

This PDF includes a chapter from the following book:

# **Proxies**

## **The Cultural Work of Standing In**

© 2021 Massachusetts Institute of Technology

### **License Terms:**

Made available under a Creative Commons  
Attribution-NonCommercial-NoDerivatives 4.0 International Public  
License

<https://creativecommons.org/licenses/by-nc-nd/4.0/>

### **OA Funding Provided By:**

The open access edition of this book was made possible by  
generous funding from Arcadia—a charitable fund of Lisbet  
Rausing and Peter Baldwin.

The title-level DOI for this work is:

[doi:10.7551/mitpress/11765.001.0001](https://doi.org/10.7551/mitpress/11765.001.0001)

# Index

*Note:* Page numbers in *italics* refer to figures and tables.

- Abbate, Janet, 107–108, 223n71, 224n86
- Abrahamson, Stephen, 148–149, 158
- Abuse normalization, 138
- Accessibility-security paradox, 55
- Affective injustices, 138–139
- Agostinho, Daniela, 45
- Ahmed, Sara, 80, 131
- Alder, Ken, 58
- Allen, Jamie, 143
- Analogies, 5, 25, 28, 209n74, 209n77, 210n88
- Andrews, Harry, 103
- Archives, 199
- Aronson, Louise, 163
- ARPANET, 97
- histories of, 107–108
  - image transmission tests, 74
  - military contexts, 108
  - Roberts's research, 98
  - SIPI's work on, 108, 116
  - USC node, 223n71
- Art
- functions, 192
  - "Girls on Film," 189
  - Kodak Three Point Reflection Guide*, 189
  - Lena test image in, 141–143, 191, 230nn71–72
  - measurement tools in, 187–188
  - Shirley Card spoofs, 189–190
  - "Standard Evaluation Materials," 189, 237n15
  - standardized patients, 191
  - test materials appropriation, 190
  - 3 stoppages étalon*, 184–188
- Average man, 25–28, 210n89
- Bains, Sunny, 113
- Banet-Weiser, Sarah, 136
- Barad, Karen, 65, 69
- Barrows, Howard, 191. *See also* Standardized patient program, Barrows and Abrahamson's
- Barry, Andrew, 70
- Battle of Mogadishu, 1–3
- Benchmarks, 18–19, 85
- Berlant, Lauren, 77
- Bonhoure, Albert, 66–68
- Bowker, Geoffrey, 28, 48, 193
- Broomberg, Adam, 190
- Broussard, Meredith, 137
- Browne, Simone, 86–87
- Buck, Julie, 189
- Bulletin Board System (BBS), 116
- Bureau International des Poids et Mesures (BIPM), 55, 61, 65, 68, 71

- Burke, Kenneth, 140
- Burrington, Ingrid, 197–198
- Busch, Lawrence, 47
- Butler, Judith, 130
- Canguilhem, Georges, 217n88
- Carnegie Mellon University, 136
- Chains of iteration, 122, 124, 130–131, 140
- Chanarin, Oliver, 190
- China Girls test images, 89–91, 107, 189
- Christensen, Alice, 207n54
- Christensen, Ward, 116
- Chun, Wendy Hui Kyong, 125
- Citation patterns, 121
- Cities as proxies, 15–16
- Cleaning. *See* Hygiene; International  
 Prototype Kilogram cleaning
- Clinical gaze, 149
- Comité International des Poids et Mesures  
 (CIPM), 55, 69, 215n64
- Comparison, 64–65
- Concealment  
 forgetfulness, 12–13, 47  
 infrastructure, 12–13, 184, 193–198  
 invisibility of proxies, 13, 30  
 IPK, 195  
 standards, 183, 186, 195. *See also* Visibility
- Conférence Générale des Poids et Mesures  
 (CGPM), 55, 62–63
- Consumer Price Index (CPI), 13–14, 206n39
- Cowan, T. L., 45
- Cullen Dunn, Elizabeth, 46
- Cultural work of proxies, 9, 19, 143, 201–202
- Culture  
 chains of iteration, 122, 124, 130–131,  
 140  
 circuits, 192  
 contexts of proxies, 191  
 definition, 5  
 Lena test image, 80–81  
 power of, 140  
 proxies as, 86, 146, 202
- Daston, Lorraine, 8
- Data, 76–78, 84–86, 110. *See also* Test data
- Data hygiene, 38–40  
 as analytic term, 69  
 cleaning *versus* sanitizing, 44  
 media content, 43–45  
 money laundering, 40–41, 212n22  
 offices, 43  
 and power, 45  
 purposes, 40  
 standardized patients, 162–163  
 voter suppression, 41–42, 45
- Davis, Angelique, 157
- Davis, Lennard, 160
- Defaults, 96
- Delegation, 6–8
- DeNardis, Laura, 48, 214n49
- Derrida, Jacques, 63
- Digital images. *See* Image coding and  
 processing
- Dirt, 39, 41, 44–45
- Disability, 160–162, 169
- Doane, Mary Ann, 89
- Douglas, Mary, 39, 41
- Downey, Greg, 180
- DuBois, Luke, 191
- Duchamp, Marcel, 184–188
- Dyer, Richard, 88, 93
- Earnest, Les, 100
- Edge detection, 106–107
- Emotional labor, 146, 230n3
- Epstein, Jeffrey, 137, 229n60
- Ernst, Rose, 157
- Eugenics, 26–27
- Exemplars, 9–10
- Fictions  
 proxies as, 25, 27  
 statistical, 25–27  
 Vaihinger's theory of, 25, 28, 209n74,  
 209n77, 210n88

