

Green Light: Toward an Art of Evolution

George Gessert

**The MIT Press
Cambridge, Massachusetts
London, England**

© 2010 Massachusetts Institute of Technology

All rights reserved. No part of this book may be reproduced in any form by any electronic or mechanical means (including photocopying, recording, or information storage and retrieval) without permission in writing from the publisher.

For information about special quantity discounts, please email special_sales@mitpress.mit.edu

This book was set in Stone Serif and Stone Sans by the MIT Press. Printed and bound in the United States of America.

Library of Congress Cataloging-in-Publication Data

Gessert, George, 1944–

Green light : toward an art of evolution / George Gessert.

p. cm.—(Leonardo books)

Includes bibliographical references and index.

ISBN 978-0-262-01414-4 (hardcover : alk. paper)

1. Art and biology. 2. Biotechnology in art. 3. Nature (Aesthetics). 4. Evolution (Biology)—Philosophy. I. Title. II. Title: Toward an art of evolution.

N72.B5G47 2010

701'.08—dc22

2009037617

10 9 8 7 6 5 4 3 2 1

Index

- A'al Waipa oasis, 181–182
- Abramović, Marina, 189
- Ackroyd, Heather, 187
- Addiction, 18–19, 21, 25, 27, 161–162
- Aesthetics, xix–xxiii, 2, 7, 9, 12, 21, 24, 30–31, 37–38, 55
- beauty and, 12, 40, 43, 58, 78, 91, 94, 181
- bio art and, xix–xxiii, 2–3, 177–183
- collectors' plants and, 24–26
- consciousness and, xx, 43, 174, 178–179
- Darwin and, 41–45
- domestication and, xxi–xxii, 7–20, 23 (*see also* Domestication)
- double flowers and, 61–79
- fanciers' animals and, 9, 14–15, 24
- florists and, 53–57
- flower forms and, 38, 55–60
- genetic engineering and, 107–110
- irises and, 57–59, 88, 155–156, 160–161, 172
- kitsch plants and, 82–91
- masquerade and, 65, 67, 69
- mathematics and, 26, 33–35, 55–56, 59, 62–63, 94
- poppies and, 164
- ruffles and, 58–59, 65, 88, 91, 129–130, 155–157, 168, 172
- standards of excellence and, 14–15, 53–60, 180–181
- streptocarpuses and, 167–169
- the sublime and, 41–45
- utility and, 30–31, 177–178
- wildness and, 177–183
- Africa, 37, 93
- African violets, 25, 27, 88
- Agriculture, 10, 19, 34, 118, 179–180
- Alba, 119–120, 130–131, 188, 211n20
- Algae, 2, 187
- Amateurs, 55
- American Gesneriad Society, 169
- American Iris Society, 57–59, 67, 216n9
- American Orchid Society, 59–60
- American Rose Society, 57
- Anemone, 35, 54, 69
- Anemone form flowers, 57, 63, 65, 69, 74
- Animal Art, 116
- Animals, 137–138, 143, 144. *See also specific animal*
- anthropocentrism and, 40, 117–118, 127, 134–139
- bio art and, xix, xxi, 1–6, 116–120, 122, 124, 130–131, 139–142, 185–189
- biophilia and, 29–31
- ceremonial uses of, 16–17
- domestication and, xxi–xxii, 7–20 (*see also* Domestication)
- drugs and, 18
- ethical issues and, 3–6, 13–14, 119–120
- extinct, 16–17, 143 (*see also* Extinction)
- fanciers and, 9, 14–16
- fluorescing, 2, 119–120, 188–189
- generational times and, 174
- human psychogenesis and, 29–30, 103–106

- Animals (cont.)
 industrial, 19
 kitsch and, 82, 207n8
 laboratory, 9, 19, 174, 187–189
 meanings of, 102, 106, 117–118, 127, 133–140
 naming of, 127, 130–131
 performing, 13–15
 pets, xx, 9, 11–13, 15, 18, 76, 82, 104–106, 207n8
 sentience and, 3–6
 sport, 13–14, 102
 transgenic, 2, 118–120, 188–189
 zoos and, 45, 50, 105, 124, 179
- Animal sacrifice, 3
- Anker, Suzanne, 117, 211n20
- Anthropocentrism, xxiii, 133
 animals and, 40, 117–118, 127, 134–139
 art and, 133–142
 Buddhism and, 134–135
 DNA and, 139, 141
 plants and, 135–136, 140–141
- Ants, 2, 8, 50, 112, 114, 185
- Arabidopsis, 171, 174
- Armageddon, 17
- Arp, 115, 136
- Ars Electronica, 117, 141
- Ashbaugh, Dennis, 115, 120
- Aspen Art Institute, 111–112
- Atomic weapons, 145
- Atwood, Margaret, 131–132, 147–148
- Auriculas, 24, 29, 38–39, 54, 57, 86–88, 128–129
- Aurochs, 16–17
- Austin, David, 100
- Azaleas, 25, 27, 38, 57, 69, 74, 83–84, 88, 110
- Aziz + Cucher, 117
- Aztecs, 35–36, 39, 75
- Bacon, Francis (painter), 137
- Bacon, Francis (philosopher, statesman), 94
- Bacteria
 anthropocentrism and, 141
 bio art and, xix, 2, 6, 115–117, 119–122, 141, 175, 179, 185–186, 212n25, 217n6
 biotechnology and, 110
- Baker, Rachel, 118
- Baker, Steve, 105
- Ballengée, Brandon, 16, 119, 139, 187
- Bartram, William, 7–8
- Basset hounds, 11
- Bayer, Herbert, 111–112, 187
- Beaumont, Betty, 113–114
- Bec, Louis, 114–115, 187
- Begonias, 24, 27, 57, 63, 69, 99, 101, 186
- Ben-Ary, Guy, 124, 186
- Berry, Wendell, 18
- Beuys, Joseph, xix, 3–6, 113, 186, 188
- Bible, 17, 40, 47, 94, 117, 143
- Binomial system, 126
- Bio art. *See also* Biotech art; Genetic art; Transgenic art; *specific artists*
 aesthetics and, xix–xxiii, 2–3, 177–183 (*see also* Aesthetics)
 anthropocentrism and, 133–142
 criticism of, 121–122
 Darwin and, xxii, 47–49
 DNA and, 115–117, 119–120, 141, 175, 185–188, 191, 212n21, 217n6
 Eastern culture and, 39
 ethics and, xix–xxiii, 2–7, 14, 36, 60, 93–97, 113, 119, 123, 181
 literature on, xix, 2, 195
 organisms used in, 185–189
 politics and, xix, 2, 120–121, 177–178, 195
 specializations of, 2
 terminology for, 2, 120, 191
 traditional media and, 3, 5, 115–117, 139
- Bio-ecological art, xix
- Biophilia, 30–31
- Biotech art, xix, 2, 60, 120–121, 123, 142, 164, 178–179, 191, 195. *See also* Bio art; Genetic art; Transgenic art; *specific artists*
- Biotechnology, xxiii, 2. *See also* Biotech art; Breeding; Genetic engineering
 debate over, 2, 107, 115

