



Københavns Universitet

Exhibiting health and medicine as culture

Whiteley, Louise; Tybjerg, Karin; Pedersen, Bente Vinge; Bencard, Adam; Arnold, Ken

Published in:
Public Health Panorama

Publication date:
2017

Document Version
Også kaldet Forlagets PDF

Citation for published version (APA):
Whiteley, L., Tybjerg, K., Pedersen, B. V., Bencard, A., & Arnold, K. (2017). Exhibiting health and medicine as culture. *Public Health Panorama*, 3(1), 59-68.

Original research

EXHIBITING HEALTH AND MEDICINE AS CULTURE

Louise Whiteley¹, Karin Tybjerg², Bente Vinge Pedersen², Adam Bencard¹, Ken Arnold³

¹ Medical Museion, Department of Public Health, and Novo Nordisk Foundation Center for Basic Metabolic Research (CBMR), University of Copenhagen, Copenhagen, Denmark

² Medical Museion, Department of Public Health, University of Copenhagen, Copenhagen, Denmark

³ Medical Museion, Department of Public Health, and Novo Nordisk Foundation Center for Basic Metabolic Research (CBMR), University of Copenhagen, Copenhagen, Denmark and Wellcome Trust, London, England

Corresponding author: Louise Whiteley (email: louise.whiteley@sund.ku.dk)

ABSTRACT

Introduction: This paper discusses the potential role of medical museums in public engagement with health and medicine, based on the work of Medical Museion at the University of Copenhagen. Rather than asking whether cultural venues such as museums can directly improve the well-being of their visitors, we instead focus on how museums should communicate about health and medicine.

Methods: The paper describes three examples of exhibitions at Medical Museion that attempt

to display medicine as culture, and draws out three of the key strategies they employ.

Results: The three key strategies are: (1) medicine is presented through historically specific material objects; (2) these objects are used to explore the processes of research and the evolution of practice; and (3) exhibitions are designed to emphasize an implied relationship between the objects' functions and the visitor's own body.

Conclusion: There is increasing emphasis on the need for health communication to recognize people's multiple, lived cultures. We argue that we should also recognize that medical research and practice is itself a form of culture, and as such is multiple and historically shifting. This paper demonstrates that museums are an ideal site for doing so, contributing to public engagement with medicine that acknowledges multiplicity on both sides.

Keywords: MUSEUMS, WHOLE-OF-SOCIETY APPROACH, PUBLIC ENGAGEMENT, CULTURAL SECTOR, MEDICINE AS CULTURE

INTRODUCTION

WHO, along with the wider fields of public health promotion and science communication, has gradually shifted its focus further out into the cultural landscape. Determinants of health used to be seen as primarily physiological; then as social, economic and structural; and more recently cultural contexts have entered the stage, creating a “whole-of-society” approach (as emphasized in this special issue) (1–3). There are both pragmatic and normative reasons for this, all entangled with changes in communication media that offer ever-expanding opportunities to be confronted with other ways of life, and for citizens to play a role in shaping previously impenetrable institutions and practices.

Indeed, evidence suggests that health campaigns that fail to take local cultures into account often struggle to achieve their goals and can even have negative effects or widen health disparities (4). The question then arises of how to deal with the fact that we are always communicating in the context of the lived, local cultures that shape personal experiences of health and medicine (5). Many traditional health communication media demand the selection of a target group that must be specifically addressed, ideally to influence behaviour. Yet it's very hard to “hit the right note” for culturally specific audiences, on both superficial and deep levels (6,7). We would like to suggest that as well as attending better to the receiver's culture, health communication should also pay attention to the multiplicity in medical culture itself.



As a university medical museum with a broad audience, we shift our focus away from the specific lived cultures of our visitors, and work on integrating ideas about medicine **as culture** into the cultural sector. This statement uses the word “culture” in three ways, which we will briefly unpack before proceeding. First, we refer to museums as part of a broadly defined creative and cultural sector. Second, we refer to the lived, local cultures that museum visitors bring with them – their habits, beliefs and values in relation to health, medicine and the body.¹ Third, and in the tradition of science studies, we treat medicine as culture. In other words, we start from the position that the scientific and clinical practices of health and medicine are also cultural, as evidenced by their shared languages, education and institutionalization, practices of looking and categorizing, concepts of knowledge, structures of power and so on (8,4). We do not just want to be sensitive to the social and cultural **context** with which much history of medicine is concerned; we want to emphasize the specificity of medical cultures themselves, in different periods, laboratories, hospitals, homes and disciplines. By doing so, we hope to create a public space where the varied and material cultures of medicine can meet lived, local cultures.

