ESSAY

# The Making of an Icon

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At the 50-year celebrations, in April 2003, of James Watson and Francis Crick's proposal of the double-helical structure of DNA, one image will be hard to avoid: the photograph of the two researchers staged left and right of their Meccano-like model. The black-and-white image comes in two versions. One picture shows Crick with a slide rule in his hand pointing up toward the model. In the other (slightly less staged) version of the picture, the arm has moved down, and instead of gazing at their model, Watson and Crick half-face each other and the viewer, laughing. Although both images are in wide circulation, the second one is reproduced somewhat less frequently (some refer to it as the "lesser" print in contrast to the "true" or "classic" picture).

The pictures, taken 50 years ago by Cambridge photographer Antony Barrington Brown in the Cavendish Laboratory, have come to symbolize the Nobel Prize–winning achievement of the two researchers and its far-reaching impact, as well as scientific achievement more generally. The restaging of the classic photograph, nearly 40 years later, with Watson and Crick adopting the same poses, bears testimony to the iconic status of the image (*1*).

As with other well-known images, we tend to take the meaning of the Watson-and-Crick photographs for granted. Asked about their origins, most people assume that they were taken at a press conference announcing the discovery. Their value seems to rely on the momentous event they document. Taking a closer look at the pictures and their history we find that they play a much more intimate and intriguing role in the history of the event they purportedly portray.

The first surprising finding when investigating the history of the images is the difficulty in establishing the exact circumstances when the photographs were taken and when they first appeared in print. With the main protagonists still alive, the problem is not that we lack accounts of these events, but that the recollections differ. The available accounts nevertheless offer important insights into the events surrounding Watson and Crick's work and, together with other evidence, help reconstruct the history of the photographs (*2*).

It will at this point be useful to recall that the first brief communication of Watson and Crick's proposed structure of DNA appeared in *Nature* on 25 April 1953 (*3*), accompanied by two papers of the King's College group in London (*4*, *5*), including, among others, Rosalind Franklin's X-ray picture of DNA, which, as became later known, provided crucial clues for Watson and Crick's work. A longer paper by Watson and Crick, in which they spelled out the genetic implications of the structure, appeared in *Nature* 5 weeks later, on 30 May (*6*). A fuller description of the proposed structure appeared in the *Proceedings of the Royal Society of London* the following year (*7*). The first communication in *Nature* contained a diagrammatic sketch of the double helix drawn by Crick's wife Odile; the last paper included photographs of a rough scale model of the structure, but none of the papers featured the model shown in Barrington Brown's photographs. What then can we find out about the photographs?

**Contact print of the photograph taken by Antony Barrington Brown of Francis Crick (left) and James Watson (1953).**

**The iconic photograph of James Watson, Francis Crick, and the double helix, taken by Antony Barrington Brown in May 1953, is today considered inseparable from the moment of discovery of DNA structure.**

Watson reportedly believed the pictures were taken in May, shortly after the first publication in *Nature*, and that they first appeared in *Varsity*, the Cambridge student weekly (*8*). *Varsity* did indeed carry a brief note on Watson and Crick's "X-ray discovery" on 30 May (the day of the second publication), but it included no picture (*9*).

Crick remembered that the photographs were taken on the occasion of an open day in the Cavendish. According to his recollections, it was only for that occasion that he and Watson built up the model to full height as it appears in the photograph, using all available model-building parts (*10*). Yet, the open day in the Cavendish that year took place on 14 and 15 July. Crick himself cannot make this date coincide with his memories. There is indeed another photograph showing the model in front of a black curtain that was probably taken on that day (much less often reproduced, it seems to be the only other surviving photographic record of the model; the photographer is unknown). However, Crick's recollection is important for another reason. It makes clear that the model in Barrington Brown's picture, which is generally referred to as the "original" model, is not Crick and Watson's actual working model. Rather, there was a plethora of models. Crick recalls (*11*):

> Of course we built the hopelessly incorrect model we showed to the King's [College] people …. After Pauling's paper arrived, we got permission (both from [Lawrence] Bragg and Maurice [Wilkins]) to try again. Jim ordered metal models of the bases of which we had none before but we became impatient and made make-shift paper ones, with which we discovered the AT, GC pairs.
>
> After that we immediately started to build models, but using only one sugar-phosphate, plus one extra atom, and using a constraint to allow for the base pairs. We built at least two fairly similar models, of which one is the published one.
>
> I think I was wrong to suggest that we went straight from this to the tall, open-day one. We probably built a shorter model, with both chains, and perhaps a couple of base pairs, but my recollection is that for the open day we used everything we had to build as big a one as possible.