- future and, 60, 107
 plants and, 107–110
 transgenic art and, 2, 53, 110, 115–123, 140, 185–189, 191, 195
 Bioterrorism, 120–121
 Bishop, Elizabeth, 44
 Blueberries, 10
 Blue rose, 108–110, 183
 Bolshevism, 98
 Boon, Marcus, 17–18
 Brancusi, 115
 Breeding, 65, 67, 153–170, 171–175. *See*
 also Biotechnology; Breeding complexes;
 Domestication
 art and, xx, 1, 11–17, 47–50, 116–117, 119, 139, 153–169, 171–175, 178, 180–181, 183
 Burbank and, 47
 capitalism and, 27, 29–30, 89, 91, 100–102
 criticism of, 93–106
 eugenics and, 2, 50, 103, 122–123
 florists and, 38, 53–57, 87–88, 91, 97, 128–129
 fruit flies and, 9, 19–20, 174
 irises and, 153–161
 kitsch and, 82–91
 poppies and, 161–165
 standards of excellence and, 53–60
 streptocarpuses and, 165–169
 for wildness, 177–183
 Breeding complexes, 1, 23–24, 83, 101, 172, 207n9, 216nn9,10
 aesthetics and, 83, 88, 180–181
 economic plants and, 24
 irises and, 23, 153–161
 ornamental plants and, 23, 153–159
 paphiopedilums and, 23
 poppies and, 23, 161–165
 streptocarpuses and, 165–169
 Brodyk, André, 185
 Broodthaers, Marcel, 188
 Brown, Capability, 94
 Brugmansias, 17, 36
 Buddhism, 12, 118, 134–135
 Buffon, 143
 Bulatov, Dmitry, 188–189
 Bullcat, 119
 Bullfighting, 14
 Bunting, Heath, 118, 189
 Burbank, Luther, 47, 50, 162
 Burke, Edmund, 43
 Burroughs, William, 17, 145–146
 Butler, Octavia, 123
 Butterflies, 2, 65, 124, 186
 Byron, Lord, 143–144
 Cacti, 13, 18, 24, 65, 186
 Caddis fly larvae, 2, 186
 Caladiums, 24, 47, 85
 Calceolarias, 27, 54
 Calendulas, 25, 35, 67, 69
 Calgene Pacific, 108
 California poppies, 162–164
 Camellias, 27, 37–38, 54, 62–63, 69, 74, 88, 180
 Camerarius, Rudolph, 39–40
 Canaries, 14–16
 Capitalism, 27, 130
 kitsch and, 89, 91
 plant breeding and, 29, 100–102
 Capucci, Pier Luigi, 2, 120, 191
 Carlyle, Thomas, 41
 Carnations, 24, 27, 39, 54–55, 62, 67, 69, 77, 93, 100, 108
 Cartesian dualism, 136, 138
 Cats, 11–12, 18, 82, 119, 186
 Cattleya, 59, 88
 Catts, Oron, 120, 124, 186
 Centraal Museum, Utrecht, 164–165
 Century plant, 36
 Ceremonial organisms, 16–17
 Chaga gardens, 37, 182
 Chagall, Marc, 1
 Chapman, Dinos, 117
 Chapman, Jake, 117
 Chen, Tony, 109
 Ch-en Hung-shou, 76

