



Museum as Academy: Research Practices at Copenhagen's Medical Museion

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Museums have always supported learning and inquiry, but the last twenty years have seen a flourishing of reinvented university museums, following a period of neglect. This paper is grounded in the case of Medical Museion at the University of Copenhagen, which experiments with relations between research and museum practice, and what this can tell us about contemporary knowledge-making in general. We draw on multiple thinkers to build an

image of a 'museum method' that invites playful circling, imaginative leaps, boundary-crossing, and serendipitous collaborations centered on encounters between objects and diverse visitors. Our case is exemplified through four key aspects of 'research in public': the use of historical collections; bringing PhDs into museum work; contributing to scientific culture; and artist collaborations.

Keywords: art-science collaboration, co-creation, collections research, knowledge, materiality, museum history, PhDs, public engagement, research culture, serendipity

1. Situating Medical Museion

1.1 The Development of University Museums

Museums have always supported learning and inquiry. The world's first—Ptolemy's Museion established in the third century BCE Alexandria—was a home for scholars and muses (Worthington 2016). Along with so much else about this enduring institution, the nature of investigation has evolved and diverged ever since; but research has never gone away.

In the Renaissance reinvention of museums as wonder cabinets, great emphasis was placed on capturing and investigating transportable elements of the material world: strange new things from overseas, but also items closer to home that seemed worth poring over again. But just as significant as the curiosities they gathered, these 'workshops' were also used to develop diverse curious practices—from experimental trials to linguistic inquiries. The Enlightenment tamed their exuberance, and museum-research came dominantly to focus on classification and taxonomy (Arnold 2006; Whitehead 2008). At the same time as this early princely and private

collecting, universities were also stockpiling objects of study alongside other accumulations of scholarly and pedagogical paraphernalia. Padua's *Theatrum Anatomicum* (for teaching medicine) was established in 1594. During the next century, the idea of 'pedagogical museums' took hold in many European universities. Established in 1683, Oxford's Ashmolean claims to be the world's second oldest, two decades younger than the Kunstmuseum in Basel. By the nineteenth century, any self-respecting 'modern' university hosted at least a couple of museums, the more ambitious adding others to accommodate object-based studies in archaeology, anthropology, art history, and the proliferating natural sciences (Boylan 1999; Whitehead 2013).

By the first half of the twentieth century, some universities had accumulated as many as 30 separate museum collections. But this boom was short-lived, and by its end, the idea of creating and passing along knowledge through collections had been overshadowed by philosophical, technological, and pedagogical trends that highlighted abstract over concrete thinking. The fortunes of university museums slipped dramatically (Merriman 2002). Meanwhile elsewhere in the museum sector, curators rather than 'keepers' came to the fore, concerned less with collections as sources of knowledge than exhibitions as forms of audience-focused inquiry (Conn 2013; Pickstone 2001). This intellectual retreat left numerous collections orphaned, no longer constituting an essential research infrastructure. Fears for their wholesale dispersal led to various national preservation efforts, which in 2001, converged in the establishment of a specialist committee within the International Council of Museums (ICOM) focused on university museums: the International Committee for University Museums and Collections (UMAC).

With dramatically varying regional density, the number of university museums around the world today is estimated at some 3,900: Europe has over 2,200, Africa just 20 (Statista 2021). Their just-in-time reprieve has, for many, coincided with a re-alignment of mission. Increasingly, this is articulated in terms of how museums can enhance university research, teaching, public outreach, as well as improve their social relevance (see, e.g., University Museums Group and University Museums in Scotland 2013).

1.2 The Case of Medical Museion

One specific example of such a rejuvenated institution is Medical Museion, where the authors of this article are based. In 2002, the University of Copenhagen hired a new professor of medical history, Thomas Söderqvist, who almost as an afterthought, was also asked to look after the medical historical museum. With virtually no previous museum experience, Söderqvist and colleagues set about reimagining what it could be. To this end, they pursued four experimental innovations:

1. a return to the ancient Greek 'mouseion' idea as a way of promoting multi-disciplinary investigations—the modern version of a 'temple for the muses;'
2. a shift of focus from the earlier history of medicine towards contemporary biomedical science;

3. close attention to the aesthetics of medical/scientific objects, and an emphasis on the 'presence' effect of material culture (Söderqvist et al. 2009);
4. and a campaign to gain stakeholder support for experimental projects by pointing to a need for publics to engage with science.

Much about Medical Museion has changed more recently; but just as much remains true to the museum re-making efforts of Söderqvist & Co. We still eschew the public-dissemination model of many traditional science museums and centres, favoring instead adventurous 'public inquiries' relating to the interests of the University of Copenhagen's medical faculty. It's rarely smooth or simple, but much energy is still aimed at creating a virtuous and dynamic circularity between our academic and public twin foci: public programming enriched by research, and research made relevant by that programming. Many of these loops are inspired by and tethered to material culture (some of it in our collections, some of it in university labs) and to the historic rooms we use as offices, storage and programming spaces. As a boundary-crossing institution, we are, in short, an ex-ivory tower striving to throw our doors wide open onto a broad city street.

Medical Museion's collections include a couple hundred thousand items mostly reflecting the post-middle-ages history of medicine in Denmark. It is here that we are most likely to find things that 'fascinate, awe, shock, irritate, or puzzle,' as Sandra Dudley (2015: 58) puts it. The sorts of stuff that can make a museum project fizz. Our spaces are housed in neoclassical and later town buildings, centered on the 1787 Academy of Surgery and Medicine. The warren of domestic-scale rooms wrapped around a spectacular auditorium (the original teaching space) are charged with visual, aural, and olfactory qualities that constitute their own aesthetic and cognitive significance: transformational places in which we encourage visitors to fashion their own meanings and uncover their own feelings, rather than simply reinforcing established ideas.

These particular things and special rooms are the raw material to which mixed groups of investigators apply their interests and knowledge, practices and personalities. Project-focused collaborative teams are drawn from a museum staff of around forty and, crucially, extend out to a network of university colleagues, artists, and other stakeholders from Copenhagen and beyond. Each initiative requires the convening of a new group who, when we are at our best, establish their own version of a 'museum method.' At their core are almost invariably 'curators' (*tovholder* is a useful Danish term that suggests project-anchors) who apply intellectual, but also pragmatic and organizational leadership: a blend of finding and juxtaposing, relationship-holding, and general trickster-ing (Tybjerg 2021). Not infrequently, project members are drawn from Museion's research team who simultaneously pursue their own academic interests.

