

Index

- Abstract works of art, 123
- Acar, S., 333–334
- Adair, Red, 159
- Addis, D.R., 440–441, 454
- Aerial screw (Leonardo)
 - analytic thinking and, 121–123, 243–244
 - breakthrough thinking and, 120–121
 - componential theory of creativity and, 416–417
 - insight and, 243–244
 - “outside-the-box thinking” and, 120–121
 - overview, 120
- Affect, role in creativity, 300–301
- Agreeableness, 355
- “Aha!” experiences
 - analytic thinking and, 217
 - insight and, 38, 222, 225, 233, 236, 237–238, 246–247
 - unconscious processes and, 252
- Airplane, 218–219
- Alba, J., 226–228, 229, 445–446
- Algorithms, 85
- Amabile, T.M., 386, 400–402, 405–407, 408–409, 410–411, 412, 415–419. *See also* Componential theory of creativity
- American Airlines
 - coffee lids, savings involving, 137, 139–140
 - Homestead Air Force base overflights, savings involving, 137–138, 139–140
 - IdeAAs program, 137
- American Behaviorism, 311
- American Psychiatric Association, 290
- Amnesia, 438, 440
- Analogical paradox
 - film and, 171–174
 - “general problem” and, 171, 174
 - inert knowledge versus hidden knowledge, 174–175
 - manufacturing and, 170
 - overview, 169–170
 - “radiation problem” and, 174
- Analogical thinking
 - base, 152
 - Deep Dive shopping cart and, 152
 - double helix structure of DNA and, 148, 152–153
 - far analogies (*See* Far analogies)
 - “general problem” and, 149–150
 - Guernica* and, 152
 - “laser/brain-tumor problem” and, 150–151
 - local analogies, 152
 - overview, 37–38
 - problem-solving and, 149–152
 - “radiation problem” and, 151
 - regional analogies, 153
 - relational structure, 152
 - simultaneous-convergence solution, 150–151
 - source, 152
 - target, 152
 - transparent analogies, 153
- Analogical transfer
 - base, 153
 - components of, 153–155
 - Deep Dive shopping cart and, 12–13
 - double helix structure of DNA and, 153
 - Fallingwater* and, 118
 - “general problem” and, 155–157
 - “green” creativity and, 157
 - inert knowledge problem (*See* Inert knowledge problem)
 - “laser/brain-tumor problem” and, 153–155, 157
 - overview, 12–13, 148
 - Pollock and, 125–126
 - during problem-solving, 155–157, 162–163, 179
 - “radiation problem” and, 153–157
 - schemas, 155
 - simultaneous-convergence solution, 155
 - spontaneous far analogical transfer (*See* Spontaneous far analogical transfer)
 - target, 153
- Analytic thinking
 - aerial screw and, 121–123, 243–244
 - “Aha!” experiences, 217
 - all levels of innovation, usefulness in, 143–144

- anticipating outcome in, 89–90
- bacteria as cause of ulcers and, 131–132
- bottom-up processing in, 87, 109–110
- continuity with past in, 86
- Deep Dive shopping cart and, 35, 36, 86
- defined, 16–17
- Dunkirk rescue and, 86
- as dynamic process, 236
- environmental events, effect of, 87
- equivalence with creative thinking, 38–39
- escape fire and, 242–244
- general components of, 85–87
- in genius-level creativity, 132
- genius view versus, 68–70, 454–456
- Guernica* and, 35, 36
- imagining in, 89
- insight, presence in, 225, 235–238, 240, 243–244, 248
- insight versus, 16–17, 217
- interpretation of information in, 90–91
- judgment in, 90
- light bulb filament and, 240, 241–242, 243–244
- overview, 16, 91
- planning in, 89–90
- Pollock and, 126
- problem-solving and, 79
- in professional (pro-c) creativity, 136
- radar and, 240, 241, 243–244
- remembering in, 89
- remote associations versus, 455–456
- specific components of, 87–91
- structure of, 85–86
- top-down processing in, 86–87, 110, 379
- in under-the-radar innovation, 142–143
- Ancient Greece, genius in, 56–58, 284
- Ancient Rome, genius in, 58
- Andreasen, N.C., 292, 294
- Anterograde amnesia, 438
- Anthony, S., 326, 347
- Anticipating outcome in analytic thinking, 89–90
- “Antique coin problem,” 225
- Architects, personality and creativity in, 367.
 See also specific architect
- Arithmetic, neuroscience and, 425, 446–448
- Artists. *See also specific artist*
 - historical changes in status of, 383–384
 - nonsocial personality traits of, 362
 - open-mindedness in, 363–365
 - personality and creativity in, 360–365
 - personality profile, 361–362
 - scientists compared, 360–365
 - social personality traits of, 362
 - studies of personality, 367, 372
- Associative connections, 262–263
- Associative hierarchies, 66–68, 257–258, 345–346
- Associative processes
 - in divergent thinking, 344–346, 349
 - executive functioning versus, 349
 - generation of ideas as, 34
 - testing of, 344–346
- Autistic savants, 202
- Bach, J.S., 50
- Bacon, eliminating problems with freezing, 141
- Bacteria as cause of ulcers, 126–132
 - analytic thinking and, 131–132
 - gastric biopsies and, 127–128
 - H. pylori* and, 129–131
- Baer, J., 333, 350–351, 402, 416
- Baird, B., 274, 282
- Barzun, Jacques, 6, 63–64, 65, 66, 68–70, 71, 120–121. *See also* Genius view of creativity
- The Beatles
 - as cover band, 187–188
 - historical background, 184–185
 - learning to write music, 186–187
 - overview, 184–185
 - practice and, 188, 213–214
 - talent and, 185–186
 - “10-year rule” and, 192, 213
- Beaty, R.E., 244, 343–344, 348, 349, 454
- Becker, G., 61, 312–314
- Beda, Z., 276, 277
- Beeman, M., 216, 221, 233, 242–243, 253, 258–259, 426–427, 428–429, 432–435, 436–437, 456. *See also* Insight; Neuroscience of creativity
- van Beethoven, Ludwig, 210, 211, 213
- Behavioral activation system, 299
- Benedek, M., 339, 343, 346, 349
- Benzene, ring structure of
 - selective comparison and, 389
 - unconscious processes and, 251–252, 263, 267–268
- Big-c creativity, 113
- Big 5 inventory, 355–356
 - agreeableness, 355, 356, 359
 - conscientiousness, 355, 356, 359
 - extraversion, 355, 356, 359
 - negative emotionality, 355, 356, 359
 - open-mindedness, 355, 356, 359
 - 2 extra-short form, 354
- Big 2 model of personality, 356–358, 359
- Bilalić, M., 212