If we follow Crick's account, it must have been the lack of any photographic or other traces of the earlier models that has turned the big model, captured in Bar-

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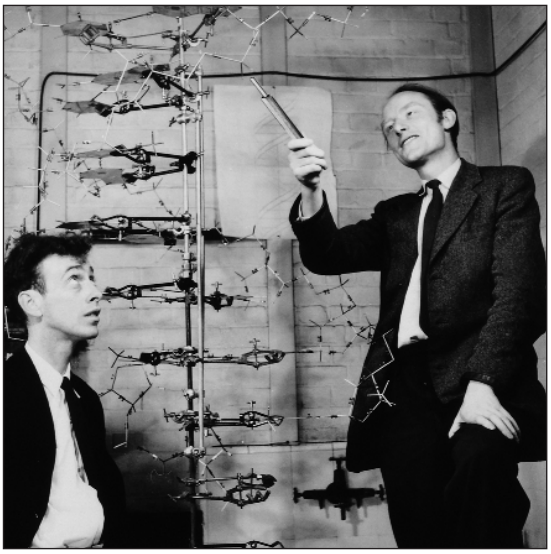
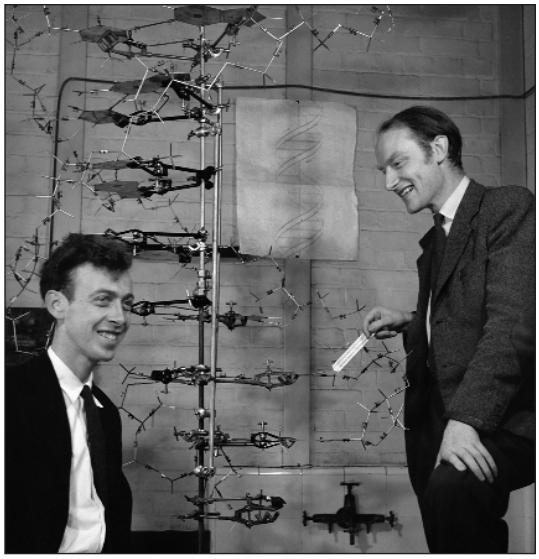
rington Brown's photographs, into the supposed original one.

Barrington Brown recently offered the most detailed account of the events surrounding his visit to the Cavendish (*12*, *13*). He recalls that there was a student at Cambridge paid by *Time* magazine to look out for newsworthy stories about Cambridge science. He found out about Watson and Crick's model and asked Barrington Brown to take a picture to accompany his report. Barrington Brown did not find the model particularly impressive or photogenic. He therefore staged Watson and Crick in front of it. The strongest evidence he has to support his story is a set of contact prints of the eight shots he took that day; the date marked on them is 21 May 1953 (see figure, top right; the famous print is exposure no. 2; its companion no. 3; no. 5, on p. 255, showing Watson and Crick drinking tea in their office is also in circulation; the other five prints have rarely been reproduced).

A letter Watson wrote to Max Delbrück, his mentor at the California Institute of Technology, confirms that a reporter of *Time* (a photographer is not mentioned) visited the laboratory around that time (*14*). Nevertheless, *Time* magazine did not publish the story sent in from Cambridge, and Barrington Brown got his negatives back. Here, a second surprising fact emerges. Except perhaps for one, so far unconfirmed, use in a *Time-Life Book* the photographs apparently did not appear in print for well over a decade. Even around the time of the Nobel award (1962) there is no trace of them. Also, the photographer seems to have forgotten about them.