- Chen Shun, 74, 76
- Chickens, 2–3, 14, 19, 106, 118, 186
onagadori, 16
- Chin, Mel, 114
- China, xxii, 1, 26, 39, 49, 161
anthropocentrism and, 134
art and, 39, 76–77
Cultural Revolution, 99
cymbidiums and, 59
doubles and, 63, 74–79
literati and, 76–77
naming conventions and, 127
ornamental plants and, 26–27, 35–39
plant aesthetics and, 38–39, 59–60
sunflowers and, 99
- Chinchillas, 9
- Christianity, 17, 40, 133, 151
- Chrysanthemums, 24, 27, 38–39, 57, 108,
205n15, 206n29, 213n3
Chinese names of, 127
doubles and, 65, 69, 74, 77–79, 193
kitsch and, 84
- Churchill, Winston, 50
- Chu Ta, 39, 76–77
- Cinti, Laura, 186
- Cioran, E. M., 146
- Clarke, Kevin, 115, 139
- Class, xxii, 77, 130
florists and, 128–129
ornamentals and, 93, 99–101
- Cleomes, 48
- Cockatiels, 9
- Cockfighting, 14
- Coffee, 25, 102, 182
- Colchicine, 25
- Cole, Thomas, 43
- Coleridge, 41, 43
- Coleuses, 24, 165
- Color, 38, 55, 58
albinos, 130–131
blue roses, 108–109
genetic engineering and, 108
kitsch and, 84
red irises, 109–110
- Computers, 60, 120, 212n22
- 'Connecticut Yankees,' 111, 125
- Cook, James, 74
- Cooley's Gardens, 109
- Coral lily, 109
- Cornflowers, 179
- Corren, Carl, 47
- Cows, 10, 16–17, 19, 45, 106
- Coyote, 3–5, 13
Coyote: I Like America and America Likes Me
(Beuys), 3–6
- Crab apples, 24, 74, 77
- Crabs, 2, 113, 186
- Cranberries, 10
- Creech, John, 38
- Crickets, 186
- Critical Art Ensemble (CAE), 107, 120–121,
189
- Critique of Judgment* (Kant), 40
- Cultural Revolution, 99
- Cut flowers, 24, 25, 27, 109
- Cyclamens, 38
- Cymbidiums, 59
- Cyrus the Great, 33–34
- da Costa, Beatriz, 2, 188, 195
- Dada, 122
- Daffodils, 57, 83–86, 131, 186, 207n9
- Dahlias, 27, 35, 37, 54, 57, 62–63, 65, 67, 69,
75, 102, 110
- Daisy type doubles 63, 64, 193
- Dalí, Salvador, 1, 111, 187, 189
- Darwin, Charles, xxii, 13, 47–49, 105, 118
art and, 41–45
domestication and, 14, 44–45
God and, 42, 202n6
human extinction and, 144–145
shortcomings of as writer, 43–44
the sublime and, 41–44
suffering and, 42–44
Wallace and, 202n14
- Darwin, Emma, 41

- Darwin, Erasmus, 41
- Daturas, 36
- Davis, Joe, 115, 175, 185, 187, 211n20
- Daylilies, 29
- de Bure, Paul, 154
- de la Vega, Garcilaso, 36
- Deleuze, Gilles, xxii, 104–106, 137
- Delphiniums, 1, 25, 29, 37, 48–49, 61, 111, 116, 120, 125, 130, 187
- De Maria, Walter, 112
- de Menezes, Marta, 124, 185–186
- Demeter, 69, 71, 73, 161
- Denes, Agnes, xix, 188–189
- de Sahagún, Bernardino, 75
- Descartes, 3, 136, 138
- Diamond, Jared, 149
- Dianthus, 38, 48
- Dick, Philip, 149
- Dion, Mark, 137, 187
- Diploids, 25, 109, 129, 153, 155, 216n9
- Disease, 7–8, 53, 67, 103–105, 120, 137, 162, 167, 212n25
- biotechnology and, 107
 - dualism as, 39
 - eugenics and, 50–51, 103, 123
 - extinction and, 147–149
 - ornamental plants as, 96–97
- DNA, 30, 71, 175, 185, 212n21, 217n6. *See also* Genetic art; Transgenic art
- blue rose, 108–109
 - property rights and, 115
 - red iris, 109–110
 - representations of, 111, 116–117, 120, 139
 - transgenic art and, 115–120, 191
- Doctrine of Signatures, 127–128
- Dogs, 2, 18, 187
- aesthetic qualities of, 11, 13, 82
 - art and, 137–138
 - ceremonial uses and, 16
 - fluorescing, 119
 - hunting, 14
 - racing, 13–14
 - scorn of, 104–106
- Dogwood, 24
- Domestication, xxi–xxii, 7, 9–10, 21–29, 35, 37–38, 40, 77, 88, 137
- aesthetics and, 9–20, 24–46, 53–60, 97, 167–168, 180–181
 - capitalism and, 27, 29–31
 - color and, 8–9
 - criticism of, 93–106
 - Darwin and, 44–45
 - as degeneration, 102–103
 - hunger and, 8–10
 - in the laboratory, 9
 - monsters and, 12–13
 - origins of, 8–11, 25–26
 - ornamentals and, 21–31, 33–40, 153–155, 157, 162, 167–168, 179–180 (*see also* Ornamental plants)
 - recent, 9–10, 25–26, 157, 162–163, 167–168
 - wildness and, 79, 95, 102–106, 153–154, 172, 177–183, 207n9
- Donkey paintings, 1
- Donkey's Tail group, 1
- Donne, John, 143
- Dorgelès, Roland, 1
- Dostoyevsky, Fyodor Mikhaylovich, 43
- Doubles, 61–79, 100–101
- Aztecs and, 75
 - China and, 74–79
 - criticism of, 100
 - Europe and, 75–77
 - fragrance and, 61–62, 73, 77–78
 - Greeks and, 69–71, 73, 75
 - Japan and, 74–75
 - kitsch and, 82–85, 91
 - meanings of, 77–79
 - mimicry and, 64–67, 69
 - popularity of, 61–62, 77–79
 - Romans and, 73
 - types of, 62–67, 70, 72, 78–79, 93
 - wild plants and, 61–62, 73–74, 78–79
- Douglas, David, 126, 157
- Douglas firs, 126, 159
- Dried flowers, 24