- Bipolarity and genius
 behavioral activation system and, 299
 bipolar spectrum, 288–289
 correlation versus causation, 295
 creativity, effect on, 292–293, 300
 cyclothymia, 289
 depression, 288–289, 291–292
 hypomania, 289
 inverted-U hypothesis and, 293, 298, 300
 logical issues, 295
 mania as caused by creativity, 297–298
 mania as increasing creativity, 290–291
 mania generally, 288
 mania increasing creativity, 295–298
 methodological issues, 293–295
 milder forms, 301–302
 overview, 288
 in poetry, 291
 “Sylvia Plath Effect,” 291–292
 “Birds and trains problem,” 106–107
 Blanchette, I., 170–171
 Bloom, B., 197
 Bloom, Harold, 64–65, 66, 68–70, 71, 120–121.
 See also Genius view of creativity
 Bottles, eliminating problem of oil on, 141
 Bottom-up processing in analytic thinking, 87,
 109–110
 Bowden, E.M., 247
 Brain networks
 default mode network (DMN), 449–451,
 452, 453–454
 executive function network (ECN), 451–452
 network coordination during creativity, 452
 network integration during creativity,
 452–453
 overview, 424, 448–449, 456–457
 Brain stimulation, 424, 444–446
 Brainstorming, 8–9
 Braque, Georges, 398
 Breakthrough thinking, 120–121, 232. *See also*
 Perkins, D.N.
 Bridge (card game), 211
 Bullfighting in *Guernica*, 29–30, 83–84
 Byron, George Gordon (Lord), 290, 313
 Byron, K., 418

 Cai, D.J., 272–273
 Campbell, D.T., 256–257, 259–260, 453, 454
 “Candle problem,” 98–104
 criteria for tacking candle to wall, 100–101
 extension of ideas and, 98–100
 “green” creativity and, 98–100, 107–108
 holders, 102–104
 insight and, 236
 overview, 98
 partial match with knowledge in, 98–100,
 107–108
 problems in gluing candle to wall, 102
 Representational Change Theory (RCT)
 and, 230
 shelves, 102–104
 variations on old ideas, 101
 Carlsen, Magnus, 201
 Carroll, J.B., 340
 Carson, S.H., 305, 307, 375, 377–378
 Case studies, 37. *See also specific case study*
 Catrambone, R., 160–161
 Cattell, R.B., 340
 Cattell-Horn-Carroll (CHC) theory of
 intelligence
 components of IQ, 341
 crystallized knowledge (Gc), 342–343,
 344
 executive functioning and, 342
 fluid intelligence (Gf), 340–341, 343–344
 levels of IQ, 341
 long-term retrieval (Glr), 342, 344
 overview, 340, 344
 short-term memory (Gsm), 342
 working memory capacity (WMC), 342
 Chan, J., 175–178
 Chase, W.G., 191–195
 Cheever, John, 299
 Chein, J.M., 228, 229
 Chess
 giftedness and, 201
 tension view and, 212
 “10-year rule” and, 190–192
 Chi, R.P., 444–446
 Chomsky, N., 394
 Christensen, B.T., 170
 Chronicle, E.P., 227–228
 Chrysikou, E.G., 448, 454
 Chuderski, A., 244–245
 Churchill, Winston, 75
 Cinan, S., 245
 Cobain, Kurt, 299
 Cognitive inhibition, 375–377
 Cognitive tuning theory, 301
 Coleridge, Samuel Taylor, 313
 Colflesh, G.J.H., 234–235
Collective Suicide (Siqueiros), 125–126
 Combinations of ideas, 253–256
 how combinations becomes conscious,
 255–256
 mechanisms of, 253–254

- Componential theory of creativity. *See also*
 Amabile, T.M.
 aerial screw and, 416–417
 analysis of creativity in, 402
 breaking away from experience, criticism
 based on, 416–417
 cognitive style and, 411
 consensual assessment technique (CAT),
 401–402, 419
 constraint versus enabling effects of
 reward, 409
 creativity-relevant processes, 410–412
 criticisms of, 415–418
 Deep Dive shopping cart and, 416–417
 definition of creativity, criticism based
 on, 415
 divergent thinking and, 417–418
 domain resources component, 414
 domain skills component, 410
 double helix structure of DNA and, 416–417
 effect of external factors, 406
 evidence for negative effects of extrinsic
 factors, 407–408
Fallingwater and, 416–417
 five-stage organizational innovation
 process, 413
 general versus domain-specific nature of
 creativity, criticism based on, 416
Guernica and, 416–417
 heuristic methods in, 401, 411, 417–418
 “immunization” against negative effects of
 reward, 408
 innovation in, 401
 innovation management component,
 414–415
 light bulb filament and, 416–417
 measurement of creativity in, 401–402
 methods to increase creativity, 410
 motivation component, 405–410, 414
 organizational components in innovation,
 413–415
 organizations, negative effects of reward
 in, 409
 overview, 386, 400, 402, 412, 419–420
 personality and, 412
 positive effects of external factors, 409–410
 progress loop, 405
 reward, criticism based on role of,
 417–418
 social psychology and, 400
 stages of creative process in, 402
 synergy effect, 409–410
 working style and, 412
- Compound Remote Associates (CRA)
 problems
 executive functioning and, 348–349
 Gestalt theory and, 222
 incubation and, 272–273
 insight and, 222, 234–235, 236, 426–430,
 433, 434, 436
 Neo-Gestalt theory and, 234–235
 neuroscience and, 426–430, 433, 434, 436
 reorganization and, 434
 unconscious processes and, 282
- Concepting, 176
- Conceptual leaps, 175–178
- Configuration of traits, creativity as, 43
- Confluence theories of creativity
 componential theory (*See* Componential
 theory of creativity)
 investment theory (*See* Investment theory of
 creativity)
 overview, 38, 322, 386, 419–420
 triangle theory (*See* Triangle theory of
 creativity)
- Conscientiousness, 355
- Conscious thinking, 39
- Conscious work hypothesis, 266, 275–276
- Consensual assessment technique (CAT),
 401–402, 419. *See also* Amabile, T.M.;
 Componential theory of creativity
- Continuity with past
 in analytic thinking, 86
 overview, 14
- Cooking spray, eliminating waste of, 140
- Corrective Optics Space Telescope Axial
 Replacement (COSTAR), 165–167, 266
- Cramond, B., 333–334
- Cranford, E.A., 236, 434
- Cranial electrotherapy stimulation, 444
- Creative Achievements Questionnaire
 (CAQ), 365
- “Creative genius,” 6–7. *See also* Genius; Genius
 view of creativity
- Creative leaps, 13–14
- Crick, Francis, 54, 145–148, 152–153, 157,
 218–219, 336, 378–379, 398, 416–417. *See
 also* DNA, double helix structure of
- Crocker, Jim, 165–167, 169, 266
- Crystallized knowledge (Gc), 342–343, 344
- Csikszentmihalyi, M., 48, 54, 71, 253, 259,
 262–263, 267–270, 367, 372. *See also*
 Unconscious processes
- Cubism, 398
- Cuelemans, C., 50
- Cultural relativism, 310–314

