit of the digital age still finds its expression in this reappropriation of time. Our cutting and pasting, mash-ups and remixes, satires and send-ups all originate in this ability to pause, reflect, and rework.

As Internet connections grow faster, fatter, and freer, however, we are more likely to adopt an "always on" approach to media. Our broadband connections—whether in our homes or in our phones—keep our applications on, updating, and ready at every moment. Anytime anyone or anything wants to message, email, tweet, update, notify, or alert us, something dings on our desktop or vibrates in our pocket. Our devices and, by extension, our nervous systems are now attached to the entire online universe, all the time. Is that my phone vibrating?

We scramble to keep up with the never-ending inflow of demands and commands, under the false premise that moving faster will allow us to get out from under the endless stream of pings for our attention. For answering email and responding to texts or tweets only exacerbates the problem by leading to more responses to our responses, and so on.

We strive to multitask, attempting to give partial attention to more than one thing at a time, when all we really do is move as quickly as possible from one task to another. No matter how proficient we think we are at multitasking, studies show[1] our ability to accomplish tasks accurately and completely only diminishes the more we try to do at the same time. This is not the fault of digital technology, but the way we use it.

Instead of our going online to get our email, our email comes to us. Instead of using our inbox as an asynchronous holding bin, we stick it into our phones, which are sure to thump, ding, or shudder with each new incoming message—just to make sure we know something wants our attention. We work against the powerful bias of a timeless technology, and create a situation in which it is impossible to keep up. And so we sacrifice the thoughtfulness and deliberateness our digital media once offered for the false goal of immediacy—as if we really can exist in a state of perpetual standby.

The results aren't pretty. Instead of becoming empowered and aware, we become frazzled and exhausted. We have no time to make considered responses, feeling instead obligated to reply to every incoming message on impulse. We reduce the length and complexity of our responses from paragraphs to sentences to txts, making almost everything

1. E. Ophir, C. Nass, and A. D. Wagner. "Cognitive control in media multitaskers." *Proceedings of the National Academy of Sciences* vol. 106 no. 37 (September 2009), 15583–15587.

we transmit sound like orders barked over a walkie-talkie in a war zone. Everything must happen right away or, better, now. There is no later. This works against the no-time bias of digital media, and so it works against us, even though it might work for the phone company programming the device and inducing our dependence and compliance. (Yes, each variety of beep is studied and tested for its ability to entrain our behavior.)

It's not that the net has somehow changed from an asynchronous medium to a synchronous one. No, it's all still just commands existing in a sequence, outside time. But those commands are coming at us now in increasingly rapid bursts, stimulating us to respond at rates incompatible with human thought and emotion—and in ways that are not terribly enjoyable. Try as we might, we are slow to adapt to the random flood of pings. And our nervous systems are not happy with this arrangement.

For the first time, regular people are beginning to show the signs of stress and mental fatigue once exclusive to air traffic controllers and 911 operators. Cell phone users now complain of "phantom vibration syndrome," the sensation of a cell phone vibrating on your thigh, even though there's no phone in your pocket.

Yet this very discomfort and anxiety compels us to seek still more: The possibility of one great email from a friend, or one good contract offer somewhere down in that list of unanswered messages keeps us compulsively checking our

inboxes, iPhones and BlackBerrys like classically conditioned gamblers at the slot machines. And, perhaps counterintuitively, the faster we empty our inbox, the faster it fills up again. Every answered email spawns more. The quicker we respond, the more of an expectation we create that we will respond that rapidly again. An email chain becomes like a conversation happening in real time—except much less efficiently than a phone call. The slower we respond—the more we do the net on our own schedule instead of the one we think it is imposing on us—the more respect we command from the people on the other side of the screen. Unfortunately, many of us don't feel we have even the right to dictate our own relationship to the incoming digital traffic.

Of course, the simplest way out is to refuse to be always on. To engage with the digital—to connect to the network—can still be a choice rather than a given. That's the very definition of autonomy. We can choose to whom or what we want to be available, and when. And we can even choose people for whom we *want* to be always on. Being open to a call from a family member 24/7 doesn't require being open to everyone. The time it takes to program your phone to ring for only certain incoming numbers is trivial compared to the time wasted answering calls from people you don't want to hear from.

We are more likely, however, to ignore the timeless bias of the digital and aspire to catching up with its ever-elusive

pace. We mistake the rapid-fire stimulus of our networks for immediacy, and the moment we are actually living in for the thing that needs to catch up. We are like drivers trying to catch up with the image in the rearview mirror.

