



Guildhall School of Music & Drama Research Portal

Document Version

Peer-reviewed version

Citation for published version (MLA):

Mermikides, Alex and Emma Weitkamp. "Medical performance and the 'inaccessible' experience of illness: an exploratory study". *Journal of Medical Humanities*. 2016. 42.

Citing this paper

Please note that where the full text provided on GSMD's Research Portal is the Author Accepted Manuscript or Post-Print version this may differ from the final Published version. If citing, it is advised that you check and use the publisher's definitive version for pagination, volume/issue, and date of publication details. And where the final published version is provided on the Research Portal, if citing you are again advised to check the publisher's website for any subsequent corrections.

General rights

Copyright and moral rights for the publications made accessible in the Research Portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognize and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the Research Portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain.
- You may freely distribute the URL identifying the publication in the Research Portal.

Take down policy

If you believe that this document breaches copyright, please contact pure@gsmd.ac.uk, providing details, and we will remove access to the work immediately and investigate your claim.

The scientist center stage

Alex Mermikides

While rehearsing for a performance for London's Science Museum, I ask how scientists and theater artists might collaborate to produce theater that serves the science as much as the art.

July 2012, a teaching room in the Drama Department of Kingston University, London. There are four people in the room: a clinical hematologist from Antwerp University Hospital; a digital artist who specializes in scientifically accurate images; a composer (currently trying to launch a stubborn piece of sound software on his MacBook); and a theater-maker (myself). Projected onto a screen is a diagram of human chromosome 6 that identifies the alleles relating to the major histocompatibility complex, a slide from a lecture that the hematologist presented to the artists earlier in the day. There are a couple of books temporarily abandoned on a chair: *The EBMT Handbook: Haemopoietic Stem Cell Transplantation*¹, and an art book open to a print of Mona Hatoum's 1994 artwork *Marrow*, which the hematologist is studying. Laid out in two long rows on a table are several pieces of paper shaped like microscope slides, on each of which are printed comments from donors and recipients of hematopoietic stem cell transplantation describing the moment when they heard that they were a 'match'—the remains of a short performance that I presented to the group earlier in the day.

What brought this diverse collection of material and people together was an arts project: the group was in an early rehearsal for a performance, entitled *Bloodlines*, scheduled to premiere at the Science Museum's Dana Centre in London in July 2013 (Box 1). The performance was inspired by personal experience: the sound artist developed acute lymphoblastic leukemia in 2004, and his treatment included transplantation of bone marrow that I donated (we are siblings). However, rather than a conventional drama, the performance will track the physi-

ological processes that take place in the bodies of a patient with acute lymphoblastic leukemia and his bone marrow donor: an internal battle between disease and medical intervention played out on a microscopic scale. Themes of human fragility and mortality, which are common preoccupations of art, are thereby embedded in areas of knowledge that are usually the domain of the medical expert.

Uniting the two cultures

The range of disciplines represented by the people in the *Bloodlines* rehearsal room reflects a contemporary concern with challenging C.P. Snow's famous critique that the sciences and the humanities exist as "two cultures" that are fundamentally alien to one each other². In a more recent lecture, Eric Schmidt, the executive chairman of Google, also attested to the growing necessity for these two cultures to find common ground by calling for the "boffin" and the "luddy" to work together³. Both Snow and Schmidt criticize each culture's blindness to the other, advocating more openness and collaboration between disciplines. 'Sci-art' offers one way of bridging the disciplinary rift. Sci-art encompasses a large range of art forms, such as visual art, sound, digital art and performance, plus scientific fields, with genetics and neuroscience now in vogue. It can represent varying degrees of difficulty for audiences. At one end of the spectrum, art can be a useful device for activities that engage the public, in health campaigns (such as the use of body painting in a drive for blood donors (<http://www.blood.co.uk/news/events/body-art-ery/>)⁴) or in museum or educational contexts. At the other end of this spectrum are deliberately provocative works such as Eduardo Kac's *GFP Bunny*, a transgenic fluorescent green rabbit. Even where the art is critical of the science, which is arguably the case of Kac's famous work, Sci-art affords opportunities for artists and

scientists to learn more about each other's disciplines and to discover common concerns and approaches. In her insightful monograph on the subject, Siân Ede acknowledges "radical differences in two epistemological traditions" but also attests to the commonalities between them—for example, pointing out that "scientists...create visual images, models and scenarios that are gruesome, baffling and beguiling" in much the same way that artists do⁴. Moreover, for medical science, at least, what brings the scientist and artist together includes questions of universal importance. As Ede suggests, "the mystery of death may lie at the heart of artists' obsession with the sentient body but it is a curiosity shared with biomedical researchers and clinicians⁴." This is the subject of a book co-edited by the hematologist collaborating on this project⁵.

In some experimental projects, the distinction between the art and the science blurs, as when 'bio-artist' Kac uses laboratory techniques such as genetic sequencing as his artistic process. There is a historical precedent for this in the close relationship between anatomy and visual art during the European Renaissance. Indeed, the concerns and practices of these particular disciplines were so close during this period that, as the website for London's Science Museum puts it, "to be an artist during the Renaissance was, for many, to be an anatomist⁶." This was most famously the case for Leonardo da Vinci, and also for anatomist Andreas Vesalius, whose exquisite anatomical drawings are a cited inspiration for contemporary artist Gunther von Hagens.

Although artist-scientists such as Kac and von Hagens are rare, there has been a particular emphasis in contemporary Sci-art on close collaborations between scientists and artists in the processes of creating artworks. For example, the Wellcome Trust, a leading supporter of Sci-art in the UK, requires that projects submit-

Alex Mermikides is in the School of Performance & Screen Studies, Kingston University, London, UK.
e-mail: a.mermikides@kingston.ac.uk

Box 1 Participants in *Bloodlines*

Ann Van de Velde: clinical hematologist, Faculty of Medicine, Antwerp University Hospital; cofounder of BIOMAB; key member of Arts Researches Science, an international Sci-art organization; and coeditor of *Confronting Mortality with Science and Art*

Anna Tanczos: digital artist specializing in scientifically accurate imagery, Sci-Comm Studios, UK; also involved in activities that engage the public, such as Café Scientifique events

Milton Mermikides: sound artist and Lecturer in Music at the University of Surrey, UK; previous work includes *Hidden Music* (with *Bloodlines*, a track composed of his daily blood counts during treatment for acute lymphoblastic leukemia; <http://miltonmermikides.bandcamp.com/track/bloodlines>)

Alex Mermikides: theater-maker and Senior Lecturer in Drama at Kingston University, UK; previous work includes *Sarajevo Story* and *Here's What I Did with my Body One Day* (with Lightwork theater); also coeditor of *Devising in Process* with Jackie Smart

Additional information available at sciencethroughart.wordpress.com

ted in application for their Arts Awards funding feature “biomedical scientific input into the process, either through a scientist taking on an advisory role or through direct collaboration⁷.” In relation to the latter, the Wellcome Trust strongly values models of collaboration wherein “both parties [are] equally engaged in the project” and “their mutual input would lead to outcomes that would be inconceivable without the input of the other⁸.” That report by Glinkowski and Bamford on the Wellcome Trust’s SciArt program acknowledges that attitudinal and practical challenges make this level of mutuality an “ideal” that can be achieved only in exceptional circumstances, but the desire to have scientists and artists work closely together in the creation of artworks remains an important principle⁸.

‘Integrated collaboration’

The desire for “direct collaboration” between artists and scientists is particularly strong in the case of theater. In part this is because, as Dowell and Weitkamp point out in their study of theater-science collaborations, theater is already “an inherently collaborative art form demanding the cooperation of large teams of performers, directors, designers, writers, musicians [and] technicians⁹.” Moreover, partly as a result of the historical influence of left-wing political ideologies, some prominent strands of contemporary theater practice favor an even greater degree of collaboration. The form of ‘devised theater’ is particularly important in this context because in using a “mode of work in which no script...exists before the work’s creation by the company”¹⁰ it allows a range of disciplines, not just the playwright and the director, to have a say in the form and content of the performance. Makers of devised theater tend to embrace interdisciplinary collaboration both in the performing arts (for example, working with dancers to create ‘physical theater’ or with sound composers to create novel forms of music theater or contemporary opera) and also

beyond the arts disciplines. Moreover, when such interdisciplinary collaborations take place, there is an expectation that representatives of each discipline make an active contribution to the creative development of the work. Thus, the role of a scientist participating in devised ‘Sci-theater’ will probably fall into what Dowell and Weitkamp describe as an “integrated” style of collaboration⁹. Distinguishing that from an “advisory” style of collaboration (in which the scientist acts as a consultant or advisor), Dowell and Weitkamp characterize the “integrated” approach by its use of “creative participation from [the] scientist” and “knowledge transfer from theater practitioner to scientist” as well as from the scientist to the artist⁹.

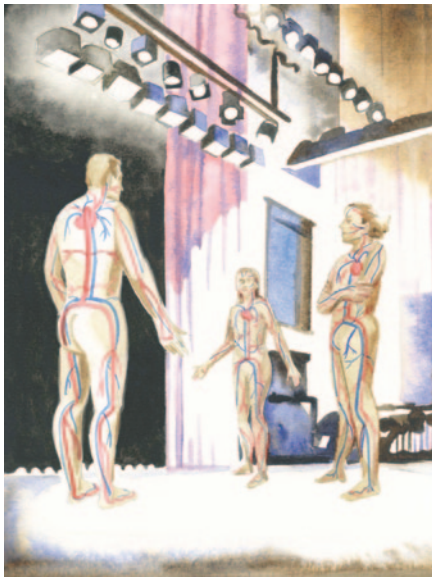
The theatrical performances that result from such collaborations tend to typify a recent theatrical style that Kirsten Shepherd-Barr, in her study *Science on Stage*, defines as the “alternative science-play”¹¹. ‘Traditional’ science plays such as Michael Frayn’s *Copenhagen*¹² and Tom Stoppard’s *Arcadia*¹³—both prize-winning plays of international repute—might relate stories about scientists or the social, ethical or personal impact of science or scientific discovery. The “alternative science play” offers a different experience of the science. The audience, Shepherd-Barr suggests, is engaged in “imbibing, sensing or ‘dreaming’ the science” and thereby experiences an emotional and immersive rather than an intellectual encounter with the scientific “ideas”¹¹. Despite Shepherd-Barr’s choice of the term ‘alternative’, which has connotations of obscurity and snobbishness, this approach in fact describes some of the most interesting and successful examples of contemporary theater. For example, it is a form regularly adopted by the internationally renowned company Complicite, with productions such as *Mnemonic*¹⁴, which deals with the neuroscience of memory, and *A Disappearing Number*¹⁵, which explores mathematics. On a more local scale, Melanie Wilson’s poetic performance *Autobiographer*¹⁶, about

dementia, was created in collaboration with Sube Bannerjee, a professor at the Institute of Psychiatry at King’s College London, and *Going Dark*¹⁷, a performance about astrophysics and retinitis pigmentosa, created by Sound and Fury with Dominic ffytch, Clinical Senior Lecturer in Psychiatry at King’s College, London, and credits many other scientists and scientific institutions in its program. Each of the last two productions has attracted industry acclaim in the UK: a *Time Out* critic’s choice for the former; The Linbury Prize of Stage Design for the latter. Moreover, they draw audiences that also seem to be open to some form of ‘direct collaboration’ in their encounter with science.

The scientist on stage

Bloodlines takes the ‘integrated’ approach further than most by placing the collaborating scientist center stage. As the production’s only performer, Ann Van de Velde will essentially be playing ‘herself’, a clinician involved in teaching and in the diagnosis and treatment of patients suffering from conditions such as leukemia, with special responsibility for the management and care of donors of hematopoietic stem cells. Those aspects of her professional role will be variously represented in the performance. For example, the performance opens with her giving a lecture to medical students, which will ‘mutate’ as an apparent technological glitch causes her PowerPoint presentation to be over-run with proliferating leukocytes (one of many effects created by our digital artist, Anna Tanczos). It will also feature her in the laboratory discussing a slide of bone marrow aspirate with a technician, outlining the case for bone marrow transplantation to a patient’s family and, toward the end, counting blood cells to assess chimerism. As these scenes suggest, one of the aims in placing the collaborating scientist at the heart of the performance is to ensure a greater degree of scientific accuracy and currency than is likely with an actor. Moreover, having the author deliver material that she herself has written (a hallmark of devised theater) allows the performance to communicate something of the scientist’s fascination, dedication and belief for her subject.

The combination of knowledge and passion can be powerful, a fact that has been highlighted in one of the few other performances with a scientist as its ‘star’. The performance piece *10 Billion*¹⁸ is a collaboration between Stephen Emmott (Head of Computational Science at Microsoft Research in Cambridge, UK), who has been applying his understanding of complex systems to the issue of earth sciences and population growth, and theater director Katie Mitchell (now Associate Director at both the National Theatre of England and the Royal Shakespeare Company). The performance took



Chris Sharp

'Bloodlines', a collaboration between science and the arts.

the form of a lecture, written and delivered by Emmott in a recreation of his own office, about the probably devastating impact of population growth. The effect of having an expert scientist at the center of this production served to bring the 'science' to life. As a *Time Out* reviewer noted: "I've read some of these facts before, but the sheer cumulative impact of a scientist calmly saying them to your face is devastating"¹⁹.

The production was also praised for being an "unfussy marriage of science and art"²⁰. The question of whether or not a lecture can be classified as 'theater' was raised but quickly dismissed as "nonsensical" by leading critic Michael Billington of *The Guardian*²¹. His argument that "theater is whatever we want to be and gains immeasurably from engaging with momentous political, social or scientific issues" reinforces the suggestion, made earlier, that contemporary theater audiences have an appetite for subject matter and forms that go beyond those of 'traditional' theater. Indeed, what was particularly encouraging to the *Bloodlines* team about that production was the readiness of reviewers and audiences alike to accept a performance focused almost entirely on scientific fact rather than dramatic fiction. The international reputation of the production team, which brought together a leading London theater (the Royal Court), an international festival (Avignon) and one of the UK's most prominent directors (Katie Mitchell was awarded an Order of the British Empire in 2009), also attests to the faith that the theater industry has in science, and the scientist, to draw and engage audiences. This production reinforces the impression that collaborating with scientists can bring great benefit to theater artists. What is in it, however, for the scientists?

Serving the science or the art?

Glinkowski and Bamford asked just that question of scientists involved in collaborations with artists on arts projects funded by the Wellcome Trust⁸. From the responses they received, Glinkowski and Bamford identify two benefits of such collaborations⁸. First there is what they call "loss plenitude": an opportunity for scientists to re-establish "a dimension of experience that had been in some way 'sacrificed' in the business of becoming a scientist"⁸. Van de Velde's experience of science-art collaborations aligns with this: she tells me that her promotion of art-science collaboration through her BIOMAB project (Biological and Medical Art in Belgium) is driven by a belief that these joint efforts can offer scientists an opportunity to rediscover the 'creativity' that can sometimes be drowned out by work demands. The second benefit that Glinkowski and Bamford identify is that such collaborations provide a means of addressing an "image problem" that science has in the public imagination⁸. The suggestion is that positive representations of scientific subjects or of scientists in artistic projects might redress existing stereotypes of science as cold, difficult or obscure, or of scientists as 'boffins'. Van de Velde makes a related point in suggesting that engagement with artists and the arts can prompt scientists to communicate more imaginatively not only with the public (as Glinkowski and Bamford suggest⁸) but also within the science community. An example she gives is what she sees as the overuse of charts in conference presentations, where careful use of visual images might convey key concepts in more succinct and striking ways (interview with author).

Although such benefits should not be undervalued, the findings of Glinkowski and Bamford⁸ are disappointing for various reasons. Chief among these is the fact that only two benefits are identified, a figure that is far outweighed by the number of benefits that such collaborations can bring to artists. In addition, the benefits for scientists seem to emerge as a byproduct of collaboration, rather than its central aim. This point is also made by artist Gordana Novakovic about her own collaboration with Peter Bentley (from the Department of Computer Science at University College London) in the creation of a virtual artwork entitled *Fugue*. Novakovic suggests that the benefits to the scientists involved "however welcome would be accidental rather than intended" (interview with author). What is of particular concern in the findings of Glinkowski and Bamford, however, is the power dynamic implied by the suggestion that the apparently uncreative scientist with an "image problem" might be helped by the apparently creative and media-savvy artist⁸. As well as

reinforcing the same stereotypes that are playfully referred to by Schmidt as the "boffin" and the "luvvy," this suggests a relationship based on emphasizing the differences between the 'two cultures'. A more productive basis for such relationships may be to focus on the commonalities and confluences between artistic and scientific practice.

The mutuality of *Bloodlines*

Whether the production that we are working on in that messy teaching room in Kingston University achieves that level of 'mutuality' remains to be seen. Certainly, this is the intention behind the artists' invitation to the scientists to play an 'integrated' role in the creation of *Bloodlines*. Whatever the outcome when the performance premières in July 2013, the fact that one of the artists in the project owes his life to medical science and the work of people like Van de Velde affirms the group's belief that the rightful place of the scientist is at center stage.

ACKNOWLEDGMENTS

Bloodlines is supported by the Arts and Humanities Research Council, UK (grant AH/K003518/1).

COMPETING FINANCIAL INTERESTS

The author declares competing financial interests: details are available in the [online version of the paper](#).

1. Carreras, E., Gluckman, E., Gratwohl, A., Masszi, T. & Apperley, J. (eds). *The EBMT Handbook: Haemopoietic Stem Cell Transplantation* (European School of Haematology, 2004).
2. Snow, C.P. *The Two Cultures* (Cambridge Univ. Press, London, 1959).
3. Schmidt, E. <<http://www.guardian.co.uk/media/interactive/2011/aug/26/eric-schmidt-mactaggart-lecture-full-text/>> (2011, accessed 13 March 2013).
4. Ede, S. *Art & Science* (Taurus, 2010).
5. Pollier-Green, P., Van de Velde, A. & Pollier C. *Confronting Mortality with Art and Science* (VUB Press, Brussels, 2008).
6. Science Museum (London). <<http://www.sciencemuseum.org.uk/broughttolife/themes/understandingthebody/anatomy.aspx/>> (accessed 13 March 2013).
7. Wellcome Trust. <<http://www.wellcome.ac.uk/Funding/Public-engagement/Funding-schemes/Arts-Awards/index.htm>> (accessed 13 March 2013).
8. Glinkowski, P. & Bamford, A. <<http://www.wellcome.ac.uk/sciartevaluation/index.htm>> (2009, accessed 13 March 2013).
9. Dowell, E. & Weitkamp, E. *Public Understanding of Science* 21, 891–901 (2012).
10. Heddon, D. & Milling, J. *Devising Performance: A Critical History* (Palgrave, 2009).
11. Shepherd-Barr, K. *Science on Stage: From Doctor Faustus to Copenhagen* (Princeton Univ. Press, 2006).
12. Frayn, M. *Copenhagen* (Methuen, 1998).
13. Stoppard, T. *Arcadia* (Faber & Faber, 1993).
14. Complicite. *Mnemonic* (Oberon Books, 1999).
15. Complicite. *A Disappearing Number* (Oberon Books, 2008).
16. Wilson, M. *Autobiographer* (Oberon Books, 2012).
17. Naylor, H. *Going Dark* (Methuen, 2012).
18. Emmott, S. *10 Billion* (Penguin, 2013).
19. Lukowski, A. <<http://www.royalcourttheatre.com/whats-on/ten-billion/>> (19 July 2012, accessed 13 March 2013).
20. Bosanquet, T. <<http://www.whatsonstage.com/index.php?pg=207&story=E8831342691038/>> (2012, accessed 13 March 2013).
21. Billington, M. <<http://www.guardian.co.uk/stage/2012/jul/19/ten-billion-review-royal-court?INTCMP=SRCH/>> (2012, accessed 13 March 2013).