- Cushen, P.J., 253, 259
 Cyclothymia, 289
- Danek, A.H., 247
 Dante, 54
 Darwin, Charles, 54, 188, 256–257, 389, 453
 Daubman, K.A., 300–301
 Daydreaming, role in incubation, 274–275
 De Caro, M.F., 245–246
 Deep Dive shopping cart (IDEO)
 analogical thinking and, 152
 analogical transfer and, 12–13
 analytic thinking and, 35, 36
 associative process and, 34
 bottom-up processing and, 110
 brainstorming, 8–9
 casters, use of, 12–13, 14, 16, 35, 36, 84–85, 86, 110
 challenge to create, 4–5
 componential theory of creativity and, 416–417
 conclusions from, 17–18
 designer expertise and, 13
 dual-process theories and, 454
 environmental events, effect of, 87
 executive functioning and, 35
 extension of ideas and, 15–16, 35
 gathering information and, 82
 generation of ideas and, 15–16, 34
 “green” creativity and, 14, 36–37, 83, 84–85
 heuristic methods and, 82, 97
 incremental creativity and, 14
 logic and, 10–12
 novel components of, 11
 overview, 10
 plastic baskets, use of, 4, 10–12, 36, 83, 86
 problem-solving, as example of, 79, 82–83, 84–85
 prototyping, 9–10
 remote associations and, 378–379
 safety bar, use of, 4, 13, 14
 structure of analytic thinking and, 86
 sub-goals and, 83
 team, 7
 top-down processing and, 87
 Deep Learning, 229–232. *See also* Ohlsson, S.
 Default mode network (DMN), 449–451, 452, 453–454
 Defining creativity
 as configuration of traits, 43
 goal-directed novelty, 51–52
 Guilford on, 43
 intentional novelty, 54
 novelty component (*See* Novelty component of creativity)
 overview, 37
 standard definition, 43–44
 surprise component, 50–51
 systems view, 44–46
 three-factor definitions, 50–51
 value component (*See* Value component of creativity)
- De Groot, A., 190–192
 de Mestral, Georges, 167–169, 266
 Depression, 288–289, 291–292
 Depue, R.A., 299
 Designer expertise, 13
 Diagnostic and Statistical Manual (DSM), 290
 Dickinson, Emily, 297–298
 Dietrich, A., 454
 Digit-span tasks, 193–195
 Dijksterhuis, A., 271–272, 275, 277
The Disasters of War (Goya), 30–33, 152, 301
 Divergent thinking
 associative processes in, 344–346, 349
 componential theory of creativity and, 417–418
 creative thinking versus, 327
 executive functioning in, 346–349
 personality and, 385
 psychometric perspective on creativity, 326–327
 Divergent-thinking (D-T) tests
 associative processes and, 344–346, 349
 CHC theory (*See* Cattell-Horn-Carroll (CHC) theory of intelligence)
 creative thinking exercises, 320
 criticism of, 352
 discriminant validity, 332, 337–340
 executive functioning and, 346–349
 face validity, 332, 334–336
 fluency of thought, 342
 generality versus domain-specificity of creative thinking, 350–351
 Intelligence Quotient (IQ) (*See* Intelligence Quotient (IQ))
 originality, 342
 overview, 38, 319, 321, 327–328, 351–352
 predictive validity, 332, 333–334
 psychometric perspective on creativity (*See* Psychometric perspective on creativity)
 sensitivity to problems, 342
 Torrance Tests of Creative Thinking (TTCT) (*See* Torrance Tests of Creative Thinking (TTCT))
 usefulness of, 331–332

- DNA, double helix structure of
 generally, 157
 analogical thinking and, 148, 152–153
 analogical transfer and, 153
 componential theory of creativity and, 416–417
 D-T theory and, 335
 “green” creativity and, 146
 heuristic methods and, 148
 insight and, 218–219
 overview, 145–148
 remote associations and, 378–379
 triangle theory of creativity and, 398
- Dodge, R. Wagner “Wag,” 215–216, 221, 240, 242–243, 253, 258–259. *See also* Escape fire
- Dominowski, R.L., 227
- Donegan, Lonnie, 184
- Double helix structure of DNA. *See* DNA, double helix structure of
- Dow, S.P., 175–178
- Doyle, Arthur Conan, 66
- D-T tests. *See* Divergent-thinking (D-T) tests
- D-T theory, 335–336
- Dual-process theories
 default mode network (DMN) and, 453–454
 executive function network (ECN) and, 453–454
 generation versus evaluation of ideas, 453
 insight and, 454
 overview, 453–454
 problem-solving and, 454
 remote associations and, 454–456
- Dunbar, K., 169–171
- Dunkirk rescue
 bottom-up processing and, 110
 continuity of past and, 86
 East Mole, use of, 77–78, 80–81, 86, 90, 110
 “green” creativity and, 80–81, 84–85
 heuristic methods and, 82, 97
 judgment and, 90
 logic and, 81–82
 opportunistic assimilation and, 149
 overview, 75–78
 planning and, 89–90
 problem-solving, as example of, 79, 80–82, 84–85
 small ships, use of, 78, 80, 81–82, 84–85
 structure of analytic thinking and, 86
 top-down processing in, 87
- Edison, Thomas, 218–219, 240, 241–242, 416–417. *See also* Light bulb filament
- Einstein, Albert, 6, 35, 54, 388
- Eisenberger, R., 418
- Electroencephalograms (EEG), 430–432
- Elgammal, A., 53
- Emotion, role in creativity, 301
- Enlightenment, genius during, 60–61
- Environmental events, effect on analytic thinking, 87
- Epicurus, 254
- Ereku, M.H., 201
- Ericsson, K.A., 92–93, 193–195, 196–197, 199, 205
- Escape fire. *See also* Dodge, R. Wagner “Wag”
 analytic thinking and, 240, 242–244
 insight and, 215–216, 221, 243–244
 unconscious processes and, 253, 258–259
- Event construction, 440–441
- Evolution, 389
- Evolutionary theory of creativity, 256–257
- Executive functioning
 associative processes versus, 349
 brain networks and, 451–452
 CHC theory of intelligence and, 342
 Compound Remote Associates (CRA)
 problems and, 348–349
 Deep Dive shopping cart and, 35
 in divergent thinking, 346–349
 dual-process theories and, 453–454
 extension of ideas and, 34–35
 fluid intelligence (Gf) and, 348
 Guernica and, 34–35
 in insight, 234–235, 244–246
 in problem-solving, 110
 strategy use and, 347
- Experimental Workshop, Siqueiros, 124–126
- Extension of ideas
 “candle problem” and, 98–100
 Deep Dive shopping cart and, 15–16, 35
 executive functioning and, 34–35
 Guernica and, 26, 34–35
 overview, 15–16, 34, 39
- Extraversion, 355
- Eysenck, H.J., 377–378
- Fallingwater* (Frank Lloyd Wright)
 analogical transfer and, 118
 componential theory of creativity and, 416–417
 D-T theory and, 336
 expression of genius in, 116
 “green” creativity and, 118–120
 overview, 114–115
 Prairie House and, 118–120