More conceptually, we would argue that health communication always refers to culture, at least implicitly. Health information and research findings never exist in a vacuum; they cannot be fully defined objectively and then transmitted accurately to a blank and deficient public (9). It doesn’t make sense to treat lived culture as simply another causal determinant of disease, or as a perceptual filter that distorts a supposed baseline of rational cognition. Definitions of health, experiences of disease and evaluations of the benefits and drawbacks of treatment come into being at the dynamic intersection of science, medical culture and forms of living. As Napier et al. (10) write in their Lancet Commission article on culture and health: “We believe, therefore, that the perceived distinction between the objectivity of science and the subjectivity of culture is itself a social fact (a common perception)... We recommend a broad view of culture that embraces not only social systems of belief as cultural, but also presumptions of objectivity that permeate views of

1 Neither of these definitions are theoretically driven; they simply help to disambiguate our broad use of the word “culture” in relation to this particular setting.

local and global health, health care, and health-care delivery” (p. 1607).

Our position on medicine as culture should not be understood as a relativistic, “anti-science” statement that aims to undermine scientific authority by labelling it as socially constructed (11). Rather, we hope to maximize the value we gain from medical and scientific knowledge by recognizing its rich cultural complexity, and bringing this into the public sphere. Below, we will consider the medical museum as one of the places in which this might occur. We do not think this will solve the many pressing, practical issues of health communication, particularly in acute and fast-moving crisis situations or for marginalized populations. It is also important to acknowledge that only some people can and want to step over our threshold, and as part of a medical faculty we focus on the forms of medicine practised and researched there. The Danish context also undoubtedly frames our activities, but if we succeed in our aim, this site- and nation-specific perspective is just one in the more open conversation we hope to engender, and its very specificity can reiterate the contingency of different medical cultures.

EXHIBITION METHODS

The authors all work at Medical Museion, in the Department of Public Health at the University of Copenhagen. Medical Museion combines a museum with an interdisciplinary research group, and research and practice reciprocally inform each other; we continually experiment with methods for exhibiting and understanding the cultures of health and medicine in cultural and historical perspectives. We work closely with public health researchers, clinicians and biomedical scientists; with scholars from the social sciences and humanities; and with artists and other creative practitioners, all of whom are also part of our audience.

At the heart of our approach are the material objects that fill both our historical collections and the laboratories, hospitals and clinics where medicine is practised today. Material objects always bear markers of culture: their design indicates how they were used, and they often bear the patina of specific use (12) – signs of being used in particular places, by particular

people, in particular practices. While science often presents itself as a unity offering general insights into nature, its objects demonstrate that the medical and health sciences are grounded in a physical, material, cultural and specific interaction with bodies. This also means that objects can be used to draw attention to the cultural **processes** of research and treatment, not just their results (13). The patina of use suggests someone “at work”, and the selection, arrangement and description of objects can emphasize how they were used (14).

As well as the body of the practitioner, objects also bring to mind the bodies of those they were used upon, and can encourage visitors to project their own bodily experience into either position. Objects elicit physical responses. Most dramatically, on tours at Medical Museion, confrontations with amputation knives and blood-letting tools regularly cause people to pass out. From visitor questions and preliminary investigations of visitor responses to human specimens, we have observed diverse forms of identification between the visitors’ bodies and those implied in the exhibition or shown as specimens (15). Via these effects, we intend to use the human body as a point of connection between medical culture and the visitors – the imaginative projection of one’s own body into the place of another can invoke questions about similarity and difference (16:13,41). Fundamentally, exhibitions have a “human scale”, and we develop cases and installations that encourage identification between the different bodies in the room (17). We try to avoid producing naturalistic representations of living human bodies, as these always depict some cultural markers over others and potentially act as barriers to the kinds of identification we hope will occur.