- Fixed points, 17, 207n55  
 advantages of, 186–187  
 analytic method, 39  
 arbitrary precision, 19, 46–47, 59–60  
 legitimizing functions, 18, 53  
 maintenance, 18  
 measurement prototypes, 59, 64,  
 185–186  
 measurement systems, 17–18, 37–38, 54,  
 58, 60  
 standardized patients, 147, 166  
 test images, 84–85, 115. *See also*  
 International Prototype Kilogram
- Fleming, Sandford, 49–50
- Flyverbom, Mikkel, 195
- Ford, Lisa, 203n6
- Forsén, Lena, 73, 113, 119, 129, 141, 143.  
*See also* Lena test image
- Foucault, Michel, 149
- Frenkel, Karen, 135, 137
- Frid-Jiminez, Amber, 230n72
- Fuller, Matthew, 236n6
- Funhouse mirror politics, 136
- Galison, Peter, 8, 62
- Garland Thomson, Rosemary, 159
- Gender, 43, 130, 133–134, 136. *See also* Test  
 image femininity; Women
- General Conference on Weights and Measures  
 (CGPM), 55, 62–63
- “Girl” test image, 105, 106, 223n79
- Goffman, Erving, 159
- Goodwin, Charles, 81–82, 219n20
- Gordon, Lewis, 87–88
- Guins, Raiford, 44
- Hall, Rachel, 152, 197
- Hancock, Ben, 21–22
- Harmon, Leon, 101
- Hasinoff, Amy, 126, 227n38
- Hawkins, Timothy, 129
- Hay, Deborah, 101
- Hecht, Gabrielle, 196
- Heritage Foundation, 42
- Hetherington, Kregg, 196
- Hicks, Mar, 133
- Hochschild, Arlie Russell, 230n3
- Homosocial desires, 76–77, 101
- How Not to Be Seen: A Fucking Didactic  
 Educational .MOV File*, 188
- Hsu, Hsuan, 149
- Hutchinson, Jamie, 120
- Hygiene, 39, 41, 43–45. *See also* Data  
 hygiene; International Prototype  
 Kilogram cleaning
- IEEE Transactions on Image Processing*,  
 120–122, 225n16
- Igo, Sarah, 15, 207n48
- iLena test image, 131–132
- Image coding and processing  
 circulation, 110  
 digitization, 97  
 disciplinary consolidation, 120  
 edge detection, 106–107  
 military applications, 108–109  
 problems of, 103, 144  
 professionalization, 140–141  
 research at SIPI, 103–107  
 salient feature extraction, 106–107  
 skin tone biases, 84, 86–89, 93–94  
 training, 133–134, 140–141. *See also*  
 Images of nude women; Test images
- Image proxies, 81, 138. *See also* Test images
- Images of nude women  
 at Bell Labs, 101  
 control of women’s bodies, 111–112  
 in engineering training, 133–134  
 at MIT, 98–99  
 at Stanford, 99–101  
 suspension of disbelief, 78  
 treatment as technical accomplishments,  
 101. *See also* Lena test image; *Playboy*  
 magazine; Pornography