- Fallingwater* (Frank Lloyd Wright) (Cont.)
 remote associations and, 378–379
 response to Kaufman and, 117–118
 site visit, effect of, 116–117
 speed of creation, 115–116
Taliesin and, 118
 triangle theory of creativity and, 398–399
- Falloon, S., 193–195
- Far analogies
 conceptual leaps and, 175–178
 creative thinking, usefulness in, 175
 in film, 171–174
 “general problem” and, 171, 174
 generation from others’ analogies, 171–174
 inert knowledge versus hidden knowledge, 174–175
 in manufacturing, 170
 near analogies versus, 169–170 (*See also* Analogical paradox)
 overview, 153
 “radiation problem” and, 174
 spontaneous far analogical transfer (*See* Spontaneous far analogical transfer)
 in teaching, 170
 use of, 170–171
 Velcro and, 168–169
- Federal Art Project, 124
- Feist, G.J., 358–359, 360–361, 363, 366, 367, 368–369, 370, 371–373, 380. *See also* Personality and creativity
- Feynman, Richard, 268–270
- Fioratou, E., 326, 347
- Fixation, 235. *See also* Insight
- Flat hierarchies, 259, 345, 350
- Fleck, J.I., 95, 235–236, 237, 238–240, 244, 247
- Fleming, Alexander, 388–389
- Fluid intelligence (Gf), 340–341, 343–344, 348
- Food processors, keeping lids clean, 141–142
- Forbus, K.D., 161
- Franco, Francisco, 18–19. *See also* *Guernica* (Picasso)
- Franklin, Rosalind, 148
- Frensch, P.A., 211, 392
- Fresh look hypotheses, 266, 276–277
- Frey, Art, 132–134
- Fuchs, Lazarus, 250
- Fuchsian functions, 250–251
- Gable, S.L., 274
- Galileo, 211
- Galton, Francis, 188–189
- Gatekeepers, 44–45, 47
- Gathering information
 Deep Dive shopping cart and, 82
 overview, 39–40
- “General problem,” 149–150, 155–157, 159, 160, 171, 174. *See also* Analogical thinking; Analogical transfer
- Generation of ideas
 as associative process, 34
 Deep Dive shopping cart and, 15–16, 34
 dual-process theories and, 453
Guernica and, 26, 34
 overview, 15–16, 34, 39
- Genius
 as born, 188–189, 214 (*See also* Talent)
 “creative genius,” 6–7
Guernica and, 56, 69–70
 as made, 189, 214 (*See also* Practice)
 psychopathology and (*See* Psychopathology and genius)
 talent versus, 65
- Genius and madness. *See* Psychopathology and genius
- Genius view of creativity
 analytic thinking versus, 68–70, 454–456
 in Ancient Greece, 56–58, 284
 in Ancient Rome, 58
 associative hierarchies, 66–68
 Barzun on, 63–64
 Bloom on, 64–65
 consciousness and, 64–65
 creativity versus genius, 63–64
 during Enlightenment, 60–61
 historical development of, 57, 62
 during Middle Ages, 58–59
 modern views, 63–65
 neuroscience and, 424
 originality and, 64
 overview, 37
 perfection and, 70–71
 in psychology, 65–66
 purity and, 70–71
 during Renaissance, 59–60
 during Romantic Period, 61–62
 talent versus, 65
 tension between knowledge and creativity (*See* Tension view)
- Gentner, D., 161, 178, 379. *See also* Analogical thinking
- Gestalt theory
 “antique coin problem” and, 225
 Compound Remote Associates (CRA) problems and, 222
 creative thinking as insight, 426
 criticisms of, 225–229