- Drosophila melanogaster*, xx, 9, 19–20, 171, 174
- Drugs, 33, 36
addiction and, 17–19, 25, 161–162
definitions for, 199n15
War on Drugs and, 162
- Dualism, 136, 138
- Duchamp, Marcel, 44, 81, 128
- Ducks, 103, 114
- Duprat, Hubert, 186
- Dyson, Freeman, 60
- Earthworms, 2, 187
- Easter Island, 134–135, 149
- E. coli*, 115, 175, 185, 212n25
- Ecological art, 136
- Economic plants, 9–10, 19–25, 185–186, 188–189
- Egypt, 11, 33, 37
- Eighth Day, The* (Kac), 19, 171
- Elephants, 2, 18, 174, 187
- Eliot, George, 41
- Elk, 10
- Elusian Mysteries, 69, 71
- Ernst, Richard, 109–110
- Ethics, xix–xxi, 2, 14, 36, 50, 60
animals and, xix, xxi, 3–6, 12–14, 119–120
genetic art and, 113, 119–123 (see also Eugenics)
plants and, xxi, 6–7, 93–99
- Ethiopia, 26, 37, 177
- Eugenics, xix, xxii, 2, 50–51, 103, 122–123
- Evolution, xxii–xxiii, 2, 13–14, 30, 111
biotechnology and, 107
Darwin and, 41–45 (see also Darwin, Charles)
double flowers and, 65–69
infantile syndrome and, 12
Stapledon and, 49–50
Wallace and, 202n14
- Extinction, 16–17, 25, 71, 119, 139, 142–151
atomic weapons and, 144–146
Atwood and, 147–148
Burroughs and, 145–146
Byron and, 143–144
Cioran and, 146
Darwinism and, 144–145
disease and, 147–149
global warming and, 145, 150–151
Houellebecq and, 148
Jefferson and, 143
Judgment Day and, 143
Lem and, 146
Lovelock and, 150–151
Stapledon and, 144–145
Vidal and, 147
Vonnegut and, 148–149
- Ferns, 1, 35, 187, 210n2
- Fish fights, 14
- Fleming, Alexander, 10
- Flies, 118, 187. See also *Drosophila melanogaster*
Florentine Codex (de Sahagún), 75
- Florists, 53–57, 97. See also Glenn, George
as amateurs, 55
auriculas and, 38, 54, 86–88, 128
naming conventions and, 128–129
- Fluorescence, 119–120, 130–131, 185
- Flusser, Vilém, 116, 118, 175
- Fluxus, 81, 115
- Food, 8–10, 21, 25–26
- Foxes, 9, 14
- Fragrance, 24, 35–36, 96, 110, 177
doubles and, 61–62, 73, 77–78
standards of excellence and, 58
- Franklinia, 7–8
- Friedrich, Caspar David, 43, 136
- Frogs, 2, 16, 119, 139, 187
- Fruit flies. See *Drosophila melanogaster*
- Fuchsias, 38, 54–55, 110, 180
- Fungi, xix, 2, 6, 8, 19, 140, 146, 187
- Futurism, 122
- Gaia, 161
- Gaia hypothesis, 150–151
- Galanti, Tera, 17, 119, 189
- Galápagos* (Vonnegut), 148–149
- Garden, Alexander, 127

- Gardenias, 74, 127
- Garden of Eden, 34, 94–95
- Gardens, 24–29, 33–38, 40, 93–101
 Aztecs and, 35–36, 75
 biotechnology and, 107–110
 capitalism and, 27, 29–30, 100–102
 China and, 36–37, 99
 class and, 93–94, 99–100
 communism and, 27, 98–99
 Hawthorne on, 95–96
 Incas and, 36
 Mesopotamian, 33–35
 Nazism and, 98–99
 Romans and, 35, 37–38
 Ruskin on, 96–97
 wildness and, 34, 179–183
- Geese, 103
- Genesis, Book of, 40, 127, 141–143
- Genesis* (Kac), 117, 141, 185
- Genetic art, 185–189. *See also* Bio art; Biotech art; DNA; Transgenic art; *individual artists*
 anthropocentrism and, 133–142
 attacks on, 121–123
 definition of, 120
 Virilio on, 121–123
- Genetic engineering, 53, 60, 107–110
 blue rose and, 108–110
 patents and, 108–109, 115
 red irises and, 109–110
 transgenic art and, xix, 2, 115–123, 140–141, 185–189, 191, 195, 211n20, 212n25
- Genetic Folkart, xx, 131
- Genetics, xxii–xxiii, 25, 29–30, 71, 109, 112–124. *See also* Breeding; Genetic engineering; Hybrids
 arabidopsis and, 171
 art and, 111–124, 139, 175, 185–189, 191
 culture and, xxii, 47–50, 111–124 (*see also* Genetic art)
 eugenics and, xxii, 2, 50–51, 103, 121–123
 fruit flies and, xx, 9, 19–20, 171
 monsters and, 12–13, 19–20, 51
 mutations and, 9, 25, 51, 85–86, 117, 137–138
 plant breeding and, 109, 111, 129, 153, 155, 158, 172
 Stapledon and, 49–50
- Geraniums, 24, 84
- Gerard, John, 67, 162
- Gerbils, 9
- Gesneriads, 24, 57, 166–169, 189
- Gessert, George, 6, 12, 36, 116
 irises and, 48–49, 140–141, 153–161, 173, 188
 poppies and, 161–165, 173, 186
 streptocarpuses and, 165–169, 173, 189
- GFP Bunny* (Kac), 119–120, 130–131, 211n20
- Gibson, Rick, 123
- Gilgamesh epic, 33
- Gladiolus, 27, 88, 102
- Glenny, George, 54–57, 59–60
- Gloxinias, 25, 88, 165, 180
- Goats, 18–19, 34, 112, 114, 137, 187
- Godzilla, 13
- Goldfish, 2, 11–12, 14, 99, 112, 187, 201n16, 207n8
- Goldman, Emma, 50
- Goldsmith, Oliver, 94–95
- Goldsworthy, Andy, 187–188
- Goncharova, Natalia, 1
- Goody, Jack, 25, 93
- Gracie, Andy, 185–187
- Grafting, 34, 94
- Grapefruit, 10
- Grapes, 10
- Grasses, 2, 95, 111–12, 125, 165, 187, 210n2
- Greeks
 doubles and, 69, 71, 753
 irises and, 153
 poppies and, 161
 rise of ornamentals and, 33–34, 37
- Green fluorescent protein (GFP), 2, 117, 119–120, 130–131, 141, 185, 188, 211n20
- Greenhouse gases, 150, 182, 198n13
- Greenhouses, xxi, 21, 26, 96, 99