These often playful initiatives give us a chance to reflect on key meta-questions faced by contemporary knowledge-making wherever it happens. What are the most potent ways to foster new knowledge, and with what questions and concerns in mind? Whose 'expertise' should they

privilege, and who benefits most from minting and instrumentalizing these ideas? And how might opportunities to be 'creative' be reinvented within contemporary research culture? We touch on these broad issues in Section 2, where we assemble a collage of purposes and epistemologies that guide our specific version of museum research. Section 3 then goes on to outline four areas of Medical Museion's practice-based investigations, some that evolve traditional methods, and others more newfangled. Here we sequentially explore the contemporary relevance of historic objects (3.1); the museum-oriented medical humanities undertaken by our PhDs and postdocs (3.2); the collaborations we foster with scientific colleagues (3.3); and the aesthetic understandings that emerge from partnerships with artists (3.4).

Collectively, these four braided paths establish the direction of Medical Museion's knowledge-making. This article highlights our attempts to steer it towards the most robust, public-facing, and influential version of research we can. As already flagged, our oldest building was set up to house Denmark's *Academy of Surgeons*. Closely associated with the 'museion,' the 'academy' also has classical origins: Plato set up the original *Academia* as a center of learning on Athens' outskirts from 387 BCE on. The hybrid notion of being a museum-as-academy allows us to draw both on our own institutional origins as well as the looser contemporary usage of the term, applied these days to schools, learned societies, funding agencies, private associations, and so forth. This is our ecological niche, a role in which we can make most by being part of, but also somewhat separate within a major European university. The basic parameters for our inquiries are helpfully predetermined by this parental academic institution. This context also allows us to draw inspiration from recent novel attempts in academia to apply design thinking, pursue ideas of co-production, and otherwise reimagine elements of research culture. But our conviction is that we can additionally craft museum-specific varieties of those university trends and therefore take further steps in experimenting with research methodologies and epistemologies.

2. Museum Research: Purposes and Epistemologies

2.1 Knowledge and Understanding Across Disciplines

During the last half century, significant questions about where knowledge should be created, kept, and exploited have proliferated; and even more fundamentally, what actually counts as knowledge. Established assumptions have been challenged as the spotlight of innovation has shifted from here to there and, courtesy of the internet, quite frankly everywhere. Sharing attention with think-tanks, start-ups, and other more radically disruptive groupings, the role of universities nonetheless still seems key, though maybe more now constrained to a *particular* version of research. At Medical Museion we are eager to build out from that evolving academic model to establish bridges with other distinctively different forms of investigation, often ones rooted far from university campuses.

As Peter Miller (2021) has recently pointed out, such questions are surprisingly not 'something that the scholarly community thinks much about... [even though] over a trillion dollars is spent annually by governments, the private sector, and educational institutions on research' (Miller 2021: v). Seeking wisdom from etymology, we remind ourselves that the word research comes from the Old French *rechercher*: 'to seek out, search closely;' combining the intensive prefix *re-*, suggesting a return, and *cercher*, 'to seek for.' This deep seeking-by-circling has surfaced differently across the disciplines. What it is to (re)search, how best to come close to objects and subjects, and how to return for maximum enrichment, are challenges that have been tackled rather disparately.

A helpful pointer towards the specific register of museum research comes in a distinction between 'knowledge' and 'understanding.' Contrasting sciences with humanities, literary critic Stefan Collini (2012) argues that the 'kinds of understanding and judgment exercised [in the latter]...are of a piece with [those]...involved in living a life' (Collini 2012: 77–78). And in life of course, experience and reflection add substance and nuance to contingent and situated understanding, with abstract knowledge kept in the shadows. But in the sciences, on the other hand, they simply get in the way of a desired-for universal, viewer-independent, knowledge. Dangers of oversimplification lurk here; but in the museum context, we think it helps to draw in both: investigations aimed at creating understanding just as much as research with objective knowledge in its cross hairs. The point is decidedly not to prioritize one over the other, but rather to gain from their distinction, and then be insistently curious about both. And we especially advocate an openness to their potential mutual enrichment, as well as to the sparks that can fly between them. As the rest of this article shows, Medical Museion's investigations frequently knead together the ideas, skills, and information furnished across sciences, humanities, and arts, but also insights gained further afield. In their midst—in between codes of evidence, persuasion, and communication that can vary to the edge of conflict—lies a fruitful pond of epistemological uncertainty. Here, humility can have its own efficacy.

As part of a university, Medical Museion is nonetheless inevitably situated within a disciplinary matrix. Broadly speaking, our topic is health, while our context is public; so, our location within a Public Health department makes basic conceptual as well as academic sense. Typically, this type of scholarship flies under the banner of 'Medical Humanities' or 'Critical Medical Humanities' (Viney, Callard and Woods 2015). We're comfortable there, but our intention is to branch outwards and generate insights that engage broadly with other areas of scientific knowledge, with other types of understanding, and finally but crucially, with the experiences and life judgments of all, starting close to home with our visitors.

2.2 Co-created, Collective, and Contingent Investigations

Medical Museion's evolving research efforts are often still partly linked to a core concern with science communication, though made more open-

ended through the increasingly diverse ways in which the public engages with medicine, beyond their experiences as patients. Starting some three decades ago, science communication practice and commentary set about replacing (largely unsuccessful) top-down attempts to get an ignorant public to 'understand science.' Subsequent critique has highlighted how newer, purportedly two-way activities often turn out to be unexciting pedagogy in disguise, further raising questions about the limitations of narrowly discursive views of science communication (Broks 2006, 2017; Davies and Horst 2016). Still far from settled, most in the field now embrace more complex models of communication and participation (see, e.g., Bucchi and Trench 2008; Gregory and Miller 2000). And taking a longer historical view, it becomes clear that top-down dissemination and more reciprocal engagement have always co-existed, often with mutual dependence, serving important but different purposes (Davies and Horst 2016).

Combining readings in this literature with a practice-based knowledge of Medical Museion's visitors has encouraged us to blend distinct but overlapping engagement aims. So that despite recent nervousness around valorizing and prioritizing institutional expertise, we still feel a remnant tug towards giving place to discipline-based findings; but not at the expense of broadening what counts as expertise across a wide continuum. We also have an increasing sense that 'interactional expertise' can offer more than any 'contributory expertise/no expertise' dichotomy. We have also been influenced by engagement strategies that lean into personal experiences, where subjective and emotional responses to topics and ideas are highlighted as an alternative but powerful form of intelligence, and indeed a pragmatic necessity (Davies and Horst 2016).