And the more we live this way, the more we value the digital's definition of the now. Our search engines preface their more relevant results with a section of "live" links to whatever blog comment, social networking message, or tweet has most recently been posted containing the words in our queries. The only weighting that matters is how few seconds have transpired since it was blurted. This in turn encourages us to value the recent over the relevant.

While media critics and concerned educators lament the effects of short messaging on brain capacity, the real influence of our interaction with these programs is not on our neurons as much as our habits and outlook. Yes, thanks to what is known as neuroplasticity, our brains do change depending on what we do. A brain learning on computers ends up wired differently than a brain learning on textbooks. This is nothing new. Brains learning through text are different than ones that learned through oral teaching, too. Likewise, a kid who plays mostly with dolls ends up wired differently than one who builds bridges with blocks.

There's a misplaced anxiety here. Our brains adapt to different situations. Technologies have always changed us. Fire gave us a way to cook meat, essentially pre-digesting food

and altering the evolution of both our teeth and digestive tract. Wearing fur allowed us to shed our own. Likewise, text changed the way we process and remember information, and television changed the way our brains relate to three-dimensional space.

Digital media now extends some of these trajectories, while adding a few of its own. The outsourcing of our memory to machines expands the amount of data to which we have access, but degrades our brain's own ability to remember things. Yet this process of offloading our remembered information began with the invention of text, and met with similar critique even back then. We have been consistently using our brains less as hard drives and more as processors—putting our mental resources into active RAM. What's different now, however, is that it's not just lists, dates, and recipes that are being stored for us, but entire processes. The processes we used to use for finding a doctor or a friend, mapping a route, or choosing a restaurant are being replaced by machines that may, in fact, do it better. What we lose in the bargain, however, is not just the ability to remember certain facts, but to call upon certain skills.

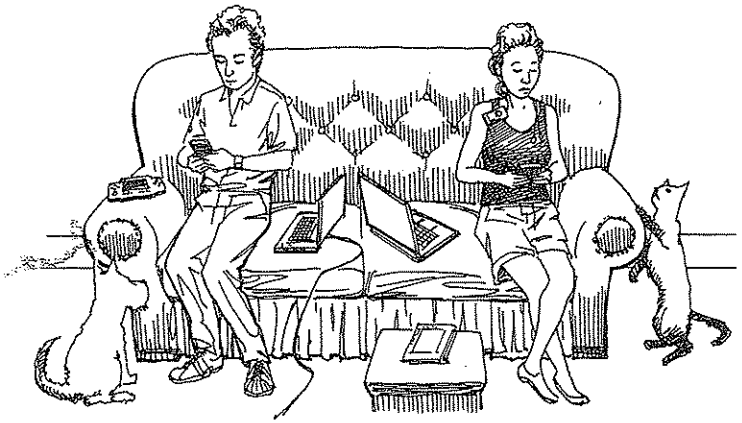
We encode a way of doing something and if the computer is capable of accomplishing that task, we never need to know how it happens again. It's a bit like doing arithmetic by algorithm, which most of us learned for calculating square roots and long division. We learn how to push the numbers

through a series of rote steps to get our answer, but forget how or why it really works. Now we're having our computers remember those processes, which removes us one step further from whatever is going on. So instead of simply offloading our memory to external hard drives, we're beginning to offload our thinking as well. And thinking is not like a book you can pick up when you want to, in your own time. It is something that's always on. Are we choosing to surrender the ability to do it without digital assistance? If so, are we prepared to remain connected to our networks all the time? What new ability, if any, are we making room for in the process?

It's not the networking of the dendrites in our skulls that matters so much as how effective and happy we are living that way and, in the case of digital media, how purposefully we get ourselves there. Recognizing the biases of the technologies we bring into our lives is really the only way to stay aware of the ways we are changing in order to accommodate them, and to gauge whether we are happy with that arrangement. Rather than accepting each tool's needs as a necessary compromise in our passively technologized lifestyles, we can instead exploit those very same leanings to make ourselves more human.

Our computers live in the ticks of the clock. We live in the big spaces between those ticks, when the time actually passes. By becoming "always on," we surrender time to a technology that knows and needs no such thing.

II. PLACE



Live in Person

Digital networks are decentralized technologies. They work from far away, exchanging intimacy for distance. This makes them terrifically suitable for long-distance communication and activities, but rather awful for engaging with what—or who—is right in front of us. By using a dislocating technology for local connection, we lose our sense of place, as well as our home field advantage.