- Information Processing Techniques Office (IPTO), 97, 102, 108, 223n71, 224n86
- Infrastructure, 13  
analytic methods, 183–184, 193, 196  
breakdowns, 193, 196  
concealment and visibility, 12–13, 184, 193–198  
crises, 196, 238n35  
definitions, 193–194  
good *versus* bad, 195–196  
knowledge, 19  
standards as, 186–187
- Intellectual property  
Digital Millennium Copyright Act, 227n35  
Lena test image, 117–120, 129–130  
Playboy Enterprises enforcing, 117, 127
- International Prototype Kilogram (IPK), 53–54  
accessibility and security, 53–55, 215n64  
concealment, 195  
conventionality, 72  
creation, 61  
enclosure, 62, 71, 183  
environment, 69–71  
ideologies, 54  
infallibility, 63–64  
mass changes, 70  
mass definition, 63–64, 68–69, 217n88  
porousness, 69–70  
as proxy, 56  
replacements of, 36–38, 53, 72, 211n4  
self-sufficient status, 65  
symbol representing, 54  
traceability, 56–57, 65  
uncertainty regarding, 65–66  
verification, 68  
visibility, 197  
witnesses, 61–62, 65–66, 68, 71  
as working object, 11. *See also* International Prototype Kilogram cleaning
- International Prototype Kilogram cleaning, 11, 38  
diagrams, 51, 52, 67  
errors, 66–68  
instructions, 50–53, 56, 66  
during manufacture, 66  
and mass definition, 68–69  
ontological significance, 55–56
- International Prototype Meter, 64, 185–186
- The Internet  
bigotry and hatred, 126  
Bulletin Board System, 116  
history, 107–108, 111  
infrastructural labor, 128, 227n37  
infrastructure visibility, 197–198  
pornography, 125–129  
regulation attempts, 126. *See also* ARPANET
- IPK. *See* International Prototype Kilogram
- Irigaray, Luce, 140
- Jamison, Leslie, 162–163  
“Jennifer in Paradise” test image, 91–92, 96
- Jevons, William Stanley, 25–26
- Johnson, W. Scott, 74
- Johnson & Matthey, 60, 66, 216n79
- Jokes  
about the meter, 184–187
- Kafer, Alison, 161
- Kahn, Bob, 108
- Katz, Elihu, 16
- Knoll, John, 91–92
- Knowledge production, 12, 19, 171, 197
- Knowlton, Kenneth, 101
- Kodak film skin tone biases, 93–94  
*Kodak Three Point Reflection Guide* (performance art), 189
- Kuhn, Thomas, 9–10, 205n27
- Labor  
contexts of mistreatment, 139–140  
emotional, 146, 230n3

- gendered, 43, 174–175, 228n53
- infrastructural, 128, 176, 227n37
- knowledge, 12
- standardized patients, 171, 174–176
- test images, 79, 124
- Lampland, Martha, 18, 195–196
- Latour, Bruno, 7, 71, 204nn16–17
- Lazarsfeld, Paul, 16
- Leahy, Richard, 103
- Lehmann, Ann-Sophie, 236n11
- Lena test image, 73–74, 113, 115
  - appearance of, 80, 97, 106
  - in art and media, 141–143, 191, 230nn71–72
  - bans on, 141
  - benchmarks, 85
  - circulation, 110–111, 116
  - concealment, 195
  - contemporary image standards, 96–97
  - data compression, 110
  - in engineering culture, 80–81
  - feminine whiteness, 112, 115
  - as fixed point, 85
  - formal descriptions, 110
  - as icon, 141–142, 144, 183
  - in *IEEE Transactions on Image Processing*, 120–122, 225n16
  - iLena image reproduction, 131–132
  - intellectual property issues, 117–120
  - justifications for use, 110, 122
  - labeling, 116, 225n8
  - masculine discourse, 140
  - norm perpetuation, 130–131
  - notoriety, 113, 114
  - in *Optical Engineering*, 114, 117–119, 129–130, 141, 225n11
  - patriarchy, 127
  - persistence, 81, 83, 129
  - Playboy* lawsuit, 117–120, 129–130
  - politics of, 112, 117–125
  - porousness, 102, 143
  - professional vision, 81
  - as property, 129–130, 132
  - reproduction, 74
  - resisting the use of, 131
  - and seeing, 144
  - separation from the centerfold, 82–83
  - separation from the model, 82, 220n22
  - as sexist, 120, 123–124, 133, 141, 226n23
  - sexualization, 122
  - smallest printing of, 224n92
  - trained incapacities, 140–141
  - ubiquity, 74, 117, 124
  - uses, 86, 110, 127. *See also* Lena test image contexts; Lena test image creation narratives
- Lena test image contexts
  - abusive, 132–133
  - cultural, 127–128, 132, 140–141
  - institutional, 102–107, 115
  - professional, 83, 97, 101–103, 111, 139
- Lena test image creation narratives
  - centerfold folding and tearing, 75–76, 197
  - common features, 74–75, 78
  - homosocial desire, 76–77
  - image selection process, 75–76, 80
  - image selection reasons, 78, 109–110, 138
  - professional vision creation, 81
- Lincoln, Martha, 149
- Literature, 65, 207n54
- Losing Lena* documentary, 141
- Lynch, Robin, 101, 190
- Lynd, Helen, 15
- Lynd, Robert, 15, 207n48
- Maguire, Ryan, 191
- Marvin, Carolyn, 35
- Masculinity, 76–77, 101, 218n7
- Massachusetts Institute of Technology (MIT)
  - hackers, 137, 228n58
  - images of nude women at, 98–99
  - influence and reputation, 136–137
  - Minsky, Marvin, 137, 228n58, 229n60
  - women's experiences, 136–139, 229nn60–61