Thinking deeply about what visitors actually *do* in museums has made it clear just how significant their role can be when the chosen methodology interweaves different perspectives and responses around a common theme. In many ways, participatory experiences in some form of co-creation can represent their own powerful form of understanding (Macdonald and Basu 2007, Simon 2010). In her book *What Are Exhibitions For?*, Inge Daniels (2019), for example, describes such collective efforts of imagination as 'mutual possibilities and mutual difference [...] grounded in the particular relational emergence of knowledge between people' (Daniels 2019: 207; see also Leach 2017). Of course, you don't have to be in a museum for this type of collective thinking to happen. Poet, critic, and theorist Fred Moten is talking about something much broader when he describes

'[a] commitment to the idea that study is what you do with other people. It's talking and walking around with other people, working, dancing, suffering, some irreducible convergence of all three, held under the name of speculative practice. The notion of a rehearsal—being in a kind of workshop, playing in a band, in a jam session, or old men sitting on a porch, or people working together in a factory—there are these various modes of activity. The point of calling it "study" is to mark that the incessant and irreversible intellectuality of these activities is already present' (Harney and Moten 2013: 110–111; also see Wallace 2018).

For many, the value of these disruptive approaches to collaborative co-curation—as alternative forms of idea-making—lies in their effectiveness at grappling with the layers of social injustice hard-baked into the very idea of museums. But as Nicolas Thomas has energetically encouraged us to realize, the reflexive and experimental notion of ‘museum as method’—as a key institutional site for the creation of knowledge and theory—doesn't just apply to urgent topics thrown up by the politics of culture. ‘Contingency,’ he contends, is a key concept here (cit. in Witcomb and Message 2015: xxxv). This promise of possible but unpredictable outcomes is what lies at the heart of many Medical Museion projects, where unplanned-for juxtapositions of specific themes and things, practices and places, collaborator- and visitor-perspectives are marshalled into forms of theorizing. In this way, museums constitute their own ‘technology:’ institutional machines for cultural ideation, equipped with back-catalogues of earlier tools and techniques.

2.3 Useless Ideas and Universal Particulars

There is a long-standing and widely held appeal about nurturing ideas that don't necessarily have immediate utility. Writer and cultural commentator Maria Popova (2012) has, for example, recently excavated American educator Abraham Flexner's 1939 essay *The Usefulness of Useless Knowledge*. Flexner worried about the dangerous trend he saw around him, where pragmatism was increasingly favored over undiluted curiosity. The theme is, of course, never far from re-emerging, and Popova is quick to highlight its contemporary relevance. There appears again, she observes, to be ‘little room for abstract knowledge and for the kind of curiosity that invites just enough serendipity to allow for the discovery of ideas we didn't know we were interested in until we are’ (Popova 2012). For her, today's dulling obsessions with effectiveness and efficiency is also likely to result in a collateral casualty: the loss of opportunity to develop ‘networked knowledge.’ Creativity, she urges, is combinatorial: ‘nothing is entirely original, [...] everything builds on what came before’ (Popova 2012). Long before even Flexner was raising his alarm, strikingly similar thoughts occurred to Mark Twain. As he put it in his 1906 autobiography, new ideas are impossible:

‘We simply take a lot of old ideas and put them into a sort of mental kaleidoscope. We give them a turn and they make new and curious combinations. We keep on turning and making new combinations indefinitely; but they are the same old pieces of coloured glass that have been in use through all the ages’ (Twain 2017: 4051).

Ideas that eschew quick returns; ideas that don't shy away from what has come around before; ideas that are built collaboratively from existing bits and pieces that haven't been re-examined for a while. We argue that museums (or at least those focused on research) specialize precisely in this type of combinatorial creativity, where circling is combined with digging deeper and differently. Museums are well placed to take a lead role in shaping

this new-but-old epistemology. After all, curation and juxtaposition—terms now ubiquitously employed to evoke ways of maneuvering in a world of too much—started early in museums. Since its inception, Medical Museion has tried to make space for un-pragmatic curiosity and combinatorial creativity. But it's far from easy. Such approaches require nurturing through care, open communication, honest negotiations, and a willingness to learn from mistakes. Trust between individuals who know and appreciate each other's different ways of seeing and making is key; but so too is dealing with strains caused by groups that shift and expand. This type of approach often also clashes with the tendency in academic research (but in so many other corners of human enterprise too of course) to jealously guard authorship and ownership of ideas. And another caveat: it's crucial not to insist that this is the only, or indeed best, way to do research in a museum.

As institutions that can be found almost everywhere, museums are nevertheless fundamentally characterized by their particularities, and often by their stubborn localness (despite the fact that the content of many museums is drawn from remote and far-flung places). This specificity applies even when they focus on global topics like scientific medicine and health. In contrast to generically manufactured didactic displays, the best work of a place like Medical Museion takes universal ideas and makes them proximally relevant through singular and even unique objects and stories. There is an essential tension at stake here: by focusing imaginatively on things and people that are authentically close to hand—grappling with the very specificity of where in the world they happen to be—they can transcend those very particularities. Having the time to think deeply about *these* objects, dwell meaningfully in *these* spaces, and develop close collaborations with *these* partners can turn projects that risk narrow parochialism into ones characterized by vibrant distinctiveness and broad relevance.

'Conjectural knowledge' is the term Italian historian Carlo Ginzburg applied to this type of understanding, where particulars rather than generalities are thrust to the fore. Its production is, he pointed out, shared across methodologies which, for example, art historians, psychoanalysts, and forensic detectives differently apply. Each of them pursues a form of 'diagnosis' guided by deciphering and amassing clues, held together by the 'elastic rigor' of 'a whiff, a glance, an intuition' (Ginzburg 1980: 28). Developing this approach at Medical Museion, we're struck by how the form and content of our conjectural understandings are fixed by our particular places and things. We are, to take just one example, concerned with general understandings of how cholera developed over two centuries of bacteriology and epidemiology. But our own unique contribution comes from layers of multidisciplinary insight promised by one particular object from Museion's collections: a sealed bottle filled with the liquid excrement of an 1853 cholera patient. Of course, our insights into the Scandinavian experience of the third cholera pandemic are extensively informed by a broad understanding across different disciplines, but our additional insight is rather specifically situated and substantiated, not just as an example but a tangible moment of discovery. It's precisely the

combination of the two—general and particular—that museum research can make available. The bottle and its contents evoke a powerfully visceral sense of coming close to a particular sick person, almost feeling it within our own body. But not on its own or without background: the resonances of those feelings are amplified by the larger-scale historical and medical knowledge. The particularity of feeling-it-in-our-stomach while comprehending broader medical and historical understandings, and of simultaneously juxtaposing multiple related contextualizations, is where our museum method derives a substantial part of its power (Ginzburg 1980, 1979).