- dual-process theories and, 453, 454
- escape fire and, 221
- “green” creativity and, 219
- impasse in, 219–222
- insight problems, 222
- insight sequence, 221–222
- “9-dot problem” and, 226–228
- overview, 224
- progress monitoring theory and, 227–228
- reproductive versus productive thinking in, 219
- restructuring in, 219–222
- reversible cube and, 220–221
- working memory (WM) tests and, 228
- Getz, I., 301
- Getzels, J., 367, 372
- Gick, M.L., 155–160
- Giftedness
 - achievement and, 201
 - chess and, 201
 - creativity versus, 204
 - talent and, 186
- Gilhooly, K.J., 234, 326, 347
- Ginsburgh, V., 50
- Global thinking style, 389–390
- Gobet, F., 201, 212
- Goya, Francisco de, 30–33, 89
- Graham, Bette, 112–113, 114, 149, 163
- “Green” creativity
 - all levels of innovation, usefulness in, 143–144
 - analogical transfer and, 157
 - “candle problem” and, 98–100, 107–108
 - Deep Dive shopping cart and, 14, 36–37, 83, 84–85
 - double helix structure of DNA and, 146
 - Dunkirk rescue and, 80–81, 84–85
 - Fallingwater* and, 118–120
 - Gestalt theory and, 219
 - Guernica* and, 21, 27, 36–37, 83–85
 - modification of ideas, 14
 - overview, 14
 - Pollock and, 126
 - in problem-solving, 79, 97–98, 104
 - as real creativity, 37
 - tension between knowledge and creativity (See Tension view)
- Grossman, B.S., 418
- Grosul, M., 363
- Grunewald, K., 247
- Guernica* (Picasso)
 - analogical thinking and, 152
 - analytic thinking and, 35, 36
 - associative process and, 34
 - bottom-up processing and, 110
 - bullfighting and, 29–30, 83–84
 - characters, antecedents to, 30–31
 - componential theory of creativity and, 416–417
 - composition studies, 22–26
 - continuity of past and, 86
 - The Disasters of War* as antecedent, 30–33, 152, 301
 - D-T theory and, 335
 - dual-process theories and, 454
 - elements of, 19–20
 - emotion and, 301
 - environmental events, effect of, 87
 - executive functioning and, 34–35
 - extension of ideas and, 26, 34–35
 - generation of ideas and, 26, 34
 - genius and, 56, 69–70
 - “green” creativity and, 21, 27, 36–37, 83–85
 - heuristic methods and, 97
 - historical background, 18–19
 - imagining and, 89
 - incremental creativity and, 21, 27
 - Minotauromachy* as antecedent, 27–30, 32–33, 83–85, 86, 89, 97, 110, 378–379
 - planning and, 20–21, 89, 90
 - preliminary work, 20–21
 - problem-solving, as example of, 79, 83–85
 - remote associations and, 378–379
 - sketches, 21–22
 - synthesis and, 33–34
 - top-down processing and, 87, 110
 - triangle theory of creativity and, 398
- Guilford, J.P., 43, 321–323, 324–328, 332, 334, 335, 336, 337, 340, 351–352, 353, 382, 385, 453, 454. *See also* Psychometric perspective on creativity
- Hambrick, D.Z., 199, 203–204
- Hampshire, A., 245
- Harrison, George, 185
- Hassabis, D., 439, 440
- Haydn, Joseph, 60
- Hayes, J.R., 195–196, 204, 207
- Hendriks, E., 53
- Hennessey, B.S., 418
- Heuristic methods
 - in componential theory of creativity, 401, 411, 417–418
 - constraint relaxation, 230, 238–240
 - Deep Dive shopping cart and, 82, 97
 - double helix structure of DNA and, 148

- Heuristic methods (Cont.)
 Dunkirk rescue and, 82, 97
 elaboration, 230, 238–240
 Guernica and, 97
 insight and, 230, 237
 in investment theory of creativity, 387
 Neo-Gestalt theory and, 230
 in problem-solving, 82, 84, 94–97, 238–240
 re-encoding, 230, 238–240
 Representational Change Theory (RCT)
 and, 230
 in “triangle of coins problem,” 94–95, 107
 Hidden inhibition, 375–377
 High-practice failures, 199
 Hippocampus, 438–440, 443, 451
 HIV virus, 12
 Holyoak, K.J., 155–161, 170
 Hopper, E.A., 274
 Horn, J.L., 340
 Hubble Telescope
 adjustment of WFPC, 165–167
 COSTAR and, 165–167, 266
 opportunistic assimilation and, 163–167
 overview, 163–164
 problems with WFPC, 164–165
 Space Telescope Strategy Panel and, 165
 Huber, D.E., 348–349
 Huge 2 model of personality, 356–358, 359
 Hypofrontality, problem-solving and, 446–448
 Hypomania, 289
 Hypothermia in infants, solutions to, 138–140
- Ianoco, W.G., 299
 IBM, 112
 IDEO. *See* Deep Dive shopping cart (IDEO)
 Imagining in analytic thinking, 89
 Implantable kidneys, 134–135
 Impressionist painting, 218–219
 Incremental creativity
 Guernica and, 21, 27
 overview, 14
 Incubation
 Compound Remote Associates (CRA)
 problems and, 272–273
 conscious work hypotheses, 266, 275–276
 fresh look hypothesis, 266, 276–277
 laboratory research regarding, 264–266
 mechanisms of, 281–282
 mind-wandering, role of, 274–275
 opportunistic assimilation and, 266,
 277–278
 overview, 256, 263–264, 283
 sleep, role of, 272–273
 “spreading activation,” 282
 Individual differences in achievement, 200–202
 giftedness and, 201
 group means versus, 202–204
 intellectual-cognitive factors, 200
 memory skills, 200–201
 savants and, 202
 Inert knowledge problem
 accessing information from memory, 158,
 161–162
 “general problem” and, 159, 160
 inert knowledge versus hidden knowledge,
 174–175
 overview, 157–158
 “radiation problem” and, 159, 161
 “Red Adair problem” and, 159, 160
 spontaneous far analogical transfer and,
 160–161
 storing information in memory, 158–161
 Insight
 aerial screw and, 243–244
 “Aha!” experiences, 38, 222, 225, 233, 236,
 237–238, 246–247
 airplane and, 218–219
 analytic thinking, presence of, 225, 235–238,
 240, 243–244, 248
 analytic thinking versus, 16–17, 217
 “antique coin problem” and, 225
 “business as usual” view and, 225
 “candle problem” and, 236
 Compound Remote Associates (CRA)
 problems and, 222, 234–235, 236,
 426–430, 433, 434, 436
 Deep Learning and, 229–232 (*See also*
 Ohlsson, S.)
 double helix structure of DNA and, 218–219
 D-T theory and, 336
 dual-process theories and, 454
 escape fire and, 215–216, 240, 243–244
 executive functioning in, 234–235,
 244–246
 fixation and, 235
 Gestalt theory and (*See* Gestalt theory)
 heuristic methods and, 230, 237
 importance in creative thinking, 244
 Impressionist painting and, 218–219
 inappropriate or unwarranted
 representations, 246
 insight sequence, 221–222, 230, 236
 intoxication, effect of, 234–235
 laboratory research supporting, 233–235
 light bulb filament and, 218, 240, 243–244
 “lilies problem” and, 222, 237

