

## Walter Benjamin and Biz Stone: The Scientific Paper in the Age of Twitter



Walter Benjamin (1895–1940). Author of “The Work of Art in the Age of Mechanical Reproduction.” Image courtesy Art Resource.



Biz Stone (1975–), founder of Twitter. Image courtesy Corbis.

Maureen Dowd: *If you were out with a girl and she started twittering about it in the middle, would that be a deal-breaker or a turn-on?*

Biz Stone: (dryly) *In the middle of what?*

Maureen Dowd: *Why did you think the answer to e-mail was a new kind of e-mail?*

Biz Stone: *With Twitter, it's as easy to unfollow as it is to follow.*

—*The New York Times*, 2009 (1)

*For centuries a small number of writers were confronted by many thousands of readers. This changed toward the end of the last century. It began with the daily press opening to its readers space for “letters to the editor.” And today. . . at any moment the reader is ready to turn into a writer.*

—Walter Benjamin, 1931 (2)

*All registered users are able to add Notes, Comments, and Ratings to any article. . . Highlight the text to be annotated, and then click the “Add a note to the text” link in the right-hand navigation menu of the article. . . Notes can be*

*started at any point within the text, but for ease of reading we ask that you do not begin Notes in the middle of words.*

—Public Library of Science, 2009 (3)

### THE SANDBOX OF IDEAS

It's reassuring to read that our colleagues at The Public Library of Science have remained true to the integrity of the word, if not the sentence or thought. *PLoS One* has raised this banner for verbal integrity in a cheery commercial entitled “*PLoS Journals Sandbox: A Place to Learn and Play* (3).” The new format, which permits instant interruption of on-line, formal scientific papers, is certainly in keeping with the temper of our time. Were this to have been the practice in old-fashioned print libraries, many of our journals would by now resemble kitty litter.

In the Age of Twitter we've become accustomed to bell-tones and roving thumbs in every venue of human

life. We call it social networking when we summon up Facebook, YouTube, or MySpace—and it's no longer limited to teenagers. Twitter and the other social networks have been used by nearly one in five of online adults ages 25 to 34 (4). Nowadays, in the plenary sessions of national scientific meetings, one sees heads bowed in homage to the Holy Book of Face or tweeting to Twitter in fewer than 140 characters of text. Biz Stone, the founder of Twitter, explains:

*Twitter is a service for friends, family, and co-workers to communicate and stay connected through the exchange of quick, frequent answers to one simple question: What are you doing?* (5)

Folks can't wait to tell you what they're doing. They've tweeted at funerals and inaugurations, texted en route to train crash and trolley disaster, so why not in lecture halls and laboratories, restaurants, or concert halls (6)?

And as for science: what are we doing? Today, on screens large and small, every online scientific paper is just a cursor stroke away. That makes it possible, as Benjamin predicted, for any reader to turn into a writer. No surprise, then, that *PLoS* and other new venture journals encourage us to adorn the digital text with notes and comments, blogs and tweets. Biz Stone brags that "[Twitter] will always be about providing access to a communication network through the lowest common denominator (5)." Right on to the *Public Library of Science*! How fitting it is that *PLoS*, the youngest kid on the block of reputable science journals, is out to compete in the sandbox of ideas (3).

## ENDANGERED SPECIES OF PRINT

It's no secret that scientific journals have been losing readers of their printed versions to the greater audience on the web. For many scientific journals, the number of "hits" they receive daily online is a factor or two greater than their monthly print circulation. That's true of the printed page in general: daily newspapers, news magazines, and hard-cover books are losing readers. Bookstores and publishers are going belly-up, and although books aren't being burned these days, they're being "Kindled." In the words of John Kerry, newspapers are becoming "an endangered species (7)." The printed word still retains a good chunk of older devotees, but even these are as likely as their younger colleagues to prefer electronic to printed copies of their favorite journals (8). The main threat to printed scientific journals is the cost of publication, since libraries alone can no longer support subscription costs (9). The solution: having the authors pay, and pay enough to have their manuscripts published to support the editorial effort—and then some! Adapting Walter Benjamin's phrase, nowadays every author is ready to turn into a publisher.