Figure 1. A photo of a sealed bottle of liquid cholera excrement from 1853 (from the exhibition *Capturing Epidemics*). The single object connects a visceral sense of a particular person's sickness with large scale medical, historical, and scientific knowledge of epidemics (courtesy of Nicolai Howalt and Medical Museion)

3. Museion Trajectories

Medical Museion's locally constructed method is nonetheless also broad in scope, bringing together ideas from various scholars, professionals, cultural practitioners, and others. It searches and circles and digs, while anchoring itself in particulars. But it also promiscuously seeks new connections, with an eye out for opportunities to make vibrant, often aesthetic links between objects, experiences, and people. Our 'museum machine' is set in motion more by a curiosity that side-steps boundaries than by hypotheses seeking proof or falsification or the goal of generalizable knowledge. To the occasional irritation of our academic colleagues, we also champion the value of collage, juxtaposition, and combination in other areas of academic research. Here,

we argue, lies an exciting path to less predictable forms of engagement with their expertise: a way of highlighting its public potential, especially when thoroughly diversified through open-mindedness.

Our combinatorial investigations frequently start along established trajectories, which Medical Museion's gravitational pull then shifts into unexpected orbits. The rest of this paper examines four such paths:

1. historical inquiries based on material culture,
2. research undertaken by our PhD candidates,
3. collaborations with scientific colleagues,
4. and artist-led aesthetic investigations.

In each, the research undertaken produces new ideas that are often in dialogue with the making of public activities such as exhibitions, events, and artworks, and, we believe, with mutual illumination for each.

3.1 Collections, Recollections, and Research

Museums with collections are inescapably founded on the past, and as soon as an object is collected it becomes the past—and indeed creates a past. Perhaps due to being steeped in the past, collections have, as noted above, been overlooked as drivers for innovative research practices in recent years. Focus has shifted outwards into the surrounding world rather than inwards towards the stores (Vergo 1989). We argue, however, that a focus on the public face of the museum need not go hand in hand with sidelining its building blocks.

But let us first look at the contents of the collections at Medical Museion in a little more detail. They consist of two main groups: the medical and the cultural historical collections. The *medical collections* date back to the eighteenth century with collections of busts of eminent surgeons, instruments, models, as well as anatomical and pathological specimens that materialized the professional and scientific identity of surgeons. In the nineteenth and twentieth centuries collections expanded and became a mainstay of teaching, with their categorizations of diseases and subspecialties. In the early twentieth century, the *collection of the cultural history of medicine* took shape after an initial exhibition celebrating the anniversary of the medical society in Denmark—a collection documenting the national history of medicine comprising both religious healing practices and folk medicine and the development of modern scientific medicine in Denmark.

In their different ways, the collections thus delineated and categorized the medical profession. While medical collections established the taxonomies of disease and mapped out the body, the cultural historical collections presented a medical profession in rapid development as a scientific field and demarcated it from religious belief, informal practitioners, and 'barbarous' practices of surgery on dirty leather sofas. The collections established scientific, disciplinary, and professional boundaries. But as the twentieth century drew to a close, they shared destiny with many museum collections. No longer seen as constitutive of medical knowledge, they lost their centrality.

Collections may, however, now play more complex roles. Museums can use them to both highlight and challenge boundaries like a modern trickster—the mythological figure who creates, challenges and trespasses the fault lines of civilization between human-animal, woman-man, dead-alive, allowed-disallowed. Reorganizing and reconceptualizing medical collections allows us to mediate between disciplines, death-life, nature-culture, history-timelessness (Tybjerg 2021). Moving in these borderlands may provide the museum with its most articulate and attractive means of demonstrating the enhanced epistemological significance noted above through doing experiments connecting publics, ideas, and objects (Macdonald and Basu: 2007: 2–3). In practice, we have done this through juxtapositions of old and new, reordering, and by breaking down boundaries between museum collection and contemporary science, reconfiguring connections between collections and science both past and present.

The recent COVID-19 pandemic presents us with a powerful example of the collections' potentials for juxtaposition. During the pandemic we had experiences for which we were utterly unprepared. In this situation, objects from 50, 100, and 200 years ago suddenly offered more resonance than recent cultural experiences and scientific data. The undulating waves of infections and dead could be understood in the light of epidemiological curves drawn up from the Spanish flu in the early twentieth century; the scramble for respirators made sense in the light of the 1950s' technological inventions made in polio wards to keep the patients ventilated; and quarantine rules from the black death suddenly seemed strangely familiar. Understanding what struck us required us to look back into the collections.

Objects also show how *physical* traces from the past can be. In the heart of a young girl kept in the pathological collections they proved fatal. After surviving a mind-blowing array of infections—pneumonia, mumps, the Spanish flu, diphtheria, whooping cough, and jaundice—the seventeen-year-old girl collapsed dead with a ruptured aorta after carrying a heavy suitcase. She showed that diseases leave their mark in bodies, lives, society, and history. And saving her heart both allowed doctors to investigate those physical traces and now offers a visceral reminder of the changes wrought by disease—in bodies and in history. The historical objects were photographed and exhibited alongside the collection of new material from the current pandemic: a lung biopsy from a Covid-19-patient, the x-ray images that alerted Danish doctors to the severity of the new disease, and the charts used by politicians to show the public how the pandemic could be controlled. Lastly the projects triggered questions from the public and Museion researchers acted as experts connecting past and current experiences. The co-concern of researchers and the public thus revealed the collections anew and re-connected us to the epidemics of the past.

The reordering of collections in exhibitions—reconceptualizing them—also creates new research, again often with the help of an external probe. In Medical Museion's exhibition *Kintsugi: Golden Body Repairs* (2017) the Japanese Kintsugi (金継ぎ) tradition, in which broken pottery is visibly

repaired using lacquer and gold dust, became a metaphor that created a new collection. The idea emerged between the museum and a research centre for healthy aging, show-casing different object categories that reveal traces of repair in our bodies: pacemakers, glass eyes, golden teeth, hearing aids, and even the traces left in a fractured bone. For another exhibition, *The Body Collected* (2015), the external probe was a pronounced public interest in seeing preserved body parts from historical pathological collections. Combined with an ambition to make modern biomedicine more tangible, it resulted in collection-led research and exhibition concept. Ordering the collections according to a simple physical principle—the ‘scale’ of specimens from whole bodies, organs, tissue to genes—allowed the historical collections and biobank samples to mirror and make sense of each other leading to a new way of looking at history of medicine (Tybjerg 2015, 2019b, forthcoming).



Figure 2. A photo of objects from across different parts of the collections at Medical Museion gathered in a new combination to show the aesthetics of the repaired body (from the exhibition *Kintsugi - Golden Body Reparations*) (courtesy of Medical Museion).

Our collections of human remains, however, require special care (Alberti 2009). There are no restrictions in Denmark on the display of historical material, which allows freedom, but carries with it ethical responsibility when dealing with collections that invariably contain material appropriated from the vulnerable and disadvantaged (Gere and Parry 2006; Richardson 1987). The question of *whether* human remains should be exhibited, however, should not overshadow the richer question of *how* we might do so. The objects give us the potential to approach difficult topics, to create new relations (Hallam 2017; Parry 2021) and to break down boundaries between the public and the medical profession by allowing a range of responses (Tybjerg 2019b). Research connecting pathological collections in continuous development with modern biobanks enable both to be more comprehensible—scientifically and ethically. And for us, this ultimately outweighs arguments against displaying material that could not be collected today.