- Neo-Gestalt theory and (*See* Neo-Gestalt theory)
 neuroscience and, 423, 426–437
 “9-dot problem” and, 226–228
 Ohlsson and (*See* Ohlsson, S.)
 overview, 16–17, 38, 217, 219
 periodic table and, 218–219
 Perkins and (*See* Perkins, D.N.)
 preparation for, 432
 problems to solve using, 222
 progress monitoring theory and, 227–228
 radar and, 217–218, 240, 243–244
 redistribution theory and, 230–231
 reorganization and, 434
 Representational Change Theory (RCT)
 and, 230–232
 restructuring from failure, 236
 selective combination, 389
 selective comparison, 389
 selective encoding, 388–389
 subtraction method and, 435–436
 sudden solution of problems, 234
 telephone and, 218–219
 “triangle of coins problem” and, 237
 working memory (WM) tests and, 228
 Inspiration, 175–176
 Intelligence Quotient (IQ)
 CHC theory (*See* Cattell-Horn-Carroll (CHC) theory of intelligence)
 components of, 341
 creativity versus, 321–322, 336, 340, 352
 crystallized knowledge (Gc), 342–343, 344
 discriminant validity of D-T tests, 337–340
 face validity of D-T tests, 336
 fluid intelligence (Gf), 340–341, 343–344, 348
 levels of, 341
 long-term retrieval (Glr), 342, 344
 short-term memory (Gsm), 342
 test questions, 321
 threshold theory and, 337–339
 working memory capacity (WMC), 342
 Interpretation of information in analytic thinking, 90–91
 Intoxication, effect on insight, 234–235
 Intuition. *See* Insight
 Inverted-U hypothesis
 bipolarity and, 293, 298, 300
 psychopathology and, 286
 schizophrenia and, 304
 Investment theory of creativity (Sternberg and Lubart)
 analytic intelligence in, 389
 “buy low, sell high,” 387
 creative intelligence in, 388–389
 creative personality in, 390
 environment and, 391
 heuristic methods in, 387
 intellectual skills in, 388–389
 motivation and, 390–391
 overview, 386–387
 personality in, 390
 practical intelligence in, 389
 resources needed, 388–391
 selective combination in, 389
 selective comparison in, 389
 selective encoding in, 388–389
 testing of, 395–397
 thinking style and, 389–390
 Isen, A.M., 300–301

 Jamison, K.R., 290–292, 294, 308
 Jarosz, A.F., 233, 234–235, 244
 Jaspers, Karl, 313
 Jastrzębski, J., 244–245
 Jauk, E., 338–339, 349
 Jing, H.G., 440
 Joy, S., 380, 381–382
 Judgment in analytic thinking, 90
 Julius II (Pope), 59
 Jung, R.E., 454
Jurassic Park (film), 171–174

 Kaufman, A., 301
 Kaufman, G., 301
 Kaufman, J., 291–292
 Kaufman, S.B., 365, 366
 Kaufmann, E.J., 114–118
 Keane, M., 157–158
 Kekulé, August, 251–252, 263, 266–268, 389.
 See also Benzene, ring structure of
 Kelley, Dave, 9
 Kershaw, T.C., 235
 Kim, K.H., 331, 337–338
 “Kind world” hypothesis, 178, 248, 379
 King, L.A., 384–385
 King’s College, 147–148
 Kinney, D.K., 293, 294, 298, 303
 Klee, Paul, 208
 Klinger, E., 450–451
 Koestler, A., 310
 Kogan, N., 337
 Kounios, J., 216, 221, 233, 242–243, 253, 258–259, 426–427, 428–429, 432–435, 436–437, 456. *See also* Insight;
 Neuroscience of creativity

- Kozbelt, A., 209–210
 Kraepelin, E., 288
 Krampe, R.T., 196–197
 Krawczyk, D.C., 170
 Kretz, D.R., 170
 Kuhn, T., 311
 Kumaran, D., 439
 Kwok, S., 228
 Kyaga, S., 294, 304
- Landmann, N., 273
 “Laser/brain-tumor problem,” 150–151, 153–155, 157
 Latent inhibition, 375–377
 Legislative thinking style, 389–390
 Lemieux, Mario, 205, 214
 Lennon, John, 184–186, 187, 249
 Leonardo da Vinci, 54, 59, 68, 211, 416–417.
 See also Aerial screw (Leonardo)
 LePort, A.K., 200–201
 Li, J., 53
 Lifetime Creativity Scales, 292, 303, 304
 Light bulb filament. *See also* Edison, Thomas
 analytic thinking and, 240, 241–242, 243–244
 componential theory of creativity and, 416–417
 insight and, 218, 240, 243–244
 “Lilies problem,” 222, 237
 Little-c creativity, 114
 Local analogies, 152
 Loewenstein, J., 161
 Logic
 creativity and, 10–12
 Dunkirk rescue and, 81–82
 Long-term retrieval (Glr), 342, 344
 Loose associations, 350
 “Love Me Do” (Beatles), 186–187
 Lubart, T.I., 301, 386–391, 393, 395, 396–397, 416, 419. *See also* Investment theory of creativity
 Ludwig, A.M., 308–309, 362, 383
 Lung, C.-t., 227
- Maar, Dora, 20–21, 25, 26
 MacGregor, J.N., 227–228, 229
 Mackinnon, D.W., 367
 Macnamara, B.N., 199
 Madore, K.P., 440–441, 446
 Maguire, E.A., 439–440, 442–443
 Mania
 as caused by creativity, 298–299
 as increasing creativity, 295–298
 overview, 288
- Mann Gulch Fire, 215–216
 Marshall, Barry, 128–132
 Martindale, C., 384
 Mayer, A., 295–297
 McCartney, Paul, 184–186, 187, 249, 272
 McKool, S.S., 402
 McLeod, P., 212
 Measuring creativity. *See* Divergent-thinking (D-T) tests
 Medical avatars, 135
 Mednick, S.A., 66–69, 70, 256, 257–258, 259–260, 261, 307, 345, 348, 349, 377. *See also* Associative hierarchies
 Meissonier, Jean-Louis-Ernest, 41–42, 48, 49, 54
 Memory and creativity
 amnesia, 438, 440
 anterograde amnesia, 438
 event construction, 440–441
 hippocampus and, 438–440, 443
 individual differences in achievement and, 200–201
 memory-span tasks, 193–195
 neuroscience and, 423, 437–441
 overview, 423
 retrograde amnesia, 438
 scene construction, 439–440
 short-term memory (Gsm), 342
 working memory capacity (WMC), 342
 working memory (WM) tests, 228
 Memory-span tasks, 193–195
 Mendeleyev, Dmitri, 218–219
 Meredith, Owen, 66
 Mervino, R.A., 171–174
 Metcalfe, J., 234, 237–238
 Meurs, T., 271–272, 275, 277
 Michelangelo, 54, 59
 Middle Ages, genius during, 58–59
 Millar, G., 333–334
 Mind-wandering, role in incubation, 274–275
Minotauromachy (Picasso), 27–30, 32–33, 83–85, 86, 89, 97, 110, 378–379
 Miranda, Lin Manuel, 54
 Mistake Out, 112–113, 114, 139–140, 163
 Modern views on genius, 63–65
 Mondrian, Piet, 383
 Morrison, Toni, 54
 Moss, J., 236, 434
 Mozart, Leopold, 60, 206–207
 Mozart, Maria Anna, 206
 Mozart, Wolfgang Amadeus
 generally, 54, 60, 201, 211
 development as composer, 205–207

