Chapter Four

KNOW THYSELF: IDENTIFYING WITH THE MUSEUM OF SCIENCE AND INDUSTRY'S *YOU! THE EXPERIENCE*

MEGAN BAYLES

AS A CHILD, my family's frequent trips to Chicago were punctuated by visits to the Museum of Science and Industry (MSI). Of course, my parents, sisters, and I saw Colleen Moore's Fairy Castle, the gallery of airplanes, and watched baby chicks hatch in the genetics exhibit. But for me, there was only one must-see: the "dead babies in the jars." Each time we went to the museum, I bided my time until we found them, at which point my sisters and I would stand on the carpeted ledge on the wall below their inset display case, pressing our noses to the glass to study each wrinkled, grey specimen in order. At each jar, we would ask our parents, "Is that a real baby?" "Was I ever that little?"

In the late 1980s and early 1990s, when I was visiting, the foetal specimens were exhibited as *Prenatal Development*. Performance and disability scholar Catherine Cole describes and analyzes that exhibit in much greater detail than I remember from my childhood visits. Reading Cole's account of visitors viewing the exhibit, though, I wonder if it was I she was watching:

> Apparently one of the museum's most popular installations, it [*Prenatal Development*] was always mobbed. The display drew viewers right up against the glass, their faces within inches of each formaldehyde-filled jar. Specimens with shriveled gray flesh, closed eyes, and tiny limbs crossed in burial poses fascinated visitors who waited in line to dwell at length upon each of the 40 fetuses and embryos … A hush descended, even as the surrounding atmosphere was abuzz with sirens and screaming children … Groups of children were the most vocal of visitors, exclaiming "disgusting," "gross," "sick" or "grody," especially when uterine tissue or the embryonic sack was shown.[1]

Now, as then, these objects hold a special place in the museum and in the experiences of its visitors. Cole's description of the popularity and impact of the specimens was written long before the opening of *YOU! The Experience*, the exhibit that now houses the foetal specimens at MSI, but the popularity and affective responses to the exhibit remain true. In fact, these specimens, unique in the museum, have always held a particular power.

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1 Catherine Cole, "Sex and Death on Display: Women, Reproduction, and Fetuses at Chicago's Museum of Science and Industry," *The Drama Review* 37, no. 1 (Spring 1993): 47–48.

Megan Bayles is currently a lecturer in American Studies and Gender, Sexuality, and Women's Studies at University of California, Davis, and in Visual and Critical Studies at Montclair State University. She is the co-editor of *Immigrant Voices: 21st Century Stories* (Great Books Foundation, 2014). Bayles holds a PhD in Cultural Studies from University of California, Davis.

The curation of the human medical specimens housed at MSI, which were originally showcased by the Loyola Medical School at the A Century of Progress International Exposition in 1933, also known as the Chicago World's Fair, reflects an expectation on the part of the museum and its curators that visitors will experience the exhibit through the lens of identification—understanding the object of the exhibit to be visitors' own bodies. Further, in both their original exhibition context and their current one, the curation explicitly invites visitors to gain self-knowledge via these specimens, though they do so in different ways. Whereas the 1933 exhibit prompted such identification in the rhetoric around the exhibit, including its title *Know Thyself*, the current exhibit, *YOU! The Experience*, goes further, not only providing many rhetorical identificatory prompts, but also centralizing the visitors' bodies via interactive technological components exhibited alongside the specimens.

Analyzed together, I argue these two exhibits of the same specimens demonstrate a change in the curatorial belief in the power of the objects themselves to produce identification. Drawing from existing scholarship on the role of objects in museums and on science museum visitors themselves, this chapter tracks the perceived and demonstrated shifts in both the display of these human specimen collections and the ways that the display attempts—and sometimes fails—to construct identificatory experiences for visitors.