Connections between science, past and present—and between collections and the public—have also reinvigorated interest in the sealed bottle of historical cholera excrement mentioned above. This at first unassuming object offers the museum a visceral historical testament to the bodily experience of cholera and scientists' attempts to understand it. But the bottle also contains a unique scientific sample. This has attracted intense interest from scientific researchers keen to access the contents, which can only be done by boring a hole in the glass with a danger of destroying it. This would enable the analysis of the only known sample of a strain of cholera whose genetic make-up is currently unknown and would therefore fill a gap in the understanding of cholera evolution. And in addition, the contents may also yield information about other indicators such as virulence that, together with information about the water ways and kitchen habits of historical Copenhageners, might help frame new questions about how cholera spreads and indeed offer knowledge that could help curb the spread in places where the disease is still endemic such as modern Bangladesh. Combined with historical studies and inquiries into what analyzing historical disease can offer, it suggests a tempting project (though one awaiting funding) that will genuinely be interdisciplinary.

This wish to access the material, however, also reflects a general scrum amongst molecular scientists to analyze samples from museums as these may lead to new insight into prehistory or evolution and thus high-profile publications (as discussed in Bradley et al. 2014; Hendy et al. 2018; Stewart et al. 2015; Yeates et al. 2016). But this can only be one side of museum research, and we need to be wary of the kind of knowledge generated by sequencing of more data which adds information but not meaning (Reardon 2017). The use of historical collections in modern science is often seen as a compelling argument for keeping collections, but should never stand alone or be primary. In the case of the cholera bottle, Medical Museion has not yet allowed the bottle to be compromised. For us, the quest for a single high-profile publication is not enough; and we would only accept the danger of potentially destroying it, if the project could truly weave together integrated new insights (as well as public engagement) across museology, history, modern cholera control, and science.

Medical Museion thus put the storerooms back in a central position, but the collections that delineated medicine are reconfigured, shaken up and sampled as new COVID-19 items are collected, the opening of the cholera bottle debated, and human remains questioned. In this way, collections are extended beyond their traditional museum boundaries in the same way as research overlaps with public inquiry. New research questions emerge as the historical kaleidoscope of our collections is allowed to turn, letting the pieces fall in still new patterns.

3.2 Proliferating Public PhDs

PhD fellows are a vital part of university life. Transitioning between student and professional researcher, they are intensely focused on what kind of research they are doing and why. This can generate both great uncertainty

and great creativity, foregrounding some of the questioning that can become rushed and implicit for more senior researchers. What kind of knowledge does the world lack that I might offer? What forms of inquiry are suitable, sufficient, and doable? This highlights the centrality of critical thinking to graduate training—which we aim to cultivate as part of the wider ethos of the research museum that we have been articulating here. At Medical Museion, we have hosted diverse students and projects, but always emphasize from the start that they should relate to the public setting of the museum in some way. Both in that their research should be altered by its public context, and that they might in turn contribute to the museum's public life. Neither should be unaffected by the other, but what this actually means is to be discovered together. In a more traditional mode, this might mean contributing research to an exhibition topic, or researching particular objects to be included in an exhibition. Or it could look like a small curatorial project or a collaboration with an artist. Sometimes this work becomes a core part of the PhD thesis, often when driven by the student's existing practice in arts, curation, or design. Other times these experiences act more as enrichments and as institutional contributions similar to working as a teaching assistant or organizing a department seminar.

Two brief examples of PhD projects demonstrate Medical Museion's approach. In each, the student engaged in a core activity of exhibition making, elucidating what philosopher Ian Bogost (2012) describes as 'philosophical carpentry,' where 'making' can valuably supplement and inform 'thinking.' What Bogost is calling for in philosophical work is something that goes beyond established forms of academic writing. He suggests constructing artifacts that do some sort of philosophical work; a form of 'philosophical lab equipment' (Bogost 2012: 100). Crafting exhibitions is a process of framing thought in a medium which cannot simply be reduced to the communication and production of semiotic meaning (Bencard 2020). This suggests an active role for exhibition making as a way to practice modes of attention that engage different registers than traditional writing and researching. Engaging with museum activities can do several things to PhD research. It can help materialize arguments and ideas, allowing them to be tested and felt in different ways. What makes sense in an exhibition space is not always what makes sense on the thesis page, and testing both can contextualize ideas and their connections in unexpected ways. Exhibitions can be, paraphrasing what Claude Lévi-Strauss said of things, 'good to think with,' but the reverse is also true (Daston 2004). Research ideas can be 'good to make with.' In this way, mirroring research back to itself through public engagement and exhibition work opens up self-reflection, potentially making ideas both bolder and more approachable.

In 2018, Ane Pilegaard completed her PhD *Object Encounters: Designing for Material Proximity in Medical Museums*. Pilegaard is an exhibition designer, who wrote a design philosophical thesis on vitrines (glass exhibition cases) and how to make objects that can't be touched, felt. She performed small-scale experiments using molded plaster and silicone

to allow objects to 'shape' the surfaces they rested on and using cuts and layers in transparent Perspex that enabled vitrines to open themselves up to other forms of visitor proximity. These 'carpentries' informed the theoretical research of the thesis and generated insights and practical strategies used in the making of two major exhibitions: *Obesity—What's the Problem* and *The Body Collected*, while sociologist Anette Stenslund completed a PhD in 2014 entitled *Atmospheric Smell—Hospital-Based and Museum-Staged*, which 'sought to develop a phenomenology of smell and atmosphere' via a dual framework looking at how people live 'in scent' in a hospital and a museum. It aimed to sharpen awareness of the importance of biographic and cultural factors in smell, to articulate the role that talking about smell plays in people's evocation of disturbing atmospheres, and to connect these medical experiences to museums and culture more generally. Part of her PhD process was a curatorial collaboration on a small exhibition called *Mefascenf*, an idiosyncratic and evocative exploration of 'how humans smell' that invited visitors into phenomenological relationship with this under-examined aspect of our non-semiotic experience through exhibits that replicated, evoked, and directly presented smell molecules for consumption. The challenges of coming close to smell for an exhibition visitor, she suggested, closely echoed some of those faced in researching smell, especially in medical and health contexts—a 'carpentry' about knowing something that often seems to evade knowledge.



Figure 3. A photo of surgical instruments resting on silicone emulating the soft tissue they operate on (from the exhibition *Obesity – What's the Problem?*). The design was a product of PhD research in exhibition design (courtesy of Ane Pilegaard and Medical Museion).