- Greyhounds, 13–14
 Grünfeld, Thomas, 117, 137–138
 Guattari, Félix, xxii, 104–106, 137
 Gulf War, 102
 Gumbrecht, Hans, xx, 174, 178
 Guppies, 9, 14
- Haacke, Hans, xix, 112, 185–189
 Haraway, Donna, 6, 141–142
 Harrison, Helen, 2, 112–113, 118, 124, 140, 186
 Harrison, Newton, 2–3, 112–113, 118, 124, 140, 186
 Harvey, Dan, 187
 Hauser, Jens, 2, 118, 120, 191
 Hawthorne, Nathaniel, 95–96
 Heck, Hein, 16–17
 Heck, Lutz, 16–17
 Hegel, Georg Wilhelm Friedrich, 40
 Herbs, 2, 36, 182
 Herodotus, 73, 76
 Hibiscus, 25, 62, 77, 86, 88
 Hiroshima, 13
 Hirst, Damien, 137, 186–187
 HIV, 107
 Hobbes, Thomas, 43
 Hoffmann, Peter Gerwin, 116, 185
 Hollyhocks, 21, 25, 54, 67, 69, 74, 76, 180
 Honeybees, 2, 187
 Honeysuckle (edible), 10, 26
 Hopkins, Gerard Manley, 95
 Horses, 2, 13, 102, 188
Hortus Third (plant dictionary), 21–23
 Houellebecq, Michel, 148
 Houseflies, 118
 House plants, 24, 165–169
 Huang Yong Ping, 187–189
 Hulsenbeck, Richard, 122
 Huxley, Julian, 50
 Huysmans, Joris-Karl, 47–48, 85
 Hyacinths, 35, 54, 102
 Hybrids, 1–25, 101, 118–119, 134, 138, 180
 criticism of, 93–97
- daylily, 29
 delphinium, 29, 111
 doubles and, 61–79
 florists and, 38, 53–57, 87, 97, 128–129
 historical perspective on, 27–29, 38–39
 interspecific, 2, 7, 21, 23, 207n9
 iris, 109–110, 116, 153–161, 172, 216n10
 kitsch and, 82–91, 99
 naming issues and, 102, 125–132
 poppy, 161–165
 rose, 27–28, 100–102, 108–109 (*see also* Doubles)
 standards of excellence and, 53–60, 180–181
 Stapledon and, 49–50
 Steichen and, 47–48, 111
 streptocarpus, 165–169
- Imaginary life forms, 108, 114–115. *See also* Blue rose; Stapledon
- Inca gardens, 26, 36
 India, 28, 37
 Infantilism, 29–30, 135–136
 Insects, 7–8, 18, 38, 42, 44, 104, 163–164, 185–188. *See also specific insects*
- Intergovernmental Panel on Climate Change (IPPC), 150–151, 215n16
- Intoxication, 17–19, 35–36
- Inuit, 134
- Iraq War, 102
- Irises, 7, 29, 67–68 200n11
 bearded, 29, 57–58, 67–68, 88, 101, 109–110, 129–132, 153–156, 160, 163, 167, 172, 174, 179, 188, 203n8, 215n5, 216nn9,10
 in bio art, 2, 48–49, 116, 120, 140–141
 Japanese, 23, 25, 29, 37, 88
 kitsch and, 88, 155–156
 naming, 129–132
 Pacifica, 7, 23, 88, 131, 140–141, 156–161, 163, 167, 172–173, 188, 203n8
 red, 109–110
 ruffled, 58–59, 88
 standards of excellence for, 57–59
- Iris (Greek goddess), 128

- Irkutsk, 27
 Itō Ihei, 27
 Ivies, 35
- Jacaranda, 84
 Japan, 27, 38–39, 161
 animal breeding and, 201n16
 bio art and, 1 (*see also* Takita, Jun)
 doubles and, 74
 Godzilla and, 13
 goldfish and, 12, 201n16
 irises and, 23, 25, 27, 29, 37, 88
 Japanese irises, 23, 25, 29, 37, 88
 Japanese maple, 24
 Jefferson, Thomas, 143
 Jellyfish, 119. *See also* Green fluorescent protein (GFP)
 Jeremijenko, Natalie, 189
 Jimsonweed, 18
 Johanson, Patrica, 113
 Jojoba, 10
 Jones, Kim, 3
 Jones, Ronald, 115
 Josephine, Empress of France, 28
 Judgment Day, 143
- Kac, Eduardo, 2, 19, 117, 119–120, 130–131, 141, 171, 185, 188–189, 195, 211n20, 214n8
 Kandinsky, Wassily, 131
 Kant, Immanuel, 40, 43
 Kim-il Sung, 99
 ‘Kimsungilia’ (begonia), 99
 Kim Jong-Il, 99
 ‘Kimjongilia’ (orchid), 99
 ‘King Alfred’ (daffodil), 83, 131
 Kitsch
 animals and, 82, 207n8
 capitalism and, 81, 89, 91
 communism and, 81, 89, 99
 color and, 84
 daffodils and, 83–86
 definition of, 81–82
 doubles and, 83–84
 form and, 84
 genetic engineering and, 110
 irises and, 88, 155–156
 Nazism and, 81, 89
 orchids and, 85–86, 88
 ruffles and, 88–89, 155
 variegation and, 88
 Klee, Paul, 26, 136
 Koi, 14
 Koons, Jeff, 82, 175, 186
 Korea, 39, 99
 Kremers, David, 117, 185
 Kriesche, Richard, 116, 188
 Kundera, Milan, 81
 Kurtz, Hope, 120
 Kurtz, Steve, 120–121. *See also* Critical Art Ensemble (CAE)
 Kwakwaka’wakw, 134
- Lacy, Alan, 116
Lagoon Cycle, The (Harrison and Harrison), 113, 118, 186
 Laib, Wolfgang, 188
 Lamarckism, 51
 Land art, 111–114
 Lascaux, 16
 ‘Laurie Anderson’ (streptocarpus), 131, 173
 Lavender, 24
 Leclerc, George-Louis, Comte de Buffon. *See* Buffon
 Leeches, 188
 Lem, Stanislaw, 146
 Leonardo da Vinci, 154
 Leopold, Aldo, 181
 Lessing, Doris, 49
 Lifton, Robert Jay, 17
Light Only Light (Takita), 118
 Lilies, 2, 35, 77, 96, 110, 125, 154, 174, 180, 186
 Linnaeus, Carl, 125–126
 Lolo the donkey, 1, 185
 Long, Richard, 187