A Century of Progress

The human specimens now in the collection at MSI were originally showcased by Loyola Medical School at *A Century of Progress International Exposition* in 1933. It marked the first time a medical school in the US had showcased human anatomy to the public. That exhibit was a wild success—both the specimens themselves and the mode of display, pioneered by the exhibitors, were spectacles. Named for Plato's dictum, *Know Thyself* was the most popular scientific exhibit at the fair. *The Loyola News* tracked the popularity of *Know Thyself*; by the second year of the fair, it attracted an estimated 420 visitors each hour, or four out of every five fairgoers.[2]

Divided into two sections, "The History of Human Development" and "The Architecture of the Human Body," *Know Thyself* boasted some eighty embryological specimens and two adult cadavers that had been frozen, then sliced into forty-seven 1-inch (2.54 cm) cross-sections. Dr. J. M. Essenberg, Loyola Medical School Anatomy faculty and the man behind the exhibit, obtained and prepared the body slices from two unclaimed bodies, presumably from the Cook County Morgue. Dr. Helen Button, an obstetrics resident at Cook County Hospital, collected most of the foetal specimens. The cadavers—one sliced vertically, the other sagittally—showed "every organ of considerable size," the major anatomical structures were made more distinct via a dying process pioneered by Dr. Otto E. Kampmeir from the University of Illinois Medical School and executed by

2 Sal Dimicelli, "Medic Embryo Exhibit Fair's Chief Display," *The Loyola News*, October 23, 1934.

medical student Virgil La Fleur.[3] The embryological and foetal specimens ranged in gestational age from a few weeks post-conception to full term and included traditional wet specimens (specimens suspended in formalin, a solution of formaldehyde and water), as well as transparent specimens known as Spalteholz preparations, which make the internal organs and structures visible.[4]

As a framing command, the exhibit's title *Know Thyself* implied that the specimens on display were being presented as inherently the same as the visitors' bodies. Notably, though, outside of the title, the exhibit text did not emphasize visitor identification. The dearth of label and wall text is characteristic of object-based curation, which is not commonly utilized in US science museums today and is certainly not present in the current exhibitionary home of the Loyola specimens. The label text included labels of anatomical structures, diagrams to orient the viewer within the body, drawings to illustrate embryological structures invisible to the naked eye, and the size, approximate gestational age, sex, and "other interesting details" of the embryological specimens.[5] *The Loyola News* reported that "The specimens in gross anatomy as well as in the embryological exhibit are so prepared that the layman cannot only gather information concerning the makeup of the human body, but he can also appreciate the complexity and delicacy of human creation."[6] Much of the reporting of the exhibit's success, though, echoed the identificatory frame. Clearly proud of the success of the medical school's exhibit, *The Loyola News* reported a change in location: "At the beginning of the 1933 Fair, the exhibit was placed in a remote upstairs corridor in the Hall of Science, but at two o'clock the opening day a riot call came from that obscure nook. The people had found *the exhibit showing how they were made* so interesting that it took two hours for the two hundred policemen to disperse the crowd and prevent the collapse of the flooring because of the extraordinary weight."[7] (emphasis added)

The rhetoric of identification is echoed, too, in the paper's first account of the exhibit's popularity. "Loyola's demonstration showing the people what they were and what they are at the present time attracted crowds which stood 10 feet (3.05 m) deep before the cases. Floyd Gibbons, writing in *Cosmopolitan* for November, describes the dense crowds about the exhibit, interested in their personal embryology and anatomy."[8] The presumption is that the throngs of fairgoers are not only overwhelmingly interested in the spectacle of anatomy on display, but that their interest is in their own bodies, or rather, in the notion that the bodies they're viewing are the same as their own bodies, and that by viewing the specimens, they are learning about their own biology and origins. These journalists, though, do not cite any evidence from the fairgoers. Likely,

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3 Ernest Weizer, "Medical School Exhibit at Fair Draws Throngs of Visitors, Records Show," *The Loyola News*, October 24, 1933, 5.