This sea change in the way that information is handled and supported has worried many and frightened a few (9). We might recall that scientific journals as we know them are relatively recent arrivals on the scene and have moved along paths trod by the general culture. Before

there were any periodicals, Copernicus and Galileo, Vesalius, and Harvey did pretty well with monographs subsidized by court and/or learned societies. Science and publishing became professionalized at the dawn of the Enlightenment. The two oldest scientific journals on record are *The Philosophical Transactions of the Royal Society* (London) and the *Journal de Scavants* (Paris), both founded in 1665. Originally filled with material of general interest for fellow citizens of "the republic of letters," they soon morphed into publications that reported the most rigorous science of the day (10). By the mid 19th century, while scores of specialized journals had sprouted, books and monographs still ruled the roost. Darwin made more of a splash with his commercial 1859 bestseller *On the Origin of Species by Natural Selection* than with the antecedent Darwin-Wallace paper delivered at the nonprofit Linnean Society on July 1, 1858 (11). Things began to change when *Nature* hit the decks in 1869; it has remained a profitable commercial enterprise—and an example for many of us—ever since.

## IT HAS NOT ESCAPED OUR NOTICE

The mold was struck for the modern scientific paper between the two world wars. Responding to the needs of a self-expanding hierarchy of research universities and professional societies, a standard set in 1927 gained acceptance world wide (12). Today the acronymic IMRaD formula (Introduction, Methods, Results, and Discussion) is now required by all reputable journals, including this one.

But there's always been wiggle-room around the canonical IMRaD format; most journals are enlivened by letters to the editor, rebuttals, conference proceedings, abstracts of meetings, news reports, etc. Walter Benjamin's description in 1931 of the marketplace of print still applies to the market in scientific ideas:

*Today there is hardly a gainfully employed European who could not, in principle, find an opportunity to publish somewhere or other comments on his work, grievances, documentary reports, or that sort of thing. Thus, the distinction between author and public is about to lose its basic character* (13).

He would have loved texting and Twitter; I can imagine his pleasure at running his thumbs over the passing comments and pertinent grievances as he "follows" and "unfollows" as both author and reader.

In this context, one can only imagine what the epochal Watson-Crick paper would look like these days on *PLoS*. Their 1953 paper was written as a "Letter to the Editor" in *Nature* and never underwent peer review. John Maddox, editor-in-chief at the time, later admitted that "the Crick and Watson paper could not have been refereed: its correctness is self-evident." That's a matter of dispute, as we'll see (14). The Watson-Crick paper begins with:

*We wish to suggest a structure for the salt of deoxyribose nucleic acid (D.N.A.). This structure has novel features which are of considerable biological interest. . .*

The ending of the paper is of course perhaps the best known in scientific prose:

*It has not escaped our notice that the specific pairing we have postulated immediately suggests a possible copying mechanism for the genetic material.*

But for many of us, the real action is in the acknowledgments at the end:

*We are much indebted to Dr. Jerry Donohue for constant advice and criticism, especially on interatomic distances.*

*We have also been stimulated by a knowledge of the general nature of the unpublished experimental results and ideas of Dr. M. H. F. Wilkins, Dr. R. E. Franklin and their co-workers at King's College, London (15)*

One need only to imagine what tweets, twoops, formal corrections, and comments might decorate these passages on *PLoSOne* today. Pauling, Chargaff, Avery, Meselson, Cairns, Donohue, Perutz, Franklin, and Wilkins would have had their say:

*This structure has novel features* **COMMENT: YEAH! HYDROGEN BONDING, LINUS!) which are of considerable biological interest. COMMENT: FOR WHICH I WROTE THE CHEMISTRY, ERWIN FORMAL CORRECTION: IT'S THE GENETIC MATERIAL, YOU FOOLS!, GENES! OSWALD**

*It has not escaped our notice that the specific pairing* **FORMAL CORRECTION: BASE PAIRING A/T=G/C, ERWIN** *we have postulated immediately suggests a possible copying mechanism for the genetic material. COMMENT: LIKE WHAT? CONSERVED? SEMI? MATT COMMENT: MORTAL OR IMMORTAL? CAIRNS*

*We are much indebted to Dr. Jerry Donohue for constant advice and criticism, especially on interatomic distances. FORMAL CORRECTION: SEZ YOU! I TOLD YOU ABOUT THE KETO TO ENOL TAUTOMERS. YOU KNEW SQUAT FROM THE CHEMISTRY! JERRY* *We have also been stimulated by a knowledge of the general nature* **FORMAL CORRECTION: I SHOWED YOU THEIR PICTURES, MAX** *of the unpublished experimental results and ideas of Dr. M. H. F. Wilkins, Dr. R. E. Franklin FORMAL CORRECTION: YOU PEEKED, "DARK LADY" and their co-workers at King's College, London COM-MENT: OUR TWO FOLLOWING PAPERS ARE DATA, YOURS IS A LEAP, MAURY.*

## ARCADES TO THE BORDER

Walter Benjamin, (1895–1940) the quintessential European intellect and literary omnivore, would have loved having a COMMENTS and FORMAL CORRECTIONS option at his finger-tips. His lifelong passion, the *Pas-sagenwerk* or *Arcades Project*, was posthumously published as a handsome volume of more than 1000 pages (16). The *Project* is a rough alloy of insights, interruptions, and wisdom as dense and fragmented as the imaginary DNA discourse above. The work owes as much to Dante as to Benjamin's fellow refugee from Hitler, Sigmund Freud. Benjamin may have set out to trace the roots of modern Europe to its Oedipal childhood in the 19th



A Paris arcade in the 1920s as Walter Benjamin might have seen it. Image courtesy Art Resource.

century, but in retrospect, the *Arcades Project* spells out some of the reasons that Europe went to hell in the 20th century.