These two examples highlight how research and museum practices in its many different forms can recursively inform each other. But making this happen is complex. Graduate research education is increasingly driven by plans, strategies, and precise timelines, which whilst it has its benefits, can make it hard to find space for deep questioning, circling around, and serendipity. We hope that museum work offers some of this, but it is important to note that it also requires a lot of patience and effort, both from students

and the wider staff. Hosting tricksters can be tiring, as both sides have to work out what each will offer and need from the other—and all the while both are changing (see Deliss 2020). Museum work also requires different forms of attention from research; it is often concrete and immediate, drawing attention away from the slower-burn of analysis and paper writing. Working collaboratively and in a realm of material logistics can be rejuvenating and bring meaning to research, but can also feel jarring in relation to the ultimate deliverable of the thesis. Ultimately, allowing PhDs to experiment in the museum space seems to us to be one of the more genuine and inspiring ways to be a research museum—a space that can really support the construction of philosophical lab equipment for research in public.

3.3 Opening up Scientific Research Culture

As detailed above, until the mid-twentieth century many museums hosted scientists who generated knowledge from collections—natural historians, botanists, archeologists, archival historians, and anthropologists amongst them. With the shift towards a more public-oriented curation and exhibition strategy, scientists appeared more often as audiences or outside experts rather than primary operators of the museum machine. In medical museums, the retired doctors and medics who had previously shepherded collections were often moved aside in favour of humanities scholars, curators, and public engagement experts.

The reinvention of Medical Museion involved bringing contemporary science and scientists back into the mix. We emphasized *how* science knows as well as *what* it knows, building on an overarching conviction that science belongs in the cultural sphere, treated as itself a set of cultures that shape identity, social roles, and purpose (Whiteley et al. 2017). This also generated curatorial research questions. How can enticing exhibitions be made about the black-boxed world of the laboratory and how can an emphasis on materiality be maintained when dealing with invisibility, unimaginably huge data sets, and disposable objects (Söderqvist et al. 2009)? What from the laboratories and clinics of today is worth transferring to our stores? And how can we bring personal experience to meet the necessarily generalizing moves of biomedical science? (Whiteley et al. 2017).

Research-led exhibition projects in this vein involve discussions with scientists about what will be displayed, collected, and explained—which has also provided an unusual way of negotiating questions of value across disciplines. Public events such as our *Evening Consultation* series have also brought scientists together with humanists and other experts to talk about themes such as sleep or the microbiome. And on the more academic side, we have developed a tradition of mid-sized workshops that invite interdisciplinary audiences to consider cross-cutting themes: for example, the *Collections, Knowledge and Time* meeting (2019) mentioned above, which brought a variety of perspectives to the relations between evolving material collections (in museums and elsewhere) and the knowledge claims made for them.

These activities can offer scientists alternate spaces to discuss some of the big questions behind their own research. When they work well, they can take on the flavour of a collective 'study,' to return to Fred Moten's ideas. Though not obviously research producing, they nonetheless elicit a shared feeling that we are co-investigators, that 'the incessant and irreversible intellectuality of these activities is already present' (Harney and Moten 2013: 110–111). This relies on temperament and trust, and more readily occurs after relationships are established. Medical Museion's university embedding helps us build trust with colleagues over time, while recognition of our past activities can make newcomers more comfortable. There is however a balance to be struck between comfort and criticality; depth and novelty, which echoes much wider issues within science itself (see, e.g., Calkin 2013; OECD 2021; Woolston 2020).

Medical Museion has been fortunate to be embedded within two major interdisciplinary scientific research centers: the Novo Nordisk Foundation Center for Basic Metabolic Research (CBMR) and the Center for Health Ageing (CEHA). Our decade-long engagement with the former has evolved into a 'cultural role' within the center, while still providing novel ways to engage publics with that science. This can perhaps be thought of as instigating a collage of ethos and epistemology. When we present our humanities and museological research alongside biomedical science, we implicitly assert the existence of differing kinds of knowing, understanding, and expertise. For example, at the Center's *(un)Conference* in 2019, a discussion about top-down vs. bottom-up theory generation placed scientific and philosophical visions side by side, and a session on creative writing as a form of perspective-taking had staff from across the organization reading poetic texts aloud to each other. In such activities, both we and our scientist colleagues offer each other feedback; expert knowledge on 'content' and non-expert reflections on 'method,' often using verbal markers of humility when transgressing these disciplinary boundaries. Here too, having time to circle is important; being able to play back what we hear and ask for clarification. It also provides a collaborative way to discuss and engage with the increasingly important issue of 'research culture.' Time (sometimes years) is needed for themes to find the right configuration of people, spaces, and ideas. For example, after a decade of working with researchers studying fat and struggling with how to tackle this politically complex topic, a new research angle on the fascinating diversity of fat tissue has given a potentially beneficial starting point.

Our relationships at CBMR have been nourished by our interest in metabolism itself, as far more than a mathematical calculus of calories in vs. out. Rather, we see metabolism as a marker for the lively, political, and constitutive exchange between the body and the world and a lens for thinking about thinking itself (Hauser et al. 2020; Landecker 2011, 2013; Landecker and Panofsky 2013). In working with the history of this oft-neglected part of physiological research, we help scientists celebrate their own heritage and have worked on several exhibitions that place CBMR science within its

historical context. As so often occurs, the physical site of the museum, with its exhibitions that need things and its visitors who need encounters, helps to ground thinking that might otherwise drift off esoterically. We can show how abstract ideas shaped a successful grant application for an exhibition—and how understanding the science of metabolism places constraints on its conceptual and philosophical use.

Commonalities between the arts and sciences have often been defined in terms of epistemic desire—both are curious, want to understand the world, build evidence, and so on. But for our particular configuration of humanities research, museum, and science centers, even more significant is the opportunity to gather varied interests around shared commitments. Commitments to improve peoples' lives through our attempts to understand their multiple bases; a recognition that internal work cultures can enable or stymie creativity; and a passion for defending—whilst also improving the equity of—'research life' and its necessary freedoms. Gently but enthusiastically, we make sprightly moves across the boundaries of disciplines and their expected roles in 'making good science.' In other words, we hope to encourage scientists to value, nourish, and interrogate their unique configurations of people, objects, and spaces, just as we do ours (Whiteley et al. 2017).

3.4 Research by and with Artists

A common denominator across our varied and overlapping foci on collections-oriented inquiries, PhD investigations, and reciprocal collaborations with scientific colleagues is the habit of being half-in and half-out: comfortably inside our institution, but simultaneously engaged with materials, activities, and interests lodged elsewhere. This bridging approach also surfaces in our collaborations with artists.