4 Weizer, "Medical School Exhibit," 5.

5 Weizer, "Medical School Exhibit," 5.

6 Weizer, "Medical School Exhibit," 5. (Gross anatomy refers to that which is visible to the naked eye.)

7 Weizer, "Medical School Exhibit," 5.

8 Weizer, "Medical School Exhibit," 5.

then, they were writing about their own experiences viewing the exhibit, or else they observed fairgoers talking about the exhibit in these terms. For these visitors, at least, the specimens themselves, with very little prompting, evoked the experience of identification.

YOU! The Experience

In 1939, shortly after the closing of *A Century of Progress*, Loyola University Medical School loaned (and eventually donated) forty-one of the embryological and foetal specimens, as well as both sliced adult cadavers, to the Museum of Science & Industry. They have been on continuous display since that time. Over the course of their time at the museum, these specimens—particularly the foetal specimens—have been exceedingly popular. MSI's curators report anecdotally that they are often regaled with visitors' memories of visiting the foetal specimens as children, or the surprise of having encountered the body slices in one of their previous homes: a stairwell. Additionally, visitor studies conducted at MSI have demonstrated the "high holding power" of the foetal specimens. One such study, conducted in 1998, showed that visitors spent an average of six minutes with the foetal specimens, with 59 percent of them stopping at individual specimens for closer examination.[9] Beverly Serrell's studies of museum visitor time use discusses the difficulty exhibit designers face in trying to keep visitors in any given exhibit for more than twenty minutes; for the foetal specimens alone to hold six minutes of interest, then, is notable. Several incidents have been observed by MSI staff in which, during power outages and false fire alarms, visitors have neglected to evacuate the building until they have finished viewing all the specimens in the exhibit.[10]

Since 2010, the specimens have been housed in the permanent exhibit, *YOU! The Experience*. For returning visitors to the museum—including those who remember seeing the foetal specimens as children—seeking out the specimens in *YOU! The Experience* may be one draw to the exhibit.[11] Though the Loyola specimens served as the impetus for the exhibit's design and practical implementation, they are relegated both spatially and conceptually to the wings. Several plastinated cadavers, purchased from Gunther Von Hagens's Institute for Plastination, are treated differently from the Loyola specimens; they are spatially centred in the exhibit, and placed alongside the other built exhibit components.[12] The MSI practitioners expressly designed the exhibit bearing in

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9 Kirsten M. Ellenbogen and Susan G. Foutz, "Institute for Learning Innovation: Prenatal Development Exhibition Front-End Evaluation," Visitor Study Prepared for the Museum of Science and Industry, Chicago (Archives of Science and Technology, Museum of Science and Industry in Chicago, June 15, 2004), 3.

10 Barry Aprison, "The Prenatal Exhibit at the Museum of Science and Industry," *Visitor Behavior* 12, no.1 and no. 2 (1997): 25.

11 The MSI curators told me several times that in science museums, the presumption is that you get to see visitors twice: once when they are children, and once when they bring their own children.

12 Gunther Von Hagens is most famous for *Body Worlds*, his exhibits of plastinated *cadavers*. Plastination is a process pioneered by Von Hagens in which the fluids and tissues of a cadaver are

mind the potential discomfort and emotional impact of their small collection of wet specimens, concerns that are empirically unfounded, as they have not been borne out in the museum's own visitor surveys.

YOU! The Experience is the only exhibit at MSI that is specifically about human bodies. One of the two entry points of the exhibit opens onto "Your Future," a section featuring a wall of centenarians' photos, with quotes from them about their longevity printed underneath; a giant board upon which museum visitors scrawl a collective "bucket list" of things they'd like to do in their lifetimes; a machine that takes photos of visitors, asks a few questions, then uses computer software to age the image; and an oral history booth set up to record visitors' stories. The other entrance opens onto "Your Vitality," the most abstract of the eight exhibit areas. There, visitors are greeted by a "laugh garden" in which screens show the faces of laughing individuals; in response to visitors' laughter, the faces on the screen laugh harder. Beyond that, interactive exhibit components invite visitors to learn about the roles of happiness, sleep, and relaxation in overall health and wellbeing.[13] "Your Movement" features a human-sized hamster wheel, as well as a huge screen on which a "virtual coach" guides visitors' projected silhouettes through a tai chi sequence, a basketball lesson, or a hip-hop dance routine. "Your Appetite" investigates the science behind the adage that you are what you eat and features a map of Chicago with information about "food deserts." "Your Heart" is an enormous image of a human heart made of LED lights hanging on the back wall of the exhibit; visitors can grip a handle that measures their heart rate, which is mirrored by the pulsing of the LED lights. "Your Mind" includes interactive games about advertising and emotions: creating compelling ad content on touchscreens, guessing the emotion of another visitor based on facial cues, or composing a self-portrait to demonstrate how you see yourself.