**Contact prints of the photographs taken by Antony Barrington Brown of Watson, Crick, and their model in the Cavendish Laboratory (1953).**

The fate of the 1953 photographs changed dramatically with the publication, in 1968, of Watson's book *The Double Helix* (*15*). Combining the personal memoirs of a scientist with elements of fiction, Watson's controversial account of the events leading to the proposal of the double-helical structure of DNA quickly became an international bestseller. The Barrington Brown photograph (the one with the slide rule pointed upwards) was only one among several pictures illustrating the book. Still, none of the pictures seemed to capture Watson's story and its spirit better than that photograph.

With the publication of Watson's book, the demand for the pictures (the classic one and its companion) rose constantly. It continues unabated to the present day. The photographs were distributed by Camera Press, as well as by a number of other institutions. Only in the early 1990s did Barrington Brown start to realize how much he was losing on royalties. He is now actively pursuing his copyright (since 1993, Science Photo Library has been distributing the pictures; in addition, Camera Press still distributes the companion to the classic print).

Watson's book not only brought Barrington Brown's picture into circulation, but also provided what became the dominant description for the image. The photographer seems to confirm this view when he says: "This is a picture of people, the story of two chaps and their interaction as described in Watson's book." (*16*).

Since the late 1960s, Watson and Crick's collaborative effort, so vividly portrayed in *The Double Helix*, has been celebrated as the origin of a new science of life. A direct line is seen to lead from that event to the Human Genome Project (*17*). The significance attributed to this development has increased the symbolic value of the original event and the iconic status of the images that have come to represent it.

In the mid-1970s, Barrington Brown's photographs guided the reconstruction of the "original" DNA model, which had long since fallen to pieces. The replica, which incorporates some of the original metal base plates, has since been on display in the Science Museum in London, where it attracts a continuous stream of visitors. Nevertheless, the history of Barrington Brown's photographs suggests that these are much more than just documents of the model and its makers at the time. Together with Watson's best-selling account, they have become part of the making of that discovery and the way it is represented. Despite the controversies that Watson's account spurred, that image has proved hard to displace. The iconic power of the 1953 photographs may even prove more enduring than the story that has made their fame.

**References and Notes**


1. See www.cshl.org/watson-archives/Previews/watson_cd-141.jpg
2. On the Cambridge context of Watson and Crick's research, see S. de Chadarevian, *Designs for Life: Molecular Biology After World War II* (Cambridge Univ. Press, Cambridge, 2002).
3. J. D. Watson, F. H. C. Crick, *Nature* **171**, 737 (1953).
4. M. H. F. Wilkins, A. R. Stokes, H. R. Wilson, *Nature* **171**, 738 (1953).
5. R. Franklin, R. G. Gosling, *Nature* **171**, 740 (1953).
6. J. D. Watson, F. H. C. Crick, *Nature* **171**, 964 (1953).
7. F. H. C. Crick, J. D. Watson, *Proc. R. Soc. London Ser. A Math Phys. Sci.* **223**, 80 (1954).
8. Archive staff, Cold Spring Harbor Laboratory, Cold Spring Harbor, NY, personal communication, June 2000.
9. "X-ray discovery," *Varsity* (Cambridge), 30 May 1953, p. 1.
10. F. Crick, letters to author, 2 June 1997 and 5 January 1988.
11. F. Crick, letter to author, 5 January 1998.
12. R. Hargreaves, Ed., *Faces of the Century: A Sainsbury's Photographic Exhibition* (A National Portrait Gallery Resource Pack for Teachers, National Portrait Gallery, London, 1999), p. 7.
13. Also A. Barrington Brown, telephone conversation with author, January 1995.
14. J. Watson to M. Delbrück, 21 May 1953 (California Institute of Technology, Pasadena, archive), quoted in R. Olby, *The Path to the Double Helix: The Discovery of DNA* (Dover, New York, 1994), p. 421.
15. J. D. Watson, *The Double Helix: A Personal Account of the Discovery of the Structure of DNA* (Atheneum, New York, 1968).
16. A. Barrington Brown in conversation with author, January 1995.
17. See, for instance, the time line from 1953 to 2001 in L. Roberts *et al.*, "A history of the Human Genome Project," [*Science* **291**, 1195 (2001)]. Watson and Crick's 1953 discovery of the double helix is illustrated by the classic Barrington Brown photograph.
18. A longer version of this article appears in *Isis* **94**(1), 90 (2003).