- Lorenz, Konrad, 12, 102–103, 105–106
 Lotus, 22, 37, 74
 Louis, Morris, 131–132, 136
 Lovelock, James, 150–151
 Lucretius, 41
 Luminescence, 18, 107–108, 110, 118–119,
 140. *See also* Fluorescence
 Lysenko, Trofim, 51
- MacDonald, Dwight, 81
 Maciunas, George, 81
Madame Bovary (Flaubert), 96
 Maggots, 2, 188
 Malevich, Kazimir, 1
 Malthus, 42
 Mammoths, 16, 143
 Marigolds, 25, 35, 62, 64, 69, 75, 84, 101, 193
 Marinetti, F. T., 177
 Marketing, 100–102
 Marvell, Andrew, 93–94, 96
 Marxism, 177
 Marylhurst College, 131
 Mastodons, 143
 Mathematics, 26, 34–35, 55, 62, 94
 Matthews, Brian, 153–154
 Max Planck Institute, 107
 Mayans, 149
 McCarthy, Cormac, 149
 McCarthy, Paul, 138
 Meadowfoam, 10
 Medicine. *See also* Drugs
 eugenics and, 50
 genetics and, 9, 49, 111
 Linnaeus and, 126
 plants and, 21–22, 33, 36–38, 161–162
 Melville, Herman, 44, 130
 Mendelian genetics, 47, 51
 Mendelssohn, Felix, 41
 Mendieta, Ana, 3
 Mesopotamia, xxii, 34–36, 73, 75
 Mexico, xxii, 35–36, 101
 Mice, 2, 9, 119, 147, 171, 188
Microvenus (Davis), 115, 175
Mikroben bei Kandinsky (Hoffmann), 116, 185
 Miller, Larry, 115
 Milton, John, 41, 94
 Mimics, 65–66, 67, 69, 70, 72
 Minks, 9
 Mint, 24
Moby-Dick (Melville), 44, 130
 Mondrian, 131
 Monsters, 3, 12–13, 26, 50–51, 78, 131, 137
 Moore, John, 115
 Morgan, Thomas Hunt, 9
 Morris, Cedric, 164
 Moss, 28, 118, 140, 188
 Moths, 17–18, 119, 189
 Mughals, 37
 Muller, H. J., 9, 50
 Museum of Modern Art (MOMA), 1, 48–49,
 130
 Mutations, 9, 51, 85
- Nagasaki, 13
 Names of organisms, 125–132, 212n22
 Biblical account of, 127
 binomial system and, 126–126
 Doctrine of Signatures and, 127–128
 humanism and, 126
 limitations of, 131
 Narcissus, 35, 71, 73, 83–86, 131, 179–180,
 186, 207n9
 Native Americans, 4–5, 16, 134, 181–182
 Natural selection, 14, 42–45, 103
 Nazism, 112
 genetic art and, 121–123
 genetics and, 49–51
 kitsch and, 81, 89
 landscape architecture and, 98–99
 Lorenz and, 103, 106
 Needham, Joseph, 39
 Nero, 35, 37
 New Guinea, 26, 37
 Nicotiana, 48
 Nitsch, Hermann, 3
 Northern Sung, 110

- North Korea, 99
- Notes on Camp* (Sontag), xxi, 82
- Nurseries, 21, 26–27, 61, 154
- Oaks, 188
- Octopus, 3
- Oksiuta, Zbigniew, 185, 188
- Old English roses, 100
- Old Fashioned Flowers* (Sitwell), 48, 53
- Onagadori chicken, 16
- Opium poppy, 17, 25, 116, 205n15, 206nn28,29
 breeding and, 161–163
 doubles and, 62, 70–71, 73
 history of, 161–162, 204n5
- Oppenheim, Dennis, 186
- Orchids, (see also cattleya, cymbidium, paphiopedilum) xxi, 2, 22, 24, 57, 99, 172
 breeding complexes and, 23
 kitsch and, 85–86, 88
 standards of excellence and, 59–60
- O'Reilly, Kira, 188
- Orians, Gordon, 30
- Oriental poppy, 23, 48, 62, 72, 88, 116, 161–163
- Origin of Species, The* (Darwin), xxii, 42–44, 47, 49, 144
- Orlan, 124, 141
- Ornamental plants. *See also specific plants*
 Africa and, 93
 bio art and, xx, 1–2, 39–40, 47–49, 85, 111, 116, 118, 130–132, 177–183
 biophilia and, 30–31
 capitalism and, 27, 100–102
 class and, 76–77, 93, 99–101
 criticism of, 77–78, 93–97, 99–100, 106
 diversity of, 21–31, 38–39
 doubles and, 61–79
 florists and, 38, 53–57, 87, 97, 128–129
 history of, 33–40
 judging of, 53–60, 180–181 (*see also Standards of excellence*)
 kitsch and, 82–91
 societies of, 54–60, 169, 180
 uselessness of, 30, 177–178
- Orris, 153
- Oryx and Crake* (Atwood), 131, 147–148
- Otters, 14, 149
- Ottomans, 27, 38
- Pansies, 54, 65, 86, 88, 106, 108, 125, 213n1
- Paphiopedilums, 23, 85–86
- Parakeets, 9
- Parkinson, John, 75–76
- Parks, 24, 33–35
- Parrish, Maxfield, 84
- Parrots, 9
- Pauline, Mark, 3
- 'Peace' (rose), 102
- Peacocks, 188
- Pecans, 10, 26
- Pelargoniums, 38
- Penicillin, 10
- Peonies, 27, 38, 57, 100, 110, 174
 double, 65, 67, 69–79, 73–74, 76–77, 79, 193, 204n1, 206n29
 tree, 74, 78–79
- Peony form doubles, 69, 193
- Perdita, 93
- Perfumes, 35–37
- Periwinkles, xxi, 35
- Persephone, 71, 161, 164–165, 173
- Persia, 28, 34, 73, 94
- Persian cats, 12, 82
- Pettit, Virgil, 109
- Petunias, 25, 62, 70, 86, 88, 101, 107, 188
- Peyote, 18, 188
- Pheasant, 14
- Philip, Kavita, 2
- Philodendron, 27
- Phlox, 27
- Photography, 24, 47–48, 108, 113–115, 117, 139
- Picasso, Pablo, 1, 18
- Pigeons, 2–3, 14–15, 188
- Pig, xxi, 2, 10, 106, 114, 186