- Material turns, 192, 194
- McCarthy, John, 99, 137
- McGill Pain Questionnaire, 154–155
- McKinney, Cait, 12
- McWilliams, Rose, 171–172, 173, 176, 179
- Measurement
- American, 63
  - comparison, 64–65
  - difference identification, 62
  - need for standards, 36–37
  - de Podesta on, 35–37
  - ritual bolstering, 71
  - standard systems, 58
  - traceability, 56–57. *See also* Metric system
- Medical education, 147, 167. *See also*
- Standardized patient programs
- Medical experimentation, 156–157
- Medical professionals
- doctors, 148, 153, 164–165
  - emotional labor, 146, 230n3
- Medical systems
- clinical gaze, 149
  - disability, 160–162, 169
  - pain, 153–158
  - racism, 155–157
  - suspension of disbelief, 164
  - white supremacy, 156–157. *See also*
  - Standardized patient programs
- Melas, Natalie, 64–65
- Melzack, Ronald, 154–155
- Mendel, David, 164–165
- Metric system
- arbitrariness, 58–61
  - Bureau International des Poids et Mesures, 55, 61, 65, 68, 71
  - creation of, 49, 54–55, 58–61
  - inaccuracies, 59–60
  - jokes about, 184–187
  - kilograms, 59–64
  - management, 55
  - mass redefinitions, 37–38, 65
  - meters, 18, 58–63, 217n89
  - Metre Convention, 60–61, 63
  - original basis, 17–18, 58
  - scope, 58
  - success, 59–60. *See also* Metric system
  - standard objects
- Metric system standard objects
- authority, 63
  - kilograms, 59–61
  - meters, 59–63
  - philosophical inquiries, 64
  - ritual burial, 62–63, 71. *See also*
  - International Prototype Kilogram
- Middletown studies, 15–16, 28, 96, 207n48
- Minsky, Marvin, 137, 228n58, 229n60
- Moran, Mayo, 14–15
- Munson, David, 121–125, 140
- Murphy, Michelle, 10, 43
- “Musicians” test image, 94–96
- National Physical Laboratory (NPL), 35, 211n2
- Nation-states, 49
- Nietzsche, Friedrich, 29
- Norman, Geoffrey, 148
- Normate, 28–29, 88, 96, 159
- Norms, 30, 130
- Norm-swapping, 16
- NPL (National Physical Laboratory), 35, 211n2
- Object arrivals, 80
- Olesko, Kathryn, 49
- Optical Engineering*, 114, 117–119, 129–130, 141, 225n11
- Ordinariness, 19
- Pachirat, Thomas, 239n42
- Paglen, Trevor, 191, 230n72
- Pain, 153–158
- Peirce, Charles S., 217n91
- Performance as proxy, 165–166
- Phantasmagrams, 10, 27