Below, we analyse three Medical Museion exhibition projects to demonstrate these strategies. To challenge ourselves, we do not focus on where cultural aspects of medicine are most obvious but look for culture even in the nitty gritty of the clinic and the lab. The three cases therefore move from the clinic to the medicalized body and then deep into the microbial world of the guts. We do not present traditional visitor research – the kinds of effects we are most interested in are not easily captured in surveys, and may be manifested long after the visitor has left the museum. We are currently developing ideas for qualitative, creative research with our visitors to try and overcome these methodological barriers. Here, we draw on staff

observations and curatorial insights gathered over many years, while acknowledging the methodological limitations of these data.

ANALYSIS

1. THE BODY IN THE CLINIC

The exhibition *Obesity: What’s the Problem?* opened in 2012 and is centred around one of the most controversial treatments for obesity – the gastric bypass operation. The operation was discovered unexpectedly to eliminate many patients’ type 2 diabetes symptoms almost the minute they left the operating theatre (18). This was a perfect case study for an exhibition investigating the complex interaction between research and clinical practice, showing how research questions and clinical solutions evolve in dialogue with each other and the surrounding culture.

The rhetorical question of the exhibition’s title is examined in three thematically separated rooms entitled “Surgery”, “Medicine” and “Research” – each investigating gastric bypass from different angles. As expressed in the title, the exhibition takes as a starting-point the idea that there is a problem, but it doesn’t offer a clear answer to what the problem really is. Instead, it lays out medical and research practices that try to illuminate causes and offer treatment, both affecting and affected by shifting definitions of obesity. The picture that emerges is in no way coherent, and is sometimes even contradictory. While this lack of clarity might cause frustration, it is an accurate depiction of the field. We respect our visitors’ ability to encounter the uncertainty that exists behind news headlines and lifestyle advice – the necessary uncertainty of a knowledge-producing culture that deals with encultured human bodies.

Objects from the clinic, operating theatre and laboratory are used to demonstrate the interaction between research questions, clinical solutions and local cultures. For example, three different kinds of bariatric surgery are featured: the gastric band, gastric bypass and intestinal barrier. The gastric band ties the stomach to make it smaller and thereby less capable of containing food. The gastric bypass permanently divides the stomach in two; it reattaches the small intestine to the upper pouch, but from a point approximately one metre further down the small

intestine. Gastric bypass was originally developed to treat stomach ulcers but was found to produce weight loss and then, surprisingly, to alleviate type 2 diabetes. This discovery shifted focus to the role of hormones in satiety and food absorption, and away from the calories in/energy out mechanics of food intake. In line with this shift of research focus, treatments evolved. The intestinal barrier is inserted in the upper intestine and prevents contact between food and the hormone-producing intestinal wall, rather than restricting food intake. Today, all three procedures exist alongside each other, but relative use differs from country to country in relation to cultural factors that span medical training, economic structures and public perceptions of surgical risk (19).

FIG. 1. EYE TO EYE WITH FOUR DIFFERENT PERSPECTIVES ON GASTRIC BYPASS SURGERY. VISITORS TO *OBESITY: WHAT'S THE PROBLEM?* CAN LISTEN TO INTERVIEWS WITH A MEDICAL DOCTOR, A SURGEON, A RESEARCHER AND A PATIENT TALKING ABOUT DIFFERENT ASPECTS OF THE OPERATION.



This material story of bariatric surgery shows that research is guided not just by hypotheses but also by observations from clinicians and patients: by sometimes surprising findings that challenge core concepts such as obesity and weight loss. The exhibition also contains short interviews with a doctor, surgeon, gastric bypass recipient and hormone researcher (Fig. 1). Again, differences of focus and understanding sit alongside each other without being resolved – visitors are invited to find their own position within the field, and we have informally observed many visitors sharing stories from their own experience at this installation.