- Pig Wings* (Catts, Zurr, and Ben-Ary), 124, 186
 Plant societies, 54, 57–60, 131
 Pliny the Elder, 27, 37, 73, 153, 161
 Poetry, 55, 125, 167, 195. *See also specific poets*
 condemnation of flowers and, 93–95
 extinction and, 143–145
 Darwin and, 41, 43
 doubles and, 71, 3–74
 rise of ornamentals and, 35–37
 Steichen and, 48, 125
 Pollan, Michael, 100
 Pollen, 2
 Pollock, Jackson, 136, 178
 Polyploids, 25, 109, 129, 153, 155, 216n9. *See also* Diploids
 tetraploids and, 25, 109, 129, 153, 155–156, 172, 216n9
 Pomegranates, 26
 Poppies, 1, 35, 48
 California, 162–164
 corn, 164–165, 173, 186, 204n5
 doubles and, 62, 70–74
 opium, 17, 25, 62, 69–71, 73–74, 116, 161–163, 204n5, 205n15, 206nn28,29
 Oriental, 23, 48, 62, 72, 88, 116, 161–163
 Powell, Dave, 119, 186
 Protozoa, 2, 188
 Psychogenesis, 103–104

 Quail, 118
 Quinn, Marc, 141, 185

 Rabbit, 14–15
 transgenic, xi, 119–120, 130–131, 188, 211n20
 Race, xix, xxii, 2, 81, 97, 103, 107, 116
 Racehorses, 13, 102
Rainy Taxi, The (Dalí), 1
 Rancière, Jacques, 178
 Ranunculuses, 29, 39, 54, 62
 Rats, 2–3, 14, 135, 188
 Rauschenberg, Robert, 137
 Red Guards, 99
 Red heifer, 17
 Redoica, Julia, 171, 187
 Red pepper, 110
 Reinhardt, Ad, 177–179
 Religion
 animal breeding and, 12, 17
 animal fighting and, 14
 anthropocentrism and, 133–135
 beauty and, 40
 Buddhism and, 12, 118, 134–135
 Darwin and, 42–45, 202n6
 domestication and, 8
 drugs and, 17–18
 dualism and, 40
 Eleusian mysteries, 69–71
 extinction and, 143, 151
 flowers and, 37–38
 Judeo-Christian beliefs and, 5, 38, 40, 117–118, 143, 150
 Lovelock, James and, 150–151
 red heifer and, 17
 shamanic plants and, 17, 36
 Renaissance, 93, 136, 178
Revenge of Gaia, The (Lovelock), 150–151
 Rey, Georges, 110
 Rhododendrons, 57, 65, 88, 102, 110
 Riefenstahl, Leni, 103
 Rinaldo, Ken, 185–189
 ‘Robert Smithson’ (iris), 131
 Rocket, 35
 Rockman, Alexis, 114
 Rome, 73
 opium poppies and, 161
 ornamental plants and, 35, 73
 roses and, 27–28, 37–38, 73
 Rose, 25–26, 57
 blue, 108–110, 183
 doubles and, 62–64, 66–67, 70, 73, 78, 193
 genetic engineering and, 108–110, 183
 history of, 27–28, 37–38
 naming of, 102, 128
 Old English, 100–101
 tea, 63, 66, 78, 82