More to the point: much of the *Arcades Project* prefigures the home page of a social network on the Web. Benjamin literally explores a *network*: the *linked* indoor shopping arcades of nineteenth century Paris, the *Passages* (16). I imagine a Benjamin today, reincarnated as the perennial flaneur; who *follows* a path in the Arcade of Panoramas. He stops occasionally at one *site* or another site. The flaneur ambles (*surfs*) along a protected space (*MySpace*) in which bustling crowds are reflected in shiny *Windows*. He adjusts his cravat in a store-front mirror (*Facebook*), and when the *bell-tone* rings in his pocket, he takes out his timepiece (*Blackberry*). He looks past his mirror image (*YouTube*), to find two generations of *followers* (*Twitter*).

Were Benjamin to log on to Twitter, he'd have thousands of tweets on hand to send to generations of followers. His essay on "The Work of Art in the Age of Mechanical Reproduction (2)" could serve as a source for the ages. The essay describes how advances in the reproduction of visual arts have led to a loss of the expressive "aura" that original paintings, drawings, and sculpture have about them, as they are endlessly reproduced and manipulated. Benjamin was ambivalent about the ever-

increasing power of mechanical reproduction. The medieval woodcut was succeeded by engraving and etching at the end of the Middle Ages. Then came lithography in the 19th century which next “permitted graphic art for the first time to put its products on the market, not only in large numbers as hitherto, but also in daily changing forms.” And then “lithography was surpassed by photography. . . which led to film.” Film was the ultimate medium for Benjamin. In the century of the common man film was art without “aura” and accessible to all:

*Magician and surgeon compare to painter and cameraman.*

*The painter maintains in his work a natural distance from reality, the cameraman penetrates deeply into its web. . . Thus, for contemporary man the representation of reality by the film is incomparably more significant than that of the painter, since it offers, precisely because of the thoroughgoing permeation of reality with mechanical equipment, an aspect of reality which is free of all equipment (2).*

I can see Benjamin now tweeting, now twoopsing, now blogging, now surfing, now scrolling. His thumbs move quickly over the tiny keys—the sandbox of images in sight. He tweets directly to Biz Jones and the other followers of WB (his *nom-de-tweet*), an upbeat quote from Paul Valery (1928). Valery and WB were sure that other great gadgets would soon supplant celluloid film:

*Just as water, gas, and electricity are brought into our houses from far off to satisfy our needs in response to a minimal effort, so we shall be supplied with visual or auditory images, which will appear and disappear at a simple movement of the hand, hardly more than a sign (17).*

Pretty good prediction, no? Isn't that “simple movement of the hand” what the thumbs are doing these days on a Blackberry. The quote is also about twice the 140 characters that Biz Stone permits, but heck, WB could have split it in two.

Benjamin might have sent another tweet—one that's carved into his tombstone overlooking the Spanish border town of Port Bou. After a decade of exile in France, Benjamin, as Marxist and Jew, had escaped from a Vichy prison in 1940. In the French border town of Banyuls he was provided with a map, a guide, and a U.S passport issued by a courageous American consul in Marseille, Hiram Bingham IV. On September 25, 1940, Benjamin joined a partisan trek on a clandestine, nighttime path over the Pyrenees. At the Spanish border, however, the Franco police seized him. Benjamin was an illegal immigrant: he had no French exit visa and Marshall Petain had just signed a pact with Hitler that guaranteed return of such refugees. He was brought to a cheap hotel in Portbou on the Spanish side, and told he would be returned to France on the next day. Fearing deportation, depressed, and alone, Benjamin died during the night, an apparent suicide from an overdose of morphine. The tweet WB might send is his epitaph:

“THERE IS NO DOCUMENT OF A CULTURE,  
WHICH IS NOT AT THE SAME TIME A DOCUMENT OF BARBARISM (18).”

It's less than 140 characters. I'd bet that Benjamin would have been at home in our new world of texting and tweets, blogs and hand-helds. In the Age of Twitter, he'd be ready to play in the sandbox of ideas, and we wait for his *FASEB Journal* essay in “Milestones.” FJ

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