The exhibition deliberately avoids showing whole human bodies. The only image is the full-sized reproduction of a scan of a woman diagnosed with

FIG. 2. A DISPLAY ABOUT THE DIAGNOSIS OF MORBID OBESITY IS SITUATED IN A NATURALLY NARROW SPACE, ENCOURAGING VISITORS TO BE CONSCIOUS OF THE SIZE OF THEIR OWN BODIES. UNTIL RECENTLY A STANDARD SCALE COULD ONLY WEIGH UP TO 150 KG, AND TWO SCALES WERE THEREFORE NEEDED FOR SOME PEOPLE.



obesity. This was intended to bypass the dilemma of how to represent different meanings of body shape in different cultures; instead, it chooses to imply the body as understood in the culture of biomedicine. It also expresses one of the key points of the exhibition and this article – we hope to encourage our visitors to use their own bodies and cultural backgrounds to interpolate themselves into the position of the gastric bypass recipient. We therefore built displays that encourage visitors to almost feel the tools on display in use, developed in part through a practice-based design PhD project (17). For example, surgical instruments are displayed on a soft layer of silicone, mimicking the skin and soft belly that the instruments broach. Diagnostic tools such as a double weighing scale are displayed in a narrow dead end, spatially echoing the experiences of those they were used to measure (20) (Fig. 2).

2. THE MEDICALIZED BODY

The Body Collected opened in 2015 and is an exhibition about how medical science has created knowledge by collecting and investigating human bodies. It displays collections of human material ranging from an obstetric collection of fetuses and malformed infants started in the late 18th century to blood samples from modern biobanks (16,21). It thus combines material from historical collections and contemporary biomedical research, giving a view of the practices of medical science from around 1800 to the present day. Crucially, the exhibition also stages a meeting between the museum visitor and the medicalized body – a space where visitors are invited to reflect on their own relationships to the physical body, to health, disease and medicine.

The organizing principle of the exhibition is simple and easy to grasp. The body parts are presented in size order, starting with the whole body represented by fetuses and whole skeletons; then on to organs from pathological collections; and lastly slices of tissue on slides, cells and DNA (Fig. 3). The exhibition is thus ordered according to the material objects, but the principle of scale also offers a historical view of medical science, as it has shifted its search for the locus of disease towards smaller and smaller parts of the human body. The exhibition shows how each new level offers new crafty ways of prying knowledge out of the body, and how the manner of investigation shapes the knowledge gained.

While the infants and fetuses in the first part of the exhibition are easy to recognize as individuals, in the section on organs only the occasional face and arm indicate that the parts come from particular human beings. As the exhibition moves onto biopsies and samples, it is as if the human body disappears from sight. Identity returns, however, in a different form as we come to the end of the exhibition. A tiny fleck of blood on filter-paper allows for full genome sequencing, and the recognizable individuality of the physical body is replaced by biochemical identification. But as it turns out, the mapping of the genome has not given us all the answers (22). The reductive drive to find the elemental building blocks of health and disease did not yield the key, and both the visitor and medical science itself must look for answers at all levels of the body, including its cultural context. To return to Napier et al. (10), the division between supposedly objective medicine and subjective culture cannot hold.

In the exhibition, the reductive drive of medicine is tempered by peepholes into the personal stories behind the specimens. Little information is preserved about the people whose bodies became part of medical collections, but sometimes we know more. One example is the story of the conjoined twins Martha and Marie, who were nursed and cared for

FIG. 3. THE FOCUS OF MEDICAL INVESTIGATIONS OF THE HUMAN BODY FROM THE LATE 18TH CENTURY TO DATE IS DISPLAYED AS A REDUCTIVE SCALE, FROM THE WHOLE HUMAN TO ITS MOLECULES IN THE BODY COLLECTED. BUT NO SIMPLE BUILDING BLOCKS OF HEALTH AND DISEASE HAVE BEEN FOUND.



at the maternity hospital for 10 days before they died “seemingly without pain”, and were dissected and described. The story reveals the double nature of medicine: both caring and driven by scientific curiosity. The last personal story in the exhibition is “you” in the biobank – in Denmark, most members of the population will have samples stored. Right at the point in the exhibition narrative (and in medical history) where the samples have stopped looking as if they have anything to do with us as humans, the visitors are confronted by the position of their own bodies within this medical culture. The bodies we recognized at the start of the exhibition are thus related to our own collected body – and all the bodies’ parts are experienced, encultured and medicalized (Fig. 4).

