

# WHAT'S NEXT

Prediction is very hard, especially  
when it's about the future -Yogi Berra

# THE PLACE OF ORIGINALITY IN THE INFORMATION AGE

BY PAUL SAFFO

Does technology extinguish creativity and originality, or does it expand them? The history of technology and creativity over the last few centuries suggests that the answer is less bleak than today's information-age fears might indicate. Our response to a given new technology typically repeats a pattern of initial resistance, followed by uneasy accommodation and eventual acquiescence. Ultimately, we achieve a seemingly irreversible integration of the new technology into our creative lives, as once-offensive tools become seamless extensions of artistic reach and creativity. Be it bulldozer, chainsaw, or laser printer, each new technological threat has been tamed into a useful tool for creative expression.

Three centuries of mechanical innovations have insinuated themselves into virtually every corner of physical creative expression. We have made a reluctant peace with the artifacts of the industrial revolution. The machine has extended the power of the hand in precision and speed, making the scarce common and the dear cheap—often at great aesthetic cost, but also creating newer wonders never possible before. Could a scrivener's unaided hand have delivered to us the photo-mosaic of earth shot from space by the Apollo astronauts that so reshaped our 1960s consciousness and influenced the environmental movement?

Above all, the machine has created an astonishing abundance. We live in an age of profligate reproduction, a world of enabling, multiplying machines, their output exceeding the wildest dreams of nineteenth-century industrialists. The machine breakers of Lyons feared deprivation of wealth and security from loss of work and of expression from being reduced to mere machine tenders. But mechanization has been so complete that we no longer tend the spinning frames—they tend themselves. As it has always been with technological revolutions, the present danger is that we will be done in by the success of our inventions, creating more subtle and insidious forms of servitude than the machine breakers ever imagined.

The engines of profligate reproduction have also drastically altered our notions of creativity and originality. Technology has made precision in multiplication the



province of the machine, forcing the essence of human creativity to retreat slowly from the hand to the head. The merits of this retreat are fertile grounds for debate. But the debate is also something of a red herring, for the most important issue of all may lie in an unexamined assumption that seems to be shared by technophile and technophobe alike: no matter how precise our machines become, the familiars of the industrial revolution will never invade the last sanctum of creativity, the human mind. This smug, industrial-age assumption is blinding us to more fundamental shifts in much the same way that fear over becoming machine tenders blinded our predecessors to the impact of technology on consumerism.

This time, the transforming agents are the microprocessor and the communications laser. These and the artifacts of the information revolution are not simply extending the means of profligate reproduction; something utterly new is afoot. The machine age of profligate reproduction is yielding to an information age of infinite recall. This shift will do more than redefine design. It will cut to the very heart of what we mean by "creativity" and "originality," and it will do so by invading the once-exclusive province of the mind.

Human culture has been shaped by a dance of two opposing forces: memory and forgetfulness. Memory gives us context while forgetfulness provides an opening for invention and originality. Successful creativity occurs when the two are balanced and originality is set within the larger context of tradition.

Memory was once the exclusive domain of the intellect. Homer and his contemporaries carried epic poems and culture in their heads. The result was captivating, but transmission was laborious and imperfect. On the bright side, the process conferred an imprecise patina to culture that itself encouraged and enabled further creativity. On the down side, though, the sum total of human knowledge that could be preserved was limited to what could be recalled from frail memory and stored in one human lifetime. Every information innovation since then has nibbled away at the margins of memory. Plato's Phaedrus feared that writing would make human memory lazy. In fact, the "memory arts" became the central tool of scholarship until well after the invention of the printing press, a response to the human need to deal with burgeoning paper-based information.

Gutenberg's invention of movable type in the mid-1400s triggered a newer revolution that extended and complexified human knowledge and thought yet further. But it, too, merely augmented memory, making the mind more important than ever. The advent of printing as a medium triggered a shift from the use of the mind as storage to the mind as processor of print-based information. These advances all enhanced creativity. Aided by the press and the book, the creative mental horizons of our ancestors grew by leaps and bounds.

Each of these information innovations also triggered fundamental shifts in cultural world views. Writing set us on a path of history. The formal memory arts led to a systematic though static medieval world view, while the press added a



radical new Renaissance dynamism, setting us also firmly on the path of acknowledging individual originality and creativity. The press was the first industrial replication machine, with its pieces of type amounting to standardized parts centuries before the idea occurred to the captains of the industrial revolution. As a replication machine, it was also a star-making machine, for the notion of authorship barely existed before the multiplication of texts invented the audience. The book and its replication led to a cult of the individual and of individual originality unprecedented in human history.