- practice and, 213–214
- precociousness of, 205–207
- purity and perfection and, 70–71
- talent and, 198
- “10-year rule” and, 195, 209–210, 213
- Mullally, S.L., 440
- Murphy, P., 234
- Murray, P., 55–56, 70–71, 285–286
- Muses, 56–58, 284
- Musicaro, R., 441
- National Aeronautics and Space
 - Administration (NASA), 163–164. *See also* Hubble Telescope
- National Geographic Channel*, 6
- National Geographic* (magazine), 6
- Negative emotionality, 355
- Neo-Gestalt theory
 - breakthrough thinking and, 120–121
 - Compound Remote Associates (CRA)
 - problems and, 234–235
 - Deep Learning, 229–232
 - fixation and, 235
 - heuristic methods and, 230
 - insight and creativity in, 233, 248
 - insight sequence and, 230
 - other Neo-Gestalt views, 232–233
 - overview, 235
 - problem-solving and, 238–240
 - redistribution theory and, 230–231
 - Representational Change Theory (RCT)
 - and, 230–232
 - restructuring in, 232–233
- Neubauer, A.C., 339, 346
- Neuroscience of creativity
 - arithmetic and, 425, 446–448
 - brain networks and (*See* Brain networks)
 - brain stimulation and, 424, 444–446
 - cab drivers and, 442–443
 - changes in brain structure in development of
 - expertise, 423–424, 442–444
 - Compound Remote Associates (CRA)
 - problems and, 426–430, 433, 434, 436
 - cranial electrotherapy stimulation, 444
 - electroencephalograms (EEG) and,
 - 430–432
 - genius view of creativity and, 424
 - hippocampus, 438–440, 443, 451
 - hypofrontality, problem-solving and,
 - 446–448
 - insight and, 423, 426–437
 - isolation of location of creative thinking,
 - 423, 424–426
 - memory and, 437–441 (*See also* Memory and creativity)
 - “9-dot problem” and, 444–446
 - overview, 38, 423–424, 456–457
 - preparation for insight, 432
 - pure insertion and, 425–426, 428–429,
 - 435–436
 - reorganization and, 434
 - resting-state brain activity, 433
 - right occipital cortex and, 431–432
 - right temporal lobe and, 430–431
 - subtraction method and, 425–426, 428–429,
 - 435–436
 - transcranial direct current stimulation
 - (tDCS), 444–446
 - transcranial magnetic stimulation (TMS), 446
- Newton, Isaac, 60
- Nightline* (television program), 4–5
- “9-dot problem,” 226–228, 444–446
- Non-representational works of art, 123
- Novelty component of creativity
 - bizarre responses, exclusion of, 52
 - empirical determination of, 53–54
 - goal-directed novelty, 51–52
 - intentional novelty, 54
 - intent requirement, 51–52
 - overview, 51–52, 54
 - permanence of, 52–53
- Nowicki, G.P., 300–301
- Nusbaum, E.C., 244, 343–344, 348, 349
- Ochse, R., 391
- Ohlsson, S., 218–219, 229–232, 233, 235,
 - 238–240, 241–242. *See also* Deep Learning; Insight
- Olton, R.M., 275
- OpenIDEO, 175–178
- Open-mindedness
 - in artists, 363–365
 - in Big 5 inventory, 355, 356, 359
 - cognitive inhibition and, 375–377
 - creativity and, 365, 374–377
 - equivalence with creativity, 384–385
 - hidden inhibition and, 375–377
 - latent inhibition and, 375–377
 - in scientists, 363–365
- Opportunistic assimilation
 - Dunkirk rescue and, 149
 - Hubble Telescope and, 163–167
 - illuminations and, 266
 - incubation and, 266, 277–278
 - Mistake Out and, 163
 - overview, 148–149, 163

- Opportunistic assimilation (Cont.)
 - unconscious processes and, 266, 277–278
 - Velcro and, 167–168
- Ordinary thinking. *See* Analytic thinking
- Ormerod, T.C., 227–228, 264–265
- Orosco, José Clemente, 125
- Osborne, Alex, 8
- Oswald, F.L., 199
- “Outside-the-box thinking”
 - aerial screw and, 120–121
 - creative leaps, 13–14
 - insight (*See* Insight)
 - overview, 6–7
 - special process thinking, 16–17
 - tension between knowledge and creativity (*See* Tension view)
- Özen, G., 245
- Palmer, E.D., 129
- Pan, L., 441
- Pariser, D., 208
- Parker, Charlie, 54
- Pauling, Linus, 146, 147, 153, 157, 378–379, 398
- Penicillin, 388–389
- Perfection, genius and, 70–71
- Periodic table, 218–219
- Perkins, D.N., 120–121, 225, 229, 232, 233
- Personality and creativity
 - in architects, 367
 - in artists, 360–365, 367 (*See also* Artists)
 - Big 5 inventory (*See* Big 5 inventory)
 - Big 2 model, 356–358, 359
 - componential theory of creativity and, 412
 - control groups, 365–368
 - correlation of personality and creativity, 371
 - correlation versus causation, 369–371
 - creativity index, 363
 - divergent thinking and, 385
 - elimination of other causes, 373–374
 - general model of, 358–360
 - Huge 2 model, 356–358, 359
 - identification of creative people, 385
 - in investment theory of creativity, 390
 - “need to be different” and, 381–382
 - open-mindedness (*See* Open-mindedness)
 - outstanding questions, 354, 380, 382–385
 - overview, 38, 322, 353, 380
 - personality as cause of creativity, 369–374
 - plasticity, 356–358, 359
 - psychoticism, 377–378
 - remote associations and, 378–380
 - role of personality, 353
 - in scientists, 360–365, 368–369 (*See also* Scientists)
 - stability, 356–358, 359
 - studies of, 365–368
 - time order of cause and effect, 371–373
 - traits of personality, 353
 - usefulness of search for true “creative personality,” 382–384
- Picasso, Pablo
 - generally, 68
 - development as painter, 207–209
 - Guernica* (*See* *Guernica* (Picasso))
 - Minotauromachy*, 27–30, 32–33, 83–85, 86, 89, 97, 110, 378–379
 - practice and, 213–214
 - precociousness of, 207–209
 - Spanish Civil War and, 18–19
 - talent and, 198
 - “10-year rule” and, 195
- Planning in analytic thinking, 89–90
- Plasticity, 356–358, 359
- Plato, 56–58
- Plucker, J., 333
- Poetry, bipolarity and, 291
- Poincaré, Henri, 249–251, 252–256, 257–258, 259–260, 261–262, 263, 266–267, 275, 279, 281, 374, 377, 455. *See also* Unconscious processes
- Pollock, Jackson, 383
 - analogical transfer and, 125–126
 - analytic thinking and, 126
 - development of technique, 126
 - Experimental Workshop, 124–126
 - “green” creativity and, 126
 - overview, 123
 - radical style of, 123–124
 - Siqueiros and, 124–126
- Pool, R., 205
- Porter, Cole, 299
- Post, F., 285–286
- Post-It Notes, 132–134
- Practice
 - achievement, relationship with, 199
 - The Beatles and, 188, 213–214
 - correlation versus causation, 198–199
 - digit-span tasks and, 193–195
 - expertise, effect on, 196–197
 - group means versus individual differences, 202–204
 - high-practice failures, 199
 - memory-span tasks and, 193–195
 - Mozart and, 213–214
 - in music, 196–197