FIG. 4. VISITORS TO THE BODY COLLECTED ARE CONFRONTED WITH THE MEDICALIZED BODY, AND IN CONTEMPLATING IT DRAW ON THEIR OWN WAYS OF COPING WITH THE BEAUTY, STRENGTH, FRAGILITY AND MORTALITY OF OUR PHYSICAL BODIES.



The exhibition shows the use of the body primarily from medical points of view. At the same time, it opens itself to a wide range of responses, and we know from comments at guided tours and interviews that the exhibition triggers personal, ethical, cultural and existential reflections. Such discussions are not included in the exhibition texts, which only very lightly touch on issues such as who was collected and how we should use dead bodies. This is in recognition of the fact that each visitor will come with his or her own cultural perspectives and views on the relationship between medicine, the body, life and death. The exhibition is a venue for showing that medical science has its own particular cultures, which being inscribed in the broader cultural space of the museum are made open for reflection and debate.

3. THE WORLD INSIDE THE BODY

Our final case study is the exhibition project *Mind the Gut* (23), scheduled to open in October 2017. *Mind the Gut* is about shifting medical, scientific and cultural understandings of the relationship between brain and belly – between our minds and our guts. It explores this specific bodily relationship as a special case of the puzzle of the psychosomatic. A key point of departure for the exhibition is that, despite remnants of everyday embodiment found in phrases like “gut reactions” and “gut feelings”, in modern medicine the brain and gut have been boxed up in separate research fields and conceptual domains. However, rapidly developing interdisciplinary scientific research is showing that the brain, the gut, the gut’s trillions of microbial inhabitants, and even brain cells living in the gut, interact to a much greater degree than previously thought (24). Research is suggesting that this may influence human states and conditions ranging from body weight to autoimmune diseases – from stress and anxiety to autism, memory and learning (25).

This research throws into doubt deeply held cultural notions of what it means to be (and to study) embodied humans. What sort of social practices and cultural patterns might emerge if we see a deeply entangled relationship between gut and brain as foundational for our selfhood, and what might it mean for medical research, clinical practice and even environmental interventions (26)? These questions are also gaining traction in the public sphere, in part as a response to a rise in gastrointestinal disorders and a concern about the relationship between diet and mental states. This

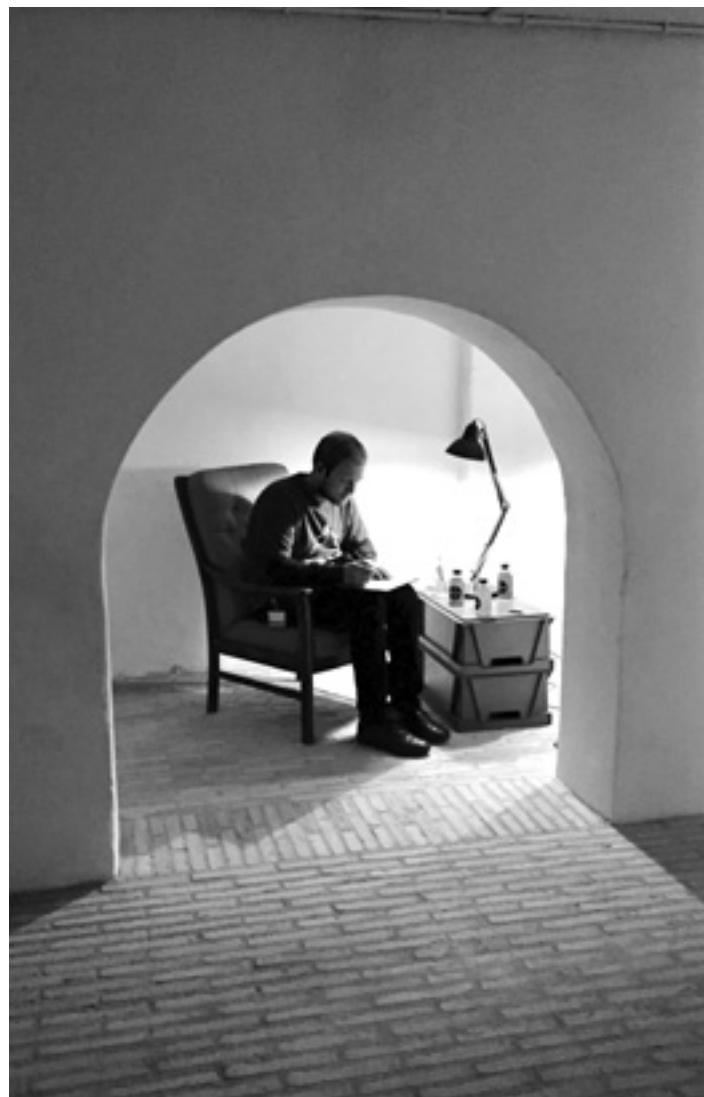
is attested to by the mainstream success of books such as Giulia Enders' *Gut: the inside story of our body's most underrated organ* (27) and Emeran Mayer's *The mind-gut connection* (28).