- Pixl test images, 90, 91
- Planck, Max, 50
- Planck constant, 37, 211n8
- Platform moderation, 128, 227n37
- Playboy Enterprises, 117–120, 127, 129–130
- Playboy Enterprises, Inc. v. Russ Hardenburgh*, 127–129
- Playboy Enterprises, Inc. v. Webbworld Inc.*, 127
- Playboy* magazine
- issues at SIPI, 76–77, 80, 98, 102, 111, 133
  - Lena centerfold, 73
  - photographs used as test images, 98–99. *See also* Lena test image
- Podesta, Michael de, 35–38, 64
- Politics of representation, 6, 19, 28. *See also* White skin in test images
- Politics of standing-in, 138
- Pornography
- in computer science environments, 132, 135–136
  - feminist debates, 226n23
  - internet, 125–129
  - mainstreaming of, 111
  - new media adoption, 125. *See also* Images of nude women; Lena test image
- Porosity of proxies, 27, 39, 146, 201
- and culture, 86
  - IPK examples, 69–70
  - Lena test image, 102, 143
  - mediating function, 20
  - standardized patients, 146
  - test image examples, 78
- Pratt, William, 98, 102–103, 131, 223n79
- Professional vision, 81, 219n20
- Prototype objects. *See* Standard objects
- Prototypical whiteness, 86–88, 96, 120
- Proxies, 4–5
- accessibility–security paradox, 55
  - averageness, 25–27
  - bodily, 8
  - critique, 171
  - environmental interactions, 70
  - as fictions, 25, 27
  - following, 200–201
  - humans sustaining, 11–12
  - influence, 202
  - legal system, 14
  - living, 10–11
  - maintenance needs, 70–71, 143, 146, 198
  - materialized hypotheses, 47–48
  - mediation, 5, 20
  - ordinariness, 19
  - power, 30, 33
  - problem appearance, 33
  - reality creation, 28–29
  - reality practices, 22
  - requirements for functioning, 53
  - revealing norms, 9
  - selection consequences, 15–17
  - spectacularity, 183
  - taking for granted, 6–7, 19
  - ubiquity of, 7
  - unjust, 139
- Proxification, 5, 14
- Proxy servers, 12
- Quetelet, Lambert “Adolphe” Jacques, 25–26
- Quinn, Terry, 38
- Racial gaslighting, 157
- Racism
- denial of Black pain, 155–157
  - infrastructure, 196–197
  - medical systems, 156–157
  - standardized patient programs, 157–158
  - training data, 84–86
  - voter suppression, 45. *See also* Test image racism; Whiteness; White skin in test images
- Rault, Jas, 196
- Raven, Lucy, 189, 237n15
- Reasonable person proxies, 14–15



- Reenactment, 165–166
- Rentschler, Carrie, 138
- RI. *See* Royal Institution of Great Britain
- Rituals, 38–39, 71, 171, 187
- Roberts, Lawrence, 98–99, 102, 107
- Roth, Lorna, 90, 94, 190
- Royal Institution of Great Britain (RI), 35
- Ruhleder, Karen, 193
- Russell, Andrew, 6
- Salient feature extraction, 106–107
- Sawchuk, Alexander, 74–76, 80, 115–116, 138
- Scarry, Elaine, 153–155, 158, 232n23
- Schechner, Richard, 166
- Schneider, Rebecca, 165–166
- Schwartz Cowan, Ruth, 43
- Scott, James C., 49, 59–60
- Scott, Joan Wallach, 134
- Sedgwick, Eve, 76–77
- Seeing and not seeing, 140
- Segal, Karin, 189
- Settler colonialism, 203n6
- Sexism
  - Lena test image, 120, 123–124, 133, 141, 226n23
  - test images, 6, 130. *See also* Images of nude women; Test image femininity; Women in STEM
- Sexuality and technology, 76–77, 79
- Sex work and pornography debates, 226n23
- Shapin, Steven, 8–9
- Shirley cards, 87, 90–91, 94–96, 107
- Shirley Card spoofs, 189–190
- Siebers, Tobin, 169
- Signal and Image Processing Institute (SIPI)
  - ARPANET work, 108, 116
  - Department of Defense funding, 102–103, 223n71
  - history, 97, 102–104, 223n71
  - image processing research, 103–108, 111
  - Playboy* magazine at, 77, 80, 98, 102, 111, 133
  - reputation, 80
  - test images, 97, 104–106, 115–116. *See also* Lena test image
- Simpson, Audra, 203n6
- Simulated towns, 21. *See also* Yodaville
- Simulation, 167
- Sjööblom, Lenna. *See* Forsén, Lena; Lena test image
- Slaton, Amy, 223n71
- Spertus, Ellen, 135–136
- Srinivasan, Amia, 138
- Stallman, Richard, 229n60
- Standardization, 6
  - analytic approaches, 50
  - cultural circuits, 192
  - early, 49
  - fixed point selection, 46–47
  - materialism, 18
  - social contexts, 46
  - suspension of disbelief, 163
  - utopian, 49–50
- Standardized patient program, Barrows and Abrahamson's
  - advantages of, 167–168, 175
  - development, 148–149
  - normalcy's role in, 158
  - physician evaluation, 179
  - SP hiring, 171, 174–175
  - SP training, 180, 235n87
  - as transitional aid, 169
- Standardized patient programs, 10–11, 145–146
  - the clinical gaze, 149
  - criticisms, 166, 171
  - development, 148–149
  - exams based on, 146, 230n4, 231n8
  - goals, 152–153, 166
  - Master Interviewing Rating Scale (MIRS), 149, 232n21
  - media coverage, 171–172, 173
  - normalcy's role in, 158–159