- transgenic, 108–110, 183
Rose form flowers, 63, 66–67
Rose hips, 38
Ross, Philip, 196–188
Rothko, Mark, 132, 136
Rubenstein, Bradley, 138
Ruffles, 65, 88–89, 91, 163
 irises and, 88, 129–130, 155–157, 160, 168, 172
 kitsch and, 88–89, 91
 standards of excellence and, 58–59
 streptocarpuses and, 168
Ruskin, John, 55, 96–97
Russ, Joanna, 123
Ryder, Albert Pinkham, 136
- Sackville-West, Vita, 100
Saffron, 35
Salish Wool Dogs, 16
Salvia, 17, 24, 98
Sauer, Carl, 8–9
Scatter (Gessert), 140–141
Scented plants, 36–37
Schizophrenia of the soul, 39
Schneider, Gary, 117, 139
Science fiction, 49–51, 111, 113–114
Scientific method, 42
Scorpions, 2, 188
Scotch broom, 179
Sea buckthorn, 10
Sebald, W. G., 147
Second Nature (Pollan), 100
Seeds, 7–8, 62, 69, 74–75, 94
 bio art and, 2, 48, 118, 140–141, 188–189
 biotechnology and, 109
 colchicine treatments and, 25
 Easter Island and, 135
 generation time and, 86, 171–174
 irises and, 157, 216n10
 ornamental qualities of, 24
 poppies and, 161–163, 165
 streptocarpuses and, 167
 Soviet Union and 27–28
Seghers, Hercules, 137
- Seifert, Alwin, 98–99
Semi-livings, 120
Semi-Living Worry Doll (Catts, Zurr, and Ben-Ary), 124, 186
Sentience, xxi, 3–7
Serpentine Lattice (Harrison and Harrison), 113, 124, 140
Shakespeare, William, 39, 41, 93
Shamanism, 17–18, 36
Shaw, George Bernard, 50
Sheep, 2, 10, 19, 34, 94, 106, 117, 137–138, 189
Shepard, Paul, 29–30, 103–105, 135–136
Sherman, Cindy, 117
Siberia, 27–28
Siegesbeck, Johann, 125–126
Silk moths, 2, 17, 119, 189
Silver, Lee, 107, 122
Siskiyou Mountains, 157, 159
Sitwell, Sacheverell, 48, 53
Skunk, 9
Slime molds, xix, 2
Smithson, Robert, 131, 136, 175, 178
'Snow Flurry' (iris), 155
Snyder, Gary, 12
Solanas, Valerie, 123
Sonfist, Alan, 112, 188
Sontag, Susan, xxi, 82
Soviet Union, 27, 51, 81, 89, 98
Sphinx moths, 18
Spices, 8, 37, 102, 130
Spider plants, 27, 189
Spiders, 2, 7, 189
Sri Lanka, 37, 113
Stalin, 51
Standards of excellence, 14–16, 53–60, 180–181
 handbooks for, 14–15
 history of, 53–60
Stapeliads, 24
Stapledon, Olaf, 3, 49–50, 111, 144–145
Steichen, Edward, 29, 116, 120, 131, 166, 189, 212n21

- Steichen, Edward (cont.)
 delphiniums and, 1, 48, 111, 130
 MOMA exhibit and, 1, 48–49, 130, 186
 plant breeding as fine art and, 1, 47–49, 111, 125, 130
- Stellarc, 124
- Stockhausen, Karlheinz, 177
- Strawberries, 10, 198n20
- Streptocarpus, 88, 131–132, 165–169, 173
 history and, 167
 monocarps and, 167–169
- Sunflower, 1, 48, 91, 99, 174
- Symbiosis, 140
- Tacitus, 35
- Tactical Biopolitics* (da Costa and Philip), 2
- Tadpoles, 2, 139, 189
- Takita, Jun, 118, 140, 188
- Tanzania, 182
- Tarantulas, 189
- Tea roses, 63, 66, 78, 82
- Tetraploids, 25, 109, 129, 153, 155–156, 172, 216n9
- Theophrastus, 73
- Third Temple, 17
- Thomas, Graham Stuart, 100
- Thoreau, Henry David, 18, 95
- Thousand Plateaus, A* (Deleuze and Guattari), 104–105
- Tiger lily, 77, 109
- Time Landscape* (Sonfist), 112
- Time Machine, The* (Wells), 144
- Tissue culture, 2, 6, 108, 115, 120, 124, 186
- Tobacco, 18–19, 102, 189
- Tobey, Mark, 131, 136
- Tohono O'odham, 181–182
- Transgenic art, 2, 115–123, 140–141, 185, 191, 195. *See also* Critical Art Ensemble (CAE); Davis, Joe; Kac, Eduardo; Takita, Jun
 anthropocentrism and, 140
 ornamental plants and, 53, 107–110, 183
- Trees, 5, 16, 18, 36, 39, 84, 94, 96, 127, 179
 agroecosystems and, 179, 182
 bio art and, 2, 185, 187–189
 Cioran and, 146
 Douglas fir, 126, 159
 Easter Island and, 134–135
 Franklinia and, 7
 memorial, 16
 Mesopotamians and, 33–34
 naming of, 126
 ornamental, 7, 24
 Romans and, 35
 seed production time and, 172–174
 variegated foliage and, 69, 90
- Trilliums, 125
- Tulips, 27, 29, 38–39, 54–55, 65, 68, 93, 102
- Turmeric, 8–9
- Turner, J. M. W., 43, 136
- Turtles, 2, 189
- Twain, Mark, 125
- University of California at Berkeley, 115
- University of Oregon Museum of Art, 49
- Valder, Peter, 74
- Variegated foliage, 69, 82, 88, 90
- Vavilov, Nikolai, 51, 179–180
- Venus of Willendorf, 133–134
- Victorians, 38, 77, 137
- Vidal, Gore, 123, 147
- Viola tricolor*, 125
- Violets, 35
- Virilio, Paul, 121–123
- Vonnegut, Kurt, 111, 148–149
- Wagner, Richard, 43
- Wallace, Alfred Russel, 202n14
- Wang Meng, 137
- Wallen, Ruth, 188
- Warhol, Andy, 91, 123
- Water lilies, 33, 40, 63, 65, 67, 69, 180
- Watson, Forbes, 55, 77
- Wells, H. G., 114, 144–145
- Werckmeister, Peter, 58
- Wheat, 10, 189

Wheeler, Wendy, 136
Whitman, Walt, 95
Wight, Gail, 188
Wilson, Edward O., v, 30, 183
Wilson, Stephen, 188
Winter, Terry, 136
Wordsworth, William, 41
Wreaths, 24, 37

X-rays, 9, 50, 117

Yeast, 189
Yeats, William Butler, 18, 145
Youngs, Amy, 185–189
Yuan dynasty, 74, 76
Yun Shouping, 74

Zaretsky, Adam, 171, 187
Zebra fish, 189
Zinnias, 35, 78, 125, 171, 193
Zittel, Andrea, 118, 186
Zoos, 45, 50, 105, 124, 179
Zurr, Ionat, 2, 120, 124, 186