Displayed in wings that flank the central area, the Loyola specimens are spatially separated from the rest of the exhibit. "Your Beginning" is a round, dark room. In the

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replaced by polymers. Von Hagens maintains that the cadavers are all sourced from volunteers, though there have been several allegations that he has illegally sourced bodies, including from executed incarcerated Chinese people, and displayed bodies without express consent. Von Hagens's plastination enterprises, especially *Body Worlds*, have been the subject of much journalistic and academic interest. See T. Christine Jespersen, Alicita Rodriguez, and Joseph Starr, eds., *The Anatomy of Body Worlds: Critical Essays on the Plastinated Cadavers of Gunther Von Hagens* (Jefferson: McFarland, 2009) and John D. Lantos, ed., *Controversial Bodies: Thoughts on the Public Display of Plastinated Corpses* (Baltimore: Johns Hopkins University Press, 2011); there are many news articles about the allegations of illegal and unethical sourcing of cadavers, including Neda Ulaby, "Origins of Exhibited Cadavers Questioned," National Public Radio, August 11, 2006, https://www.npr.org/templates/story/story.php?storyId=5637687; and Luke Harding, "Von Hagens Forced to Return Controversial Corpses to China," *The Guardian*, January 24, 2004, https://www.theguardian.com/world/2004/jan/23/arts.china. For a museum-specific investigation into the ethics of putting *Body Worlds* on exhibit, see Jeffrey N. Rudolph, Diane Perlov, and Hans-Martin Sass, "Body Worlds, An Anatomical Exhibition of Real Human Bodies: Summary of Ethical Review," California Science Center, https://www.mos.org/sites/dev-elvis.mos.org/files/docs/press-kits/Summary%20of%202004-05%20Ethical%20Review%20%20CA%20SCI%20Center.pdf.

13 There are not particularly expansive definitions of "health" or "wellbeing" in the exhibit, leaving space for warranted critiques that are outside the purview of this chapter.

middle of "Your Beginning" stands a large screen, with another smaller touchscreen on a pedestal in front of it. Sliding the arrow on the touchscreen makes the transparent body on the large screen appear increasingly pregnant, shown alongside quotes from various people about their experiences being pregnant. Behind that—almost hidden from view from outside the wing—foetal specimens line the wall in illuminated glass cases, in ascending order of gestational age. An archway at the end of the sequence funnels visitors into a room where they can watch an animated and narrated version of the gestational process unfold on video. The specimens are displayed in glass containers nestled within the back wall, with continuous glass covering the front. Visitors tend to start on the left, at the smallest specimen, and move along the specimens as they are displayed, left to right, in chronological sequence. The display demands intimacy; museum-goers file along the wall, faces pressed to the fingerprint-smudged glass, examining especially the tiniest specimens. The low lights—designed explicitly to limit damage to the specimens—have the effect of significantly changing the ambience of the two wings. The darkness seems to prompt visitors to be quieter in what is otherwise a quite loud museum. I have observed the exhibit many times; visitors nearly always engage the specimens in the same way, standing close to the glass, encouraged by the specimens' size to search out the foetuses' tiny features, remarking to their companions when they find them. I have watched many visitors pause and stare at the final foetal specimen, whose gestational age was thirty-seven weeks, five days—full term. They often vocalized surprise at seeing a specimen that looks so much "like a baby," sometimes wondering aloud whether or not it is "real," despite the museum's wall text confirming its status as a human specimen.