Now we are on the verge of an information revolution that is so great as to amount to a difference in kind. A triad of information technologies—communications, processing, and memory—is reshaping both the real and the symbolic world. We are entering a hyperdynamic world of connections, relationships, and abstracting tools that help us make sense of the information flooding about us. Already, the dominant form of information storage in our society has ceased to be either the fragile and forgetful patterns of memory or yellowing paper and aging books. Today, more information is stored in digital form than in all the libraries of the world combined.

But this is much more than a memory revolution. We are in the earliest stages of creating in a world of infinite recall, where all can be stored and nothing can be forgotten, no matter how profound or banal. This digital shift to infinite recall will upset the applecart of originality forever. For starters, the line between original and derivative works will blur as link-building information systems relentlessly identify the origins of ideas that perhaps the originator and creating designer had forgotten or never known. We may one day critique art the way the IRS conducts tax audits. What seems like luck, inspiration, and risky happenstance at the moment of creation could take on the aspect of plagiarism and fraud when viewed in perfect unblinking 20/20 digital hindsight.

Imagine clients routinely demanding an affidavit of originality from designers. Indeed, plagiarism itself could become a profoundly relative sin, differing only by degree from more venial derivations, and the causality of plagiarism might be determined more by happenstance and not by the original designer's intent.

Will the act of creativity be reduced to assembling old ideas like so much digital clip art, as the once-sustaining web of tradition becomes a suffocating blanket of electronic recall? In *Choruses from "The Rock,"* T. S. Eliot articulated a very modern fear: "Where is the wisdom we have lost in knowledge? / Where is the knowledge that we have lost in information?" To this we might add, Will vast memory and infinite recall leave room for invention and creativity at all? Of course, this coming world of infinite memory and recall is not without its advantages. Think of the fruits of creative labor lost when the library of Alexandria was torched in the seventh century by Muslim invaders, or when Spanish padres burned the Mayan codices in the 1600s. Even modest recall and reproduction can preserve ideas from the ravages of



foolish contemporaries who would censor what their descendants may see.

Now, in an age of digital storage, duplication is so facile and storage so cheap that the notion of a single original will all but disappear. For, as the music industry has discovered to its alarm, digital technology makes each copy of every copy equal in quality to the initial master. Just as digital reproduction and replication extend rather than extinguish the original, I wonder if the coming new world of infinite recall will be more likely to extend and redefine originality than to eliminate it. "Origin" is defined as that from which anything derives its existence, source, or cause. The mechanical age, with its profligate replication and reproduction, turned origin into a point, leaving us with an obsessive illusion of individual creativity. And history became a pattern of multiple points of originality with patterns of copying and duplication fanning out from them.

This, however, is a myth. I think plagiarism has become so devilish an issue today because true, strict originality is vanishingly rare. We swim in a sea of culture, of memories old and new, and all our acts flow out in response to what we experience. In the coming age of infinite recall, I think we will rediscover a preindustrial fact: origin is not a point but a continuum, and the process of originality is much more linked than we imagine. For a world of infinite recall is a world of infinite unity, of deeply interconnected relationships. In this new world, originality is going to be recognized as an additive and transformative process, with multiple paths and forks along the way, as new and old divide and recombine in infinite intriguing complexity. And this new understanding will lead us to realize that creativity and originality are much stranger and scarcer than we ever assumed, and much more precious than ever.

Eventually, we will look back on the closing half of this century and realize that we suffered from something of a cult of originality. And as the cult subsides, perhaps the litmus test of individual creativity will cease to be originality above all. Instead, the test will be passion—passion, surprise, and insight. The growing emphasis in the design industry on collaboration is evidence that the shift is already under way. We worry about working together today as a team. Perhaps we will come to value as well vertical collaborations with thinkers long dead and with visionaries yet unborn.

Of course, nothing is new. You can reach back to the caves of Lascaux or the century-long process of building a medieval cathedral to see this kind of multigenerational collaboration taking place. With luck, perhaps the deep interconnections revealed by the coming age of infinite recall will also turn back and recombine into a new power of vision that will help us bring sense and control to the existing industrial forces of infinite replication. That, I think, would be the most welcome and creative act of all.

Paul Saffo is a director at the Institute for the Future in Menlo Park, California. This essay is based on a talk he presented at the 1991 Aspen Design conference.