- origins of, 147–148, 157
- pain communication, 153–154
- patient templates, 149–150
- physician evaluation, 179
- prototypical able-bodiedness, 169
- racism, 157–158
- relationality, 161–162
- scenarios, 149–152
- suspension of disbelief, 158–163, 168
- theater of transparency, 152
- Standardized patients
  - advantages over actual patients, 166–168, 175
  - authority of presence, 168–169
  - data hygiene, 162–163
  - with disabilities, 170
  - disability performance, 169
  - enactment practices, 166
  - expertise, 176, 178–179
  - fixed point status, 166
  - gig work, 175–176, 179, 235n76
  - hiring criteria, 159
  - infrastructural labor, 176
  - instrumentalization, 148, 168, 174
  - labor sources, 171, 174–176
  - maintenance, 162
  - McWilliams, Rose, 171–172, 173, 176, 179
  - in media, 183, 191, 235n76
  - obesity studies, 169–170
  - pay rates, 176–179
  - physician evaluation, 179
  - power, 179–180
  - prophylactic functions, 166–167
  - proxy logic resistance, 180–181
  - reproducibility *versus* verisimilitude, 166
  - roles, 148–149
  - scripts, 150–151
  - Taylor, Lynn, 171–172, 175, 179, 191
  - term significance, 148, 231n12
  - as test data, 159–160
  - trainee physician encounters, 149
  - training, 180, 235n87
  - visibility, 197
  - women, 171–175
- Standard objects
  - circular definitions, 64
  - media ecologies, 236n6
  - metric system, 59–64, 71
  - semiotics of, 217n91
  - verification, 68
- Standards
  - categorization, 48–49
  - common histories, 116
  - concealment, 183, 186, 195
  - enforcement and maintenance, 180, 216n70
  - fixed point use, 186–187
  - future behavior influence, 152
  - infrastructural impacts, 130
  - as infrastructure, 186–187
  - interoperability, 48–49, 63, 214n49
  - limits, 144
  - materiality, 192
  - NTSC television, 91
  - organizational power, 46
  - and power, 48–49
  - proxies maintaining, 180
  - purposes, 46, 48
  - reference use, 186
  - reproducing phenomena, 47
  - secondary, 57
- Stanford Artificial Intelligence Lab (SAIL), 99–101
- Stanislavski, Constantin, 163–164
- Star, Susan Leigh
  - on categorization, 48
  - on infrastructure, 193, 195–196
  - on reality creation, 28
  - on standardization, 18
- Statistics
  - average man, 25–28, 210n89
  - development of, 26
  - Middletown studies, 15–16, 28, 96, 207n48