Opposite "Your Beginning" is the other wing, "Medical Innovations." Notably, "Medical Innovations" is the one section not assigned the identificatory "you," implying that it is the least relatable, or perhaps that visitors will feel the least connected to that section. Visitors there are greeted by floor-to-ceiling glass cases containing body slices. Next to these, a small demonstration studio is visible behind glass; iStan®, a patient simulation mannequin, lies on a faux operating table. Behind the body slices, a set of screens showcases different imaging technologies—alternate modes of seeing inside the body. Deeper into the wing, various prosthetic technologies are on display, and one is set up to demonstrate how a prosthetic hand communicates with the nervous system. Visitors can place their hands under a device that detects their veins. In the farthest recesses is an area where visitors are given information about different issues in medical ethics, then electronically polled for their opinions.

Wet specimens are not merely visual objects; there is another, more visceral, affective or emotional experience that often accompanies viewing them. MSI's attention to this distinction is evidenced in their spatial separation from the rest of the exhibit. Though there are practical considerations for this spatial arrangement, it also reflects the museum's concerns around visitor responses to these types of objects, and whether those responses are in alignment with responses to the rest of the exhibit. The wings that house the Loyola specimens are less exposed to vibration and light and are more easily climate controlled. Equally important, though, the placement of specimens off to the sides makes it possible for people to skip those parts of the exhibit, or instead to

have "an intimate or reflective encounter."[14] In other words, these specimens are not only treated with a particular level of conservational care, but they are also housed in ways that consider visitors' potential sensitivities regarding viewing human specimens. Both sets of specimens have large wall text panels posted with the histories of the specimens. A disclaimer hangs on the wall near the foetal specimens, informing visitors that the foetuses all died of natural causes.[15]

This kind of attention to visitor sensitivities is particularly notable because American museums, unlike European museums, have only general guidelines about the ethical display of human remains. Further, most of what the American Alliance of Museums (AAM) has to say about the ethics of such displays is relevant for ethnographic exhibits rather than medical-scientific ones. The AAM rather broadly indicates, "*the unique and special nature* of human remains and funerary and sacred objects is recognized as the basis of all decisions concerning such collections" (emphasis added).[16] It has fallen to the staff of science and medical museums, then, to determine how best to treat human specimens, given their necessary place in these institutions. Museum professionals, including those at MSI, perceive visitors to be particularly sensitive to viewing human remains. Only a few visitor studies have been conducted to assess visitor responses to human remains on display in United States museums, including the National Museum of Health and Medicine's 1999 assessment of visitor response to their collection of human remains.[17] MSI did a front-end visitor assessment of *Prenatal Development,* the foetal specimens' previous exhibitionary home, during the initial planning stages for *YOU! The Experience*. Both studies indicated that visitors were generally comfortable with viewing human specimens and that many very much enjoyed doing so. Respondents did indicate strong desires for contextualization of these objects, however, including the histories and origins of the specimens. MSI visitors particularly liked the spatial separation of the foetal exhibits, both for implicitly providing an option to skip that portion of the exhibit and because they felt it showed greater care and respect for these specimens. Broadly, the respondents in both studies felt that human specimens held high educational value.[18]

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14 Tom Hennes and Patricia Ward, "How the Body Became a Museum Exhibit," Chicago Humanities Festival, Winter/Spring 2010, podcast, http://chicagohumanities.org/events/2010/the-body/2010-how-the-body-became-a-museum-exhibit (site discontinued).

15 Correspondence between Dr. Helen Button, who collected the specimens, and MSI staff indicates that "while they appear normal, a pathologist would be able to identify each one as being the product of an [natural] abortion due to genetic incompatibility" (memo from MSI archives, 1989), though in another letter, Button indicates that many were miscarried due to malnutrition, a common occurrence during the Great Depression. Science and Technology Archives, Museum of Science and Industry in Chicago.

16 American Alliance of Museums, "AAM Code of Ethics for Museums," 2000, https://www.aam-us.org/programs/ethics-standards-and-professional-practices/code-of-ethics-for-museums/.