Mind the Gut explores these issues via an interdisciplinary collaboration between curators, scientists and artists, breaking down disciplinary separations in order to challenge separations between the different cultures in which gut, brain and environment are delineated. As described above, a key strategy for doing so is to communicate medical science in and as process. Building on previous exhibition experiments, we are curating object-based case studies of scientific experiments, their historical antecedents, key practitioners and cultural representations, combined with artistic strategies to concretize abstract, invisible, affective and temporal aspects of the scientific process.

We aim to make the visitor wonder how scientists have tried to study our subjective state of being, and how the visitor's own experience would relate to the experimental scenarios of such experiments. For example, we are collecting and reassembling a metabolic chamber – a sealed metal room used for experiments on the effects of, for example, food, exercise or sleep on metabolism. Visitors will be invited to enter the chamber and imagine having their every movement controlled, their consumption and excretion minutely observed. Alongside this human-sized chamber a functionally equivalent version for mice will be displayed, emphasizing the key role of animal models in medical research – two bodies with very different cultural values being treated as similarly as possible within this knowledge-producing culture.

We hope to create an exhibition that allows visitors to meet the body, and the research that attempts to define it, as an object in continual cultural metamorphosis. But again, we will not directly represent the lived culture of our visitors – rather, we foreground the complexity and ambiguity of medical culture, and hope that this leaves space for a diverse range of responses. At the museum's 2016 Culture Night we encouraged such responses via an artist-led poetic survey about visitors' "gut feelings", atmospherically staged alongside an anatomical torso and art installation playing stomach sounds. Staff recorded comments

FIG. 5. VISITORS TO MEDICAL MUSEION ON CULTURE NIGHT 2016 FILLING OUT AN ARTIST-LED SURVEY ABOUT THEIR "GUT FEELINGS", CONSIDERING PERSONAL, CULTURALLY SITUATED EXPERIENCE IN THE CONTEXT OF SCIENTIFIC INFORMATION AND HISTORICAL OBJECTS. THE COLLECTED SURVEYS WILL INFORM THE DEVELOPMENT OF THE MIND THE GUT EXHIBITION.



from some of the ~450 respondents, many of whom mentioned how fascinating it was to think about their guts and stools in relation to their mind, or reflected on how different people's experiences of gut feelings are (Fig. 5). An installation version and accompanying live events will continue this encouragement to visitors to pitch in with their own experiences of gut feelings and the medical cultures that surround (and perhaps ignore) them.

DISCUSSION

As we follow the body through the clinic, the biomedical research laboratory, the anatomical collection and the biobank, and into its microbial interior, we find culture everywhere. Not just interactions between medicine and the cultural context that surrounds, shapes and is shaped by it – though these interactions abound. We also find rich, material, historically shifting cultures of medical research and clinical practice. The three case studies demonstrate some key methods we use to try to exhibit medicine as culture and to point to the ways in which the visitor's body – whatever their lived, local culture – might relate to the bodies invoked by the practices on display.

First, our exhibitions present core topics in medical research in ways that highlight contingencies by using particular material objects from different times and places. *The Body Collected* arranges objects in a historical trajectory that shows that the way body parts are dissected and preserved determines what kind of knowledge we gain of the body. *Obesity: What's the Problem?* shows how different understandings of the cause of a particular medical diagnosis affect the surgical techniques and tools used to deal with it. *Mind the Gut* will exhibit treatments ranging from electrical stimulation to probiotics and faecal transplants, all aimed at correcting a disturbed relationship between gut and mind. The combination of historical and modern material, and the juxtaposition of apparently contradictory viewpoints, allows us to show that things could have been otherwise, and indeed are different both in other historical periods and in different places and spaces today.