- Steedman, Carolyn, 199
- Steinfeldt, Anne, 128
- Steyerl, Hito, 188
- Stickiness of proxies, 8, 39
- Stillman, Paula, 232n21
- Strathern, Marilyn, 5, 80
- Suess, Randy, 116
- Suspension of disbelief
  - empathy, 162
  - medical doctors, 164
  - nude women in test images, 78
  - proxy reliance on, 8, 23, 25, 29
  - standardization, 163
  - standardized patient programs, 158–163, 168
  - theatrical, 23, 163–164
  - Yodaville, 7, 23
- Sutherland, Ivan, 104
- Swartz, Lana, 41
- Taylor, Janelle, 145, 168
- Taylor, Lynn, 171–172, 175, 179, 191
- Témoins* (witnesses), 61–62
  - comparison need, 65–66
  - enclosure, 61, 71
  - verification, 68
- Test data
  - creating normativity, 84–85
  - materialization, 12
  - standardized patients, 159–160
  - versus* training data, 84–85
  - Yodaville, 22
- Test image femininity, 86
  - China Girls (film), 89–91, 107, 189
  - consumption of, 89
  - Girl (image recognition), 105, 106, 223n79
  - image recognition research, 105, 106
  - instrumentalization, 111–112
  - “Jennifer in Paradise” (Photoshop), 91–92, 96
  - Lena test image, 112, 115
  - “Musicians” (Shirley card), 94–96
  - Pixl (photo printing), 90, 91
  - Playboy* photograph use, 98–99
  - problems created by, 90, 132
  - sexualized, 96
  - Shirley cards (photography), 87, 90–91, 94–96, 107
  - television, 90–91, 92
- Test image racism
  - inscribing, 130
  - skin tone biases, 6, 84, 86–95. *See also* White skin in test images
- Test images
  - appearances of, 144
  - benchmarking via repetition, 85
  - commodification of otherness, 96
  - common characteristics, 85
  - contexts of operation, 124
  - databases, 115–116
  - enabling measurement, 109
  - fixed points, 84–85, 115
  - history of, 83
  - labor, 79, 124
  - military applications, 109
  - politics of, 112
  - porousness, 78
  - power of, 144
  - as proxies, 84
  - selection requirements, 107
  - sexism, 6, 130
  - SIPI, 97, 104–106, 115–116
  - standard creation, 96
  - television, 90–91, 92
  - uses, 84. *See also* Lena test image
- Test sounds, 191
- Theater of objectivity, 47
- Thompson, Brian, 117–118, 125, 129
- 3 stoppages étalon*
  - author’s re-creation, 200, 201
  - Duchamp’s work, 184–188
- Thylstrup, Nanna Bonde, 45
- Towns, Armond, 196–197

- Traceability, 56–57, 65
- Trained incapacities, 140–141
- Training data, 84–86
- Training simulations, 2–3, 21. *See also*  
Yodaville  
*Transactions on Image Processing*. *See IEEE Transactions on Image Processing*
- Transform coding, 103
- Transparency  
contradictory meanings, 194–195  
politics, 196–197, 239n42  
theater of, 152  
visibility management, 195. *See also*  
Visibility
- Tri-bar test targets, 188, 189
- Truth naturalization, 29–30
- Turner, Fred, 228n58
- University of Southern California (USC),  
102, 147–148, 223n71. *See also* Signal  
and Image Processing Institute
- Utah Teapot, 188, 236n11
- Vaihinger, Hans, 1, 25, 28, 209n74, 209n77,  
210n88
- Veblen, Thorstein, 140
- Vega, Suzanne, 191
- Vertesi, Janet, 219n20
- Visibility  
infrastructure, 12–13, 184, 193–198  
IPK, 197  
management, 195, 197  
proxies, 183, 198  
standardized patients, 197. *See also*  
Concealment
- Voter suppression, 41–42, 45
- Washington, Harriet, 156
- Wernimont, Jacqueline, 12
- Whiteness  
as default, 96  
image technology biases, 93  
prototypical, 86–88, 96, 120  
in test images, 86–92
- White skin in test images, 86  
color calibration, 90  
creating defaults, 96  
image recognition research, 105, 106  
“Jennifer in Paradise” (Photoshop), 91–92,  
96  
Lena test image, 112, 115  
Pixl (photo printing), 90, 91  
problems with, 6, 84, 86–88, 92–94, 96  
prototypical, 86–89, 91  
Shirley cards (photography), 87, 90–91,  
94–96, 107  
television standards, 90–91, 92
- White supremacy, 156–157
- Willfulness, 131
- Williams, Christopher, 188–189
- Witnessing, 138
- Wittgenstein, Ludwig, 39, 64
- Women  
gendered labor, 43, 174–175, 228n53  
Montreal Massacre, 134  
pictures in engineering training, 133–134  
sexist test images, 6, 130  
sex work and pornography debates,  
226n23  
standardized patients, 171–175  
wives of engineers, 131–132. *See also*  
Images of nude women; Lena test image;  
Test image femininity; Women in STEM
- Women in STEM  
affective injustices, 138–139  
computer science departments, 135–136  
enrollment, 134–135  
exclusion, 140  
fundamental roles of, 133  
MIT, 136–139, 229nn60–61  
reports of abuse, 133, 135  
social justice struggles, 134  
Stanford, 99–101
- Working objects, 8–11, 47

Yodaville, 1  
  articles on, 20, 208n64  
  and empire, 3, 203n6  
  Iraq War contexts, 21–22  
  location significance, 4, 21–22, 203n8  
  *Marines Fire on Yodaville*, 3  
  plasticity, 20–21  
  as proxy, 3–4, 23–24  
  purposes of, 1–3  
  suspension of disbelief, 7, 23  
  taking for granted, 6–7  
  as test data, 22  
  upkeep, 22–23  
Yue, Genevieve, 89  
Yuma, Arizona, 208n70  
Yuma Proving Ground, 21  
  
Zones of privacy, 77

## INFRASTRUCTURES SERIES

edited by Geoffrey C. Bowker and Paul N. Edwards

- Paul N. Edwards, *A Vast Machine: Computer Models, Climate Data, and the Politics of Global Warming*
- Lawrence M. Busch, *Standards: Recipes for Reality*
- Lisa Gitelman, ed., *"Raw Data" Is an Oxymoron*
- Finn Brunton, *Spam: A Shadow History of the Internet*
- Nil Disco and Eda Kranakis, eds., *Cosmopolitan Commons: Sharing Resources and Risks across Borders*
- Casper Bruun Jensen and Brit Ross Winthereik, *Monitoring Movements in Development Aid: Recursive Partnerships and Infrastructures*
- James Leach and Lee Wilson, eds., *Subversion, Conversion, Development: Cross-Cultural Knowledge Exchange and the Politics of Design*
- Olga Kuchinskaya, *The Politics of Invisibility: Public Knowledge about Radiation Health Effects after Chernobyl*
- Ashley Carse, *Beyond the Big Ditch: Politics, Ecology, and Infrastructure at the Panama Canal*
- Alexander Klose, translated by Charles Marcrum II, *The Container Principle: How a Box Changes the Way We Think*
- Eric T. Meyer and Ralph Schroeder, *Knowledge Machines: Digital Transformations of the Sciences and Humanities*
- Geoffrey C. Bowker, Stefan Timmermans, Adele E. Clarke, and Ellen Balka, eds., *Boundary Objects and Beyond: Working with Leigh Star*
- Clifford Siskin, *System: The Shaping of Modern Knowledge*
- Lawrence Busch, *Knowledge for Sale: The Neoliberal Takeover of Higher Education*
- Bill Maurer and Lana Swartz, *Paid: Tales of Dongles, Checks, and Other Money Stuff*
- Katayoun Shafiee, *Machineries of Oil: An Infrastructural History of BP in Iran*
- Megan Finn, *Documenting Aftermath: Information Infrastructures in the Wake of Disasters*
- Ann M. Pendleton-Jullian and John Seely Brown, *Design Unbound: Designing for Emergence in a White Water World, Volume 1: Designing for Emergence*
- Ann M. Pendleton-Jullian and John Seely Brown, *Design Unbound: Designing for Emergence in a White Water World, Volume 2: Ecologies of Change*
- Jordan Frith, *A Billion Little Pieces: RFID and Infrastructures of Identification*
- Morgan G. Ames, *The Charisma Machine: The Life, Death, and Legacy of One Laptop per Child*
- Ryan Ellis, *Letters, Power Lines, and Other Dangerous Things: The Politics of Infrastructure Security*
- Mario Biagioli and Alexandra Lippman, eds., *Gaming the Metrics: Misconduct and Manipulation in Academic Research*
- Malcolm McCullough, *Downtime on the Microgrid: Architecture, Electricity, and Smart City Islands*
- Emmanuel Didier, translated by Priya Vari Sen, *America by the Numbers: Quantification, Democracy, and the Birth of National Statistics*
- Andrés Luque-Ayala and Simon Marvin, *Urban Operating Systems; Producing the Computational City*
- Michael Truscello, *Infrastructural Brutalism: Art and the Necropolitics of Infrastructure*
- Christopher R. Henke and Benjamin Sims, *Repairing Infrastructures: The Maintenance of Materiality and Power*

Stefan Höhne, *New York City Subway: The Invention of the Urban Passenger*

Timothy Moss, *Conduits of Berlin: Remaking the City through Infrastructure, 1920–2020*

Blake Atwood, *Underground: The Secret Life of Videocassettes in Iran*

Huub Dijkstra, *Borders as Infrastructure: The Technopolitics of Border Control*

Claude Rosental, *The Demonstration Society*

Dylan Mulvin, *Proxies: The Cultural Work of Standing In*