17 Lenore Barbian and Lisa Berndt, "When Your Insides are Out: Museum Visitor Perceptions of Displays of Human Anatomy," in *Human Remains: Conservation, Retrieval and Analysis,* ed. Emily Williams (Oxford: Archaeopress, 2001), 129–34.

18 Ellenbogen and Fountz, "Institute for Learning Innovation."

Notably, anxieties about the wet specimens in *YOU! The Experience* do not translate to the plastinated specimens. Rather than being relegated to the wings, plastinates are interwoven throughout the exhibit. The plastinates bridge the wet specimens and the interactive technologies because they function as if they are not bodies, but models, something facilitated by the fact that they look—and mostly are—plastic.[19] They are tidy and clean, shiny and colourful. The polymers that have been injected into the tissues of the cadavers are bright reds, clean whites, and deep blues. Plastinated specimens serve as a spatial and metaphorical bridge between the exhibit's wet specimens and built interactive technologies. In this way, they connect the two wings of the exhibit that house the historical wet specimens, offering a visual transition from the wet specimens, as they share both the structures of the human body and the sleek visual appearance of the interactive machines.

Though the Loyola specimens hold high visitor appeal, and despite the metaphorical centring of the specimens in the design process, the built interactive components of the exhibit that invite visitor participation and input occupy most of the exhibit space and are spatially centred. As such, visitors supply almost all the bodies in the exhibit. Per the exhibit title and subtitles, *YOU!* explicitly invites visitors to identify with the exhibit; visitors' personal experiences are central, redefining the purpose of the exhibit to that of making people more aware of their own lives, having the exhibit converse with and about "you"—ideally in a way that crosscuts visitors' ages, health statuses, etc. The exhibit encourages visitors to participate in very personal ways, expressly encouraging them to think about all aspects of the exhibit—from laughter to sleep to diet to aging—in terms of their own "experience of life" via highly narrativized interactive components. I interpret this discrepancy between the desire to centre the human specimens and the emphasis on interactive technologies that, in fact, centres visitors' bodies, to reveal an anxiety about what the specimens can—and, perhaps more importantly, cannot—communicate to visitors.

Interactive Technology and the Visitor Body

Museum scholars have noted the paradoxical shift in the status of museum objects. Museums once packed walls and display cases full of collections of historically significant objects; museums today house an astonishing quantity of objects, but fewer and fewer of them find their way to the gallery.[20] Steven Conn, alongside Barbara Kirshenblatt-Gimblett and other museum scholars, argues that museums don't often view objects as being capable of reliably speaking for themselves: "the place of objects in museums has shrunk as people have lost faith in the ability of objects alone to tell stories and

19 Catherine Francis Belling, "Being Non-Biodegradable: The Lonely Fate of Metameat," in *Controversial Bodies: Thoughts on the Public Display of Plastinated Corpses*, ed. John D. Lantos (Baltimore: Johns Hopkins University Press, 2011), 20. The plastination process leaves about 30 percent of the biological material intact; the rest is replaced with polymers.

20 Steven Conn, *Do Museums Still Need Objects?* (Philadelphia: University of Philadelphia, 2010).

convey knowledge."[21] It is often hard to distinguish who or what is talking, given the many voices surrounding objects in the museum: wall text and labels, guide brochures, docents, audio tours, and so on. Of central concern in the case of the specimens at the centre of this chapter is the ability—or perceived ability—of bodies, as museum objects, to tell stories.

Human medical specimens work with—and against—the contextualization of museums and medicalization because they are unruly objects, out of bounds or unrecognizable in their original forms/contexts. While there are, of course, discernible and familiar aspects to them, often the visuals are overwhelming and disorienting. Human specimens don't always look like the models or drawings that are used to teach most of us about biology. This does not appear to discourage museum visitors. Rather than shy away from objects or exhibits that are visually chaotic, confusing, or that defy familiar narratives, visitors in science and medical history museums demonstrate being quite compelled by human specimens on display—even, as noted in visitor surveys, wanting more, though this evidence of public pleasure and curiosity, too, prompts some degree of concern and anxiety on the part of institutions and museum practitioners. While visitors convey wanting to see more (and "weirder") objects, this must be balanced with museum missions, intentions, and an avoidance of displays that might seem disrespectful to human remains. While contemporary museums seek to distance themselves from forms of display such as circus sideshows and dime museums,[22] it also seems clear that the objects that are most successful and compelling to visitors are those that demonstrate or reveal the complexity and messiness, the extraordinary nature of bodies. But this kind of mess—and this kind of relationship to objects—is not the bailiwick of the science and technology museums.

Evidenced by several other exhibits in science museums in the United States, including the Houston Health Museum's *You: The Exhibit* and the Oregon Museum of Science and Industry's Life Hall, exhibit designers and museum practitioners are increasingly focused on a personal/personalized exploration of bodies and away from biological universals. *YOU! The Experience* acknowledges—even highlights—the fact that though bodies share a great deal in common, they are also all unique, particularly when it comes to the lived experience of having a body. Notably, MSI is the only one of these museums that has integrated actual human specimens into an exhibit of this type.[23] The continued display of their historic specimen collection speaks to its continued epistemological (and emotional/nostalgic) value while the vast array of interactive components in the exhibit

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21 Conn, *Do Museums Still Need Objects?*, 7; see also Barbara Kirshenblatt-Gimblett, *Destination Culture: Tourism, Museums, and Heritage* (Berkeley: University of California Press, 1998), 31.

22 Andrea Stulman Dennett, *Weird and Wonderful: The Dime Museum in America* (New York: New York University Press, 1997). Dime museums were a US cultural formation popular in the late nineteenth and early twentieth centuries particularly popular among working class people. Dime museums often blurred the lines between education and entertainment, as well as between "real" and produced spectacles.

23 The Oregon Museum of Science and Industry has a *Prenatal Development* exhibit that consists of foetal specimens, but it is not integrated with the other exhibits in its Life Hall.

may indicate the limits of those objects and their functionality in terms of identification and experiential learning. *YOU!*'s treatment of bodies is the result of institutional anxiety about the display of human specimens, but also about the limits of human specimens' ability to communicate the desired message of the exhibit. That is, the exhibit manifests the gulf between the presumed experience of interfacing with human specimens and that which can be produced by technology.

In *YOU! The Experience*, exhibit design eschews the model of the body as a machine. However, the exhibit itself embraces machines as integral to the experience of the exhibit and the knowledge it constructs. The exhibit is not about knowing bodies *as* machines, but *through* machines. These technologies produce the exhibit as an immersive environment for visitors. Upon entering the exhibit area, visitors are invited to engage at every turn—not only by looking, but also touching, pushing, playing, moving. Visitors' own bodies become not only the means by which they take in the content of the exhibit, but also produce that content. Their own bodies become experimental and experiential sites. Further, they exemplify MSI's approach to education through interactivity, with a focus on individualized experiences. Many of these interactive components also produce experiences that request input from the visitor. On a practical level, this enables the museum to collect information from visitors, as well as to gauge how and how much various elements of the exhibit are being engaged.

Arguably, though, all aspects of a museum exhibit are "interactive." Former MSI curator Barry Aprison wrote of the display of foetal specimens in *Prenatal Development,* the precursor to *YOU! The Experience*, "The exhibit is interactive without interactive technology. There are no computers or mechanical devices. The experience is real and immediate."[24] In other words, Aprison's observations of visitors' interactions with the foetal specimens are of active engagement rather than passive observation. The overwhelming presence of interactive technologies in *YOU! The Experience* privileges embodied experience. The interactive technological components of *YOU! The Experience* are there to concretize otherwise intangible—and often invisible—aspects of embodiment. They demonstrate and produce various aspects of bodies that are not conveyed by the exhibited specimens, including appetite, cognition, lifestyle, and movement. These are beyond the purview of the visual knowability of bodies.

US science museums have always encouraged visitor participation and interaction. This is largely tied to the way that they choose to present science. As Alison Griffiths notes, "at least in the world of museum education, interactivity—premised on a constructivist (learn by doing) versus a behaviourist/didactic (learn by being taught) model of learning—connotes agency, a more dialogic model of visitor-centered learning… [and] opportunities for visitor feedback."[25] In this model, visitors make meaning through

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24 Aprison, "The Prenatal Exhibit," 25.

25 Alison Griffiths, *Shivers Down Your Spine: Cinema, Museums and the Immersive View* (New York: Columbia University Press, 2012), 185. For more on constructivist museum models, see George E. Hein, *Learning in the Museum* (New York: Routledge, 1998). For more on interactivity and education, see, among others: Paola Rodari, "A Game of Democracy: Science Museums for the Governance of Science and Technology," *Journal of Science Communication* 9, no. 2 (2010): 1–3;

their own associations. In keeping with the general trend in American science museums, MSI's goal has been not to display the history of science but to illustrate *principles* of science, particularly their application to industry.[26] Visitor interaction has contributed to this present-tense sense of producing and participating in science, rather than observing it from afar. Historian Jay Pridmore writes of MSI, "In the early years, curators piqued the interest of youngsters and adults alike with strange and sometimes exotic sights … Such demonstrations-in-motion, especially those which invited the visitor's active participation, encouraged people to think about strange and marvellous things, and ask questions of their own."[27] Through participation, visitors can see themselves as practitioners of science, as knowledge-makers.

The notion of interactivity and learning is the preeminent characteristic of the "post-museum," wherein the authority of the museum is theoretically subsumed by visitors' own meaning-making.[28] David Gruber argues, however, that rather than eliminating museum authority, in many of these post-museum exhibits, "scientific knowledge can be seen or applied only if and when visitors adopt scientific authority and regulated ways of seeing. Indeed, the post-museum, in requiring user engagement and playfulness, seems likely to prepare scripted performances or position visitors' own bodies as the objects of scientific inquiry."[29] Considering *YOU! The Experience* within this framework, and its use of visitor bodies as the central bodies through which the exhibit functions, reveals something about its desired and purported outcomes. The exhibit was explicitly designed to showcase and celebrate the extraordinary nature of the body, with a goal of inciting in visitors a desire to treat their own extraordinary bodies with more care, in turn leading to greater health.[30] Rather than say that explicitly, though, the exhibit—in keeping with Gruber's argument—relies on visitors aligning themselves with the subverted authority of the museum in considering what health means and how to accomplish it.

The two different exhibitionary contexts for the same set of objects analyzed in this chapter reveal a shift in the curatorial understanding of the power of the objects themselves. While both exhibits explicitly name an experience of identification in the exhibit text, they are drastically different in the ways they attempt to produce that experience for visitors. Changes in museums' relationship to objects broadly speaking, and to the Loyola specimens specifically, mark both a decreased faith in the ability of these objects to convey knowledge—despite evidence that visitors find them very compelling—and a shift in the way meaning-making and knowledge production are understood. That is, while the original display for these specimens, *Know Thyself*, functioned on the linkage

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David R. Gruber, "Medicalization of the Post-Museum: Interactivity and Diagnosis at the Brain and Cognition Exhibit," *Journal of Medical Humanities* 37 (2016): 65–80.

26 Conn, *Do Museums Still Need Objects?*, 159.

27 Jay Pridmore, *Museum of Science and Industry, Chicago* (New York: Abrams, 1997), 35.

28 Gruber, "Medicalization of the Post-Museum," 65.

29 Gruber, "Medicalization of the Post-Museum," 66.

30 Patricia Ward, in discussion with the author, September 7, 2011, and in Tom Hennes and Patricia Ward, Chicago Humanities Festival podcast.

among seeing, knowing, and identification or self-knowledge, the current exhibit, *YOU! The Experience*, shies away from this linkage, instead relying increasingly on knowledge production that comes not from seeing but from doing.

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