- Picasso and, 213–214
 precociousness and, 205
 rejection of talent, criticism of, 198
 retrospective studies of, 198–199
 study design, effect of, 199
 talent versus, 183–184, 198–199, 204, 214
 (See also Talent)
 “10-year rule” (See “10-year rule”)
Prairie House (Wright), 118–120, 398–399
 Precociousness
 of Mozart, 205–207
 overview, 186
 of Picasso, 207–209
 practice and, 205
 talent and, 186, 205
 Problem-solving
 algorithms, 85
 analogical thinking and, 149–152
 analogical transfer during, 155–157,
 162–163, 179
 analytic thinking and, 79
 “birds and trains problem,” 106–107
 bottom-up restructuring in, 238–240
 “candle problem,” 98–104 (See also “Candle
 problem”)
 creative thinking and, 79, 91–92
 Deep Dive shopping cart as example of, 79,
 82–83, 84–85
 definition of problem, 79–80
 dual-process theories and, 454
 Dunkirk rescue as example of, 79, 80–82,
 84–85
 as dynamic process, 104–105
 executive functioning in, 110
 “green” creativity in, 79, 97–98, 104
 Guernica as example of, 79, 83–85
 heuristic methods in, 82, 84, 94–97, 238–240
 hypofrontality and, 446–448
 laboratory research on, 79, 93–94
 model of, 108–109
 Neo-Gestalt theory and, 238–240
 overview, 37, 110–111
 representation of problem and, 105–106
 “strong” methods, 84
 sub-goals, 83
 top-down restructuring in, 238
 “triangle of coins problem,” 94–95
 verbal protocols and, 92–93
 “weak” methods, 84
 Professional (pro-c) creativity, 113–114, 136
 Progress loop, 405
 Progress monitoring theory, 227–228
 Prototyping, 9–10
 Psychology, genius in, 65–66
 Psychometric perspective on creativity
 components of creative process, 323–324
 creative thinking versus divergent
 thinking, 327
 curiosity, 324
 divergent thinking, 326–327
 divergent-thinking (D-T) tests (See
 Divergent-thinking (D-T) tests)
 elaboration, 326
 flexibility of thought, 325, 351
 fluency of thought, 324–325, 351
 identification of creative people and, 385
 IQ versus creativity, 321–322, 336, 340, 352
 motivation to be first to do something, 324
 originality, 325–326, 351
 overview, 321–323
 rarity versus originality, 325–326
 sensitivity to problems, 323, 324
 Psychopathology and genius
 affect, role in creativity, 300–301
 bipolarity (See Bipolarity and genius)
 career choice and, 308–309
 cognitive tuning theory and, 301
 correlation versus causation, 287, 295
 cultural relativism and, 310–314
 data, questions regarding treatment of,
 314–315
 emotion, role in creativity, 301
 historiometric analysis, 285–288
 inverted-U hypothesis and, 286
 Modernism and, 310–311
 overview, 38, 284–285, 307–308, 315–316
 peak level of psychopathology, 286–287
 Postmodernism and, 308, 310–311
 Romanticism and, 308, 309–311, 312–314
 schizophrenia (See Schizophrenia and
 genius)
 in science, 311
 shared vulnerability hypothesis (See Shared
 vulnerability hypothesis)
 social factors and, 309–314
 “Sylvia Plath Effect,” 291–292
 testing of hypothesis, 285
 Psychoticism, 377–378
 Pure insertion, 425–426, 428–429, 435–436
 Purity, genius and, 70–71
 The Quarrymen, 184. See also The Beatles
 Radar
 analytic thinking and, 240, 241, 243–244
 insight and, 217–218, 243–244

- “Radiation problem,” 151, 153–157, 159, 161, 174
 Ramey, C.H., 297–298
 Raphael, 207
 “Red Adair problem,” 159, 160
 Redistribution theory, 230–231
 Regional analogies, 153
 Rembrandt, 211
 Remembering in analytic thinking, 89
 Remote analogies. *See* Far analogies
 Remote associations, 378–379, 454–456
 REM sleep, role in incubation, 273
 Renaissance, genius during, 59–60
 Representational Change Theory (RCT), 230–232. *See also* Ohlsson, S.
 Representational works of art, 123
 Restricted hierarchies, 258
 Retrograde amnesia, 438
 Reverberi, C., 446–448
 Reversible cube, 220–221
Revolver (Beatles), 185
 Richards, R., 292–293, 294, 298, 303
 Richardson, J., 207–208
 Richland, L.E., 170
 Right occipital cortex, 431–432
 Right temporal lobe, 430–431
 Rivera, Diego, 125
 Roberts, R.P., 441, 454
 Romantic Period, genius during, 61–62
Rubber Soul (Beatles), 185
 Runco, M.A., 333–334
- Saleh, B., 53
 Sass, L.A., 308–312, 383. *See also* Psychopathology and genius
 Savants, 202, 204, 214
 Sawyer, K., 267–270
 Scene construction, 439–440
 Schacter, D.L., 440–441, 446
 Schaller, M., 299
 Schiller, Friedrich, 312–313
 Schizophrenia and genius
 creativity, effect on, 303–304
 disordered content versus disordered form, 302
 flat effect, 302
 inverted-U hypothesis and, 304
 overview, 302
 schizophrenia spectrum, 302–303
 Schlesinger, J., 294
 Schönauer, M., 273
 Schooler, J.W., 274
 Schopenhauer, Arthur, 66
- Schou, M., 298
 Schuldberg, D., 311–312
 Schumann, Robert, 295–297
 Schunn, C.D., 170, 175–178
 Schwarz, Dragutin, 126
 Schwