

BLUSHING IN THE DARK: FIRST EXPERIMENTAL PROOF

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“Blushing in the dark” is more than just a fanciful phrase. We conducted the first scientific measurements and thereby discovered that human beings do actually, physiologically, blush in the dark.

Introduction

Reminiscent of the manner in which Bitzer defined a horse[a], adding not a small pinch of Molière’s *virtus dormitiva*[b], a blush was described as follows:

There are vasodilator nerves, through which are transmitted impulses that dilate the vessels, and, in the case of the skin vessels, produce the condition of blushing. [1]

Blushing, “the most peculiar and the most human of all expressions,” is highly involuntary and quite uncontrollable. Like many of the commonplace phenomena of life, blushing is still surrounded by unsolved questions.[2] One of these questions is whether people do blush in the dark. Around 1790 this problem was pointedly formulated by the German polymath Georg Christoph Lichtenberg:

The question whether young women blush in the dark is a very difficult one; at least one that cannot be settled by light.[3]

Some one and a half centuries later, the physicist Max Born echoed this idea as an example of an impossible experiment:

[...] the quest for the absolute truth of things-in-themselves is similar to the attempt to find out whether young girls—or middle-aged physicists—blush in the dark. The necessary procedure—turning on the light—is not compatible with the situation to be studied.[4]

So, can and do we blush in the dark? Henry James seemed to have shied away from the affirmative answer:

[...]; he almost blushed, in the dark, [...].[5]

On the other hand, Charles Darwin thought it more than likely:

Several ladies, who are great blushers, are unanimous in regard to solitude; and some of them believe that they have blushed in the dark. [...] I have no doubt that this latter statement is correct.[6]

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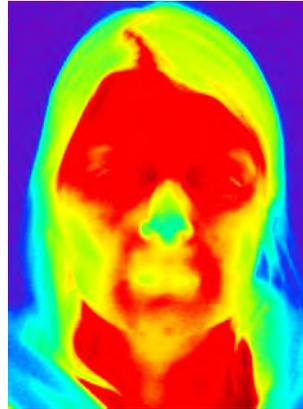


Figure 1.

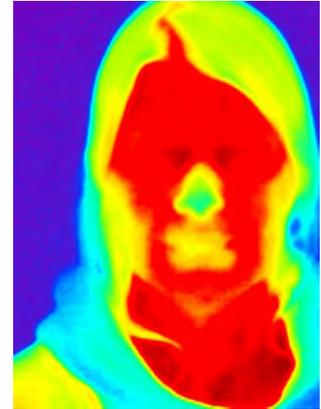


Figure 2.

In the days of Lichtenberg, Darwin, James and even—partly—in Born’s time the experiment to settle the matter unequivocally was indeed impossible. However, since the development of the thermographic camera the experiment became feasible. Apparently and surprisingly, the conclusive test has not been done.[c] At least, to the best of our knowledge, it has not been reported in a scientific publication.

Method and Apparatus

We used a Testo-875 thermographic camera in a pitch dark room. Our subject (female, 31 years old) was selected especially for her talent to blush easily. First, after some minutes of acclimatisation to the room’s temperature, we made a baseline measurement. The subject then described a life event in which she had played an embarrassing part.

Results

Figure 1 shows the baseline measurement of the subject’s skin temperature. When subject reported the symptoms of blushing, the simultaneous thermographic recording objectively confirmed her subjective account (Figure 2).

Discussion

By showing that people can indeed blush in the dark we have finally solved this age-old problem. The fact that people can blush when alone or when unseen may have implications for the interpretation of the function and significance of blushing. The sociality—the ratio of social to solitary occurrences of a behavior—of blushing is probably high. Future research may decide how high exactly it is. Other behaviors like yawning, laughing, tics, and even sneezing are also highly social. Perhaps the individual’s propensity

to blush when alone may prove to be a diagnostic and prognostic personality trait. In the case of blushing this trait might indeed be a measure for “modesty.”[7]

Notes

[a] In Charles Dickens’s 1854 novel *Hard Times*, a teacher asks a student named Bitzer to give a definition of a horse. Dickens writes (in chapter 2):

“Quadruped. Graminivorous. Forty teeth, namely twenty-four grinders, four eye-teeth, and twelve incisive. Sheds coat in the spring; in marshy countries, sheds hoofs, too. Hoofs hard, but requiring to be shod with iron. Age known by marks in mouth.” Thus (and much more) Bitzer.

[b] Molière’s play *Le Malade imaginaire* (*The Imaginary Invalid*) (1673) features this passage (in Act III, third interlude):

Mihi a docto doctore Demandatur causam et rationem Quare Opium facit dormire. A quoi respondeo, Quia est in eo Vertus dormitiva, Cujus est natura Sensus assoupire.

That macaronic Latin translates into something like: “I was asked by a learned doctor the cause and reason Why Opium produces sleep. To which I replied, Because there is in it a soporific power, The nature of which it is to make the senses slumber.”

[c] The British artist Phoebe Unwin has made five paintings titled “Blushing in the Dark.” Though the paintings may give the impression of having been painted after thermographic images, in reality this was not the case: “I never work directly from photographs, so no infrared camera was used. It is all from imagination/memory.” (E-mail of the artist to the second author, January 14, 2013.)

References

1. “Vasomotor Nerves” in *Black’s Medical Dictionary*, Harvey Marcovitch (ed.), A & C Black, London, 2009.
2. “The Puzzle of Blushing,” W. R. Crozier, *The Psychologist*, vol. 23, no. 5, 2010, pp. 390–3.
3. *Schriften und Briefe*, Georg Christoph Lichtenberg (ed. Wolfgang Promies), vol. 2, Carl Hanser Verlag, München, 1971, p. 420 [K 115].
4. Max Born, quoted in “Pluralism or Relativism?,” Gideon Freudenthal, *Science in Context*, vol. 9, no. 2, 1996, pp. 151–62.

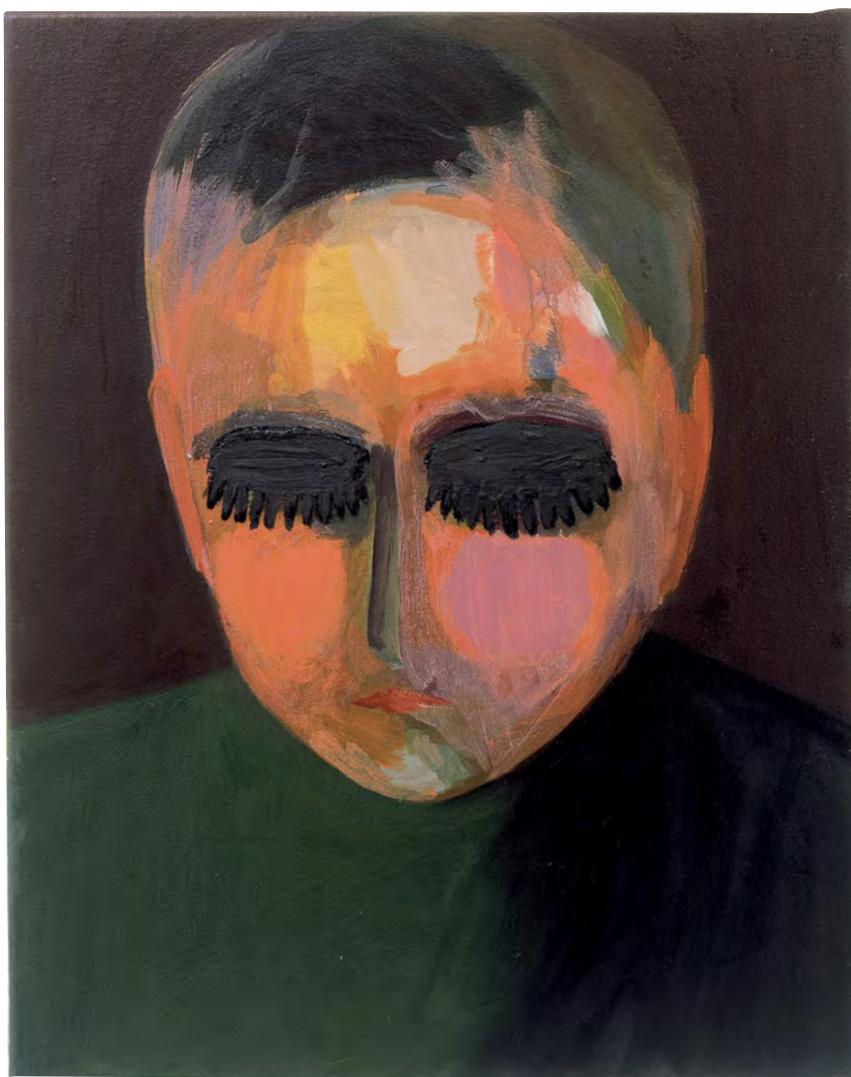


Figure 3. Phoebe Unwin’s painting “Man Blushing in the Dark” (50 x 60 cm, oil on canvas, 2006). Courtesy of the artist and Collection Wilkinson Vintners, London.

5. *The Ambassadors*, Henry James, Oxford University Press, Oxford, 1998 [1903], p. 396.
6. *The Expression of the Emotions in Man and Animals*, Charles Darwin, vol. 23 of *The Works of Charles Darwin* (eds. Paul H. Barrett & R. B. Freeman), William Pickering, London, 1989 [1872], pp. 262–63.
7. *Charles Darwin’s Notebooks, 1836–1844*, Charles Darwin, (eds. Paul H. Barrett, Peter J. Gautrey, Sandra Herbert, David Kohn, Sydney Smith), British Museum (Natural History), London / Cornell University Press, Ithaca (NY), 1987, p. 578.

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