Exploratory partnerships with artists have been forged at Medical Museum for over a decade, during which time it has evolved considerably (Arnold et al. 2019). But a concern with the appearance and impact of the outputs (artworks, performances, events, and exhibitions) has remained constant; as too the insistence that aesthetics can dive far beneath the superficial look, sound or feel of a project. As a group these initiatives are characterized by the variety of methodology, topic, and format that one would expect from different artists with different backgrounds and sensibilities. Nonetheless, two broad project types have predominated: ones where things are made and others based on curating what is already out there.

In 2010–2011, for example, British artist Lucy Lyons focused on uncovering less-expected understandings of how patients and people get older by drawing her way into alternative analyses of objects in our collections. The results were brought together in the exhibition *Experiences of Ageing*. Another collaboration with the Pharmacopoeia team resulted in the creation of *Femme Vitale*—a substantial sculptural figure that 'demonstrated' Metabolic Syndrome through a dramatic presentation of nearly thirty thousand pills—about ten years' worth of medication for the

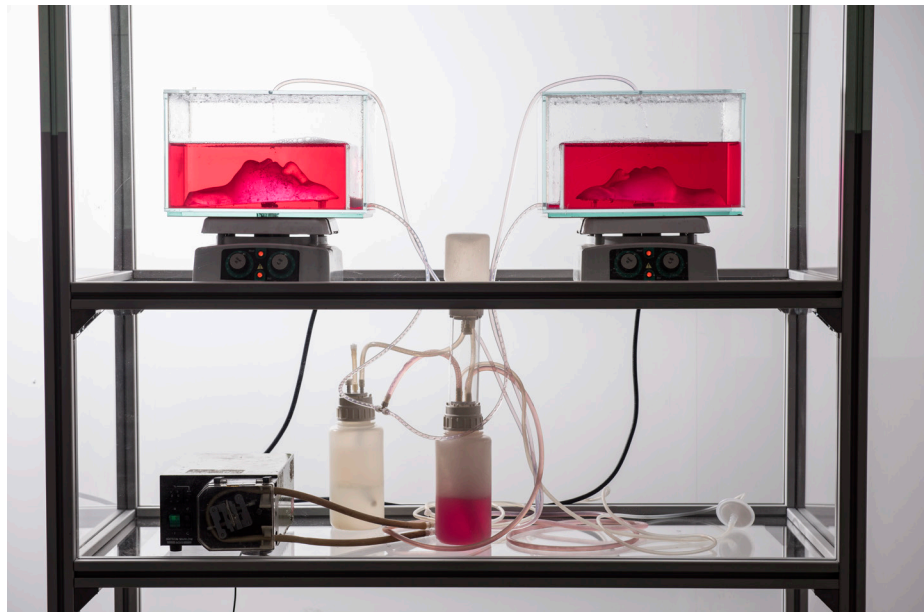


Figure 4. A live experiment and collaboration between scientist John Hunt and artist Gina Czarnecki grew skin masks with cell culture in the museum (from the installation *Heirloom*) (courtesy of Gina Czarnecki and FACT)

condition (see Whiteley et al. 2017), while *Heirloom* was instead an exhibition-cum-performance of a scientific experiment, aesthetically fashioned by artist Gina Czarnecki and scientist John Hunt. Their collaboration attempted to grow portraits of the artist's daughters in a gallery space, harvesting the girls' own cells that were then planted and nurtured on glass casts of their faces (Whiteley, Tybjerg and Pedersen 2017). In all three projects, the processes of productive inquiry to create exhibitable artworks took twists and turns: conversations, trials, and disappointments, as well as legal, scientific, and artistic difficulties to surmount. They also revealed just how surprising—eye- and mind-catching—can be the results of collaborative artistic efforts to materialize and make visible scientific unseens (see Carter 2004).

Along with projects like these that made and showed things, others artistic collaborations have instead foregrounded curatorial practices. Canadian artist Martha Fleming, for example, cast an aesthetic gaze over our historical as well as contemporary collections. The *Split & Splice* exhibition that resulted, presented a cross-section of objects, displayed according to form and surface as well, crucially, as the multiple meanings lying beneath. While the two-year-long curatorial experiment *Mind the Gut* started instead with a theme: the complex relationship between our heads and stomachs. What, curatorially, might result if a group of invited artists, scientists, and scholars collaborated on every single aspect of an exhibition under this title? How might they reframe aspects of contemporary biomedical science through the kaleidoscopic compilation of their rather different perspectives and practices (Bencard et al. 2019; Bencard & Whiteley 2018)? Another arts-based curatorial experiment is unfolding as we write. A curatorial team led by artist-curator Jacob Lillemoose and scholar-curator Adam Bencard, *The World is in You* will

look at the fascinatingly entangled ways that the world around us influences and shapes our condition: what makes us what we think we are. Presented in one of Copenhagen's major art galleries—Kunstal Charlottenborg—it inverts the dominant concern today with humankind's impact on the world around us: an exercise in anti-anthropocentric thinking.

Exhibitions like these and the investigations behind them emerge from a quarter century or more of increasing curatorial enthusiasm for exhibition-making less focused on sharing pre-conceived ideas than on attempts to forge new knowledge. Hans Ulrich Obrist—today's best-known proponent of the 'art of curation'—makes the case succinctly: 'exhibitions, I believe, can and should go beyond simple illustration or representation. They can *produce reality themselves*' (Obrist and Rasa 2014: 168). As Obrist is the first to point out, pioneering experiments in this direction first surfaced many decades ago. Alfred Barr at the Museum of Modern Art in New York pioneered his 'museum-as-laboratory' from the 1930s, and Swiss curator Harald Szeeman presented his landmark *When Attitudes Become Form* show in 1969. With the energy of a reformist, Szeeman was intent on conceptualizing art, pulling it away from an exclusive focus on individual artworks towards what could be crystalized through their juxtaposition in exhibitions. Alongside, and sometimes connected with these adventures in contemporary art, various museum-based anthropologists similarly reconceived their subject matter through curation. Particularly notable was a series of ground-breaking international shows presented at the Museum of Mankind in London throughout the 1980s. And all of these precedents provided extensive sources of inspiration for Wellcome Collection's inaugural medicine and health shows presented from 2007, in which collaborative curiosity was used to expand and contextualize the medical view of subjects as disparate as the heart and skin, sleep and warfare, death and madness (Albano 2014; Arnold 2013, 2016; Bjerregaard 2021; Honoré 2015; Klonk 2009; Obrist and Raza 2016; Schubert 2009).

Investigations involving artists have similarly enabled Medical Museion to open up topics and methods for reconsideration, and across the whole arc of research practice. Sometimes this means pausing and pondering questions that come after the first to emerge in a project or that initially appear less fruitful, unthinkable even. It can also just mean tolerating a lack of precision and clarity for just a bit longer, having patience during the stumbling prelude to research proper, trusting that something a bit richer to emerge from shadows. Almost invariably, they also involve exposing projects to public scrutiny, if not engagement along the way of an inquiry, not saving everything for a final presentation. And at the end of a project, they might further suggest ways to bend and stretch the predictable simplicities of evaluation.

Common to many of the aesthetic strategies employed here is the value of art as a form of experience blended with the knowledge of things. Susan Sontag (1969) makes the point energetically:

'[a] work of art encountered as a work of art is an experience, not a statement or an answer to a question. [...] Art is not only about something: it is something. A work of art is a thing in the world, not just a text or a commentary on the world. [...] Which is to say that the knowledge we gain through art is an experience of the form or style of knowing something, rather than knowledge of something' (Sontag 1969: 30).

Her point echoes some of John Dewey's (2005) aesthetic philosophizing from a half century earlier. He too asserted that art was principally a form of experience that should be integrated into rather than separated from the rest of our lives. Scholar and musician Arnold Berleant (2013) adds to the theme by challenging the 'traditional separation between the sequestered, contemplative experience of art and the world of ordinary experience.' Artistic engagement should 'intrude on the formerly safe space of the spectator by demanding active involvement in the appreciative process' (Berleant 2013: 116–121). Visitor-focused collaborations with artists mounted at Medical Museion have similarly encouraged us to value the direct experiences of our subjects above mere signposts to their existence elsewhere. What these projects strikingly reveal is how the worlds of health and medicine can be made real in surprising new ways for us as well as our visitors (Berleant 2013; Dewey 2005; Sontag 2014).

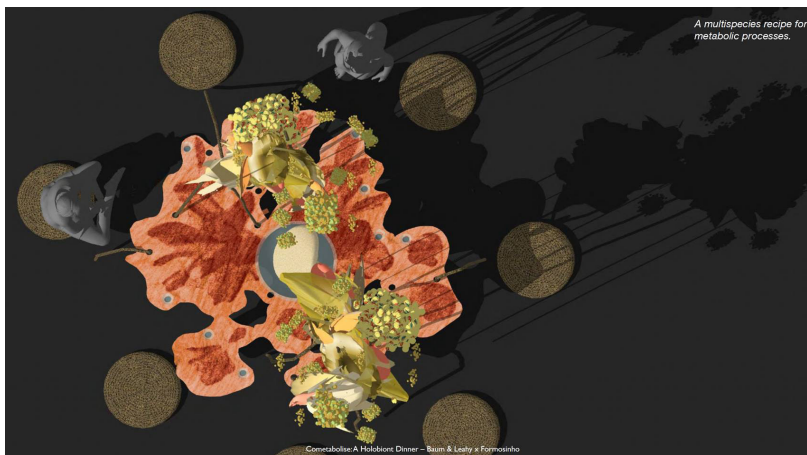


Figure 5. This concept for an art installation, *Come-metabolise - A Holobiont Dinner*, was a product of collaboration between scientists, museum researchers and artists (from the exhibition *The World is in You*, illustration and concept: Baum and Leahy and Joana Formosinho)

4. Conclusions

By fashioning material historical projects, supporting adventurous PhDs, collaborating with scientists, and co-developing initiatives with artists, Medical Museum plays with a series of overlapping strategies to stretch what a university museum can investigate and how. We've presented an enthusiastic endorsement for the general value of research to museums and an exemplar what that specifically means in our particular set of circumstances. Our proposition has a sequence of key tenets: that much can be gained from really thinking about what research could be, and what we can genuinely

add; that museums are great environments in which to balance abstract knowledge with concrete thinking; that considerable mileage opens up along the path of collaborative investigation, especially if time is allowed, and the idea of looking back at what might seem well known is not avoided; and finally, that many liberating riches are actually close at hand in what might at first appear to be a limited selection: our own stuff, spaces and colleagues.

These convictions are robustly held. But we think they can be sharpened with a few caveats and should certainly be shared with a degree of humility. Our method is clearly cobbled together from much that already exists, relying on vast amounts of other research that is quite properly and deeply embedded in their particular disciplines. What we offer has to it a certain personality, an ethos, some obvious desires, needs, and dependencies. Some kinds of artists love it—others really don't. Some scientists see our suggestions as liberating—others are perplexed. Some potential PhD candidates find it exciting and 'rich'—others stressful and 'thin.' And it would be dishonest of us not to acknowledge tensions and uncertainties that lurk in this approach. It's rarely easy to circle gracefully around each other. And certainly, valid questions can be asked about how vibrant our research outcomes are when disconnected from their contexts of production; about the limitations of working within a virtuous circle; and about the potential casualties that result from the clash of ethos between museum and university. Ultimately, this is very much *our local method*, and as part of our own argument requires us to stress, some, maybe much of it, just wouldn't work elsewhere. Maybe it would have less resonance in private collections than public museums? Perhaps some national or international contexts would gain more from it than others; while some types of audience might lap it up, others distinctly might not. Much in what we propose would be fascinating to explore in other contexts. If any of this does seem instructive or inspiring, our core plea would be to refashion what you borrow in locally relevant shapes and forms. With luck, we'll then come across your versions and be impressed enough to re-appropriate them for our own ends.

And finally, we are also aware that the approach of this article is somewhat out of step with much current museum and cultural studies scholarship. At a moment when many museum professionals along with cultural commentators are struggling to deconstruct the legacy of museums (whether or not based in research) and their part of the mess we're in, questions of how museums *should* help are often prioritized over those concerned with understanding what they have traditionally done. Medical Museion's theorization does, nonetheless, have, we think, relevance and purpose. Less explicitly activist maybe, we think the values of open inquiry and even playful experimentation manifest in our projects can, at their best, contribute in unexpected ways to think differently about some of these urgent questions.

1. We are, however, also aware of, and inspired by, other recent efforts to reimagine what a modern university museum can be—for example the 'Academic Museum' in Göttingen, the Chau Chak Wing Museum in Sydney, GUM (Ghent University Museum) and, particularly notably, the international network of Science Galleries that originated in Trinity College, Dublin. In each we find fascinating similarities, but also important differences with Medical Museion.
2. Supervisor Karin Tybjerg.
3. Supervisor Thomas Söderqvist.
4. <https://www.linkedin.com/in/stenslund/?originalSubdomain=dk>
5. <https://www.museion.ku.dk/metascenf/> and <https://www.museion.ku.dk/2014/05/om-at-udstille-ingenting/>
6. In Denmark in particular, a PhD is typically a three-year employment, imposing both benefits and disadvantages of an employment framework onto the process.
7. <https://cbmr.ku.dk>
8. <https://healthying.ku.dk>

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