Second, we try to use objects to reveal the processes of research as much as the results – to exploit the particularity of objects used in particular contexts to evoke the cultural work of producing knowledge. This includes talking about specific crafts and techniques used in opening the body to investigation in *The Body Collected*, showing multiple versions of surgical tools used for the same purpose in *Obesity: What's the Problem?* and exhibiting some of the many component processes of a contemporary laboratory study in *Mind the Gut*. A focus on science as process also reveals the constant back-and-forth whereby culture enters into the design, analysis and

application of research, and medical accounts of the body reciprocally inform cultural notions of the body. Focusing on process can also draw attention to the humanity of the research process, as in the link made between a baby's heel being pricked for a blood test and the impersonal tools for biobank data analysis in *The Body Collected*.

Third, we emphasize how human bodies are understood, studied and collected within medical research and practice. We hope to encourage identification between the visitor's body and the bodies on display, as observed in visitors' sometimes uneasy identification with diseased specimens in *The Body Collected*, or with the display designs of *Obesity: What's the Problem?* that echo the sensory qualities of surgical tool meeting flesh or the experience of having to squeeze onto a weighing scale or into a measuring device. But we resist naturalistic depictions of living humans unless they are themselves museum objects or those engaged in the processes on display. In *Obesity: What's the Problem?* an anonymous dual energy X-ray absorptiometry (DEXA) scan shows the fat body as defined by medicine and a gastric bypass surgeon and patient speak of their experiences. In *Mind the Gut* we are designing graphic depictions of anatomical connections that are either abstract, historically specific or artistic – avoiding potentially exclusionary depictions of imagined visitor bodies. We usually resist particular ethical stances within the exhibition texts, engaging with these instead in live events.

Ultimately, the approach we are advocating here is not a one-size-fits-all for health communication. Rather, it's an argument for communicating the many-faceted cultures of medicine, and for the object-based exhibition as an ideal place to do so. Presenting the multiplicity of medical culture might be seen as a weakening of medical authority, but we believe that it can actually improve trust through transparency about the complexity of medical knowledge, the processes used to discover it and the translation between laboratory, clinic and lived experience. The exhibitions and public programming at Medical Museion, which is a part of a medical faculty, build on the recognition that trust requires more than a steady stream of authoritative statements of facts; it takes mutual interaction, exchange and nurturing relationships (29,30). What we try to create is a stronger voice for medicine as culture within this mutual

exchange: an exchange we hope will both occur within the museum and spill over into life outside.

Acknowledgements: The authors would like to acknowledge the influence of the intellectual and curatorial environments at both Medical Museion and Wellcome Collection on the ideas expressed in this paper, particularly founding director of Medical Museion Prof. Thomas Söderqvist.

Sources of funding: The work has been supported by an unrestricted donation from the Novo Nordisk Foundation to the NNF Center for Basic Metabolic Research, Section for Science Communication.

Conflicts of interest: None declared.

Disclaimer: The authors alone are responsible for the views expressed in this publication and they do not necessarily represent the decisions or policies of World Health Organization.

REFERENCES

- Kickbusch I, Gleicher D. Governance for health in the 21st century. Geneva: World Health Organization; 2012 (http://www.euro.who.int/__data/assets/pdf_file/0019/171334/RC62BD01-Governance-for-Health-Web.pdf?ua=1, accessed 17 October 2016).
- Bernhardt, JM. Communication at the core of effective public health. *Am J Public Health*. 2014;94(12):2051–3.
- Cohn S, Clinch M, Bunn C, Stronge P. Entangled complexity: why complex interventions are just not complicated enough. *J Health Serv Res Pol*. 2013;18(1):40–3.
- Fissell ME. Making meaning from the margins: the new cultural history of medicine. In: Huisman F, Warner J, editors. *Locating medical history: the stories and their meanings*, Baltimore and London: The Johns Hopkins University Press; 2004:364–89.
- Dutta-Bergman MJ. Theory and practice in health communication campaigns: a critical interrogation. *Health Commun*. 2005;18(2):103–22.
- Resnicow K, Baranowski T, Ahluwalia JS, Braithwaite RL. Cultural sensitivity in public health: defined and demystified. *Ethn Dis*. 1999;9(1):10–21.
- Wynne B. Public engagement as a means of restoring public trust in science – hitting the notes, but missing the music? *Community Genet*. 2006;9(3):211–20.
- Lupton D. *Medicine as culture: illness, disease and the body in western societies*. London: Sage Publishing; 1994.
- Logan, RA. Health campaign research. In: Bucchi M, Trench B, editors. *Handbook of public communication of science and technology*. Oxford: Routledge; 2008:77–92.
- Napier AD, Ancarno C, Butler B, Calabrese J, Chater A, Chatterjee H et al. Culture and health. *Lancet*. 2014;384(9954):1607–39.
- Ashman K, Barringer P, editors. *After the science wars: science and the study of science*. London: Routledge; 2005.
- Edwards E, Gosden C, Philips R, editors. *Sensible objects: colonialism, museums and material culture*. London: Bloomsbury Academic; 2006.
- Chatterjee HJ, Hannan, L. *Engaging the senses: object-based learning in higher education*. London: Ashgate; 2015.
- Bencard A. Presence in the museum: on metonymies, discontinuity and history without stories. *Museum & Society*. 2014;12(1):29–43.
- Steensberg KL. “Looking at dead people is not what I normally do.” On non-health professionals’ reactions to human specimens on display [thesis]. University of Copenhagen; 2016.
- Tybjerg K, editor. *The body collected*. Copenhagen: Medical Museion; 2016.
- Pilegaard A. Material proximity: experimenting with material strategies in spatial exhibition design. *Museum Worlds*. 2015;5:9–85.
- Buchwald H, Estok R, Fahrback K, Banel D, Jensen MD, Pories WJ et al. Weight and type 2 diabetes after bariatric surgery: systematic review and meta-analysis. *Am J Med*. 2009;122(3):248–56.e5.
- Angrisani L, Santonicola A, Iovino P, Formisano G, Buchwald H, Scopinaro N. Bariatric surgery worldwide 2013. *Obes Surg*. 2015;25:1822–32.
- Pedersen BV, Sørensen AP. Fedme – hvad er problemet? En udstilling til kroppen. *Danske museer*. 2013;26(2):10–12.
- Tybjerg K. From bottled babies to biobanks: anatomical collections in the 21st century. In: Knoeff R, Zweijnenberg R, editors. *The fate of anatomical collections*. Farnham: Ashgate Press; 2015:263–78.
- Hall SS. Revolution postponed. *Scientific American*. 2010;303(4) (<https://www.scientificamerican.com/article/revolution-postponed/>, accessed 17 October 2016).
- Bencard A, Whiteley L. *Mind the Gut: exhibiting the complex self*. Copenhagen: Medical Museion; in preparation for invited submission (www.museion.ku.dk/mindthegut, accessed 27 January 2017).

-
24. Carabotti M, Scirocco A, Maselli MA, Carabotti CS. The gut-brain axis: interactions between enteric microbiota, central and enteric nervous systems. *Ann Gastroenterol*. 2015;28(2):203–9.
 25. Dinan TG, Cryan JF. Melancholic microbes: a link between gut microbiota and depression? *Neurogastroenterol Motil*. 2013;25(9):713–9.
 26. McFall-Ngai M, Hadfield MG, Bosch TC, Carey HV, Domazet-Lošo T, Douglas AE et al. Animals in a bacterial world: a new imperative for the life sciences. *PNAS*. 2013;110(9):3229–36.
 27. Enders G. *Gut: the inside story of our body's most underrated organ*. London: Scribe Publications; 2015.
 28. Mayer E. *The mind-gut connection*. New York: HarperCollins; 2016.
 29. Taylor PL. Rules of engagement. *Nature*. 2007;450:163–4.
 30. European Centre for Disease Prevention and Control. *Communication on immunisation – building trust*. Stockholm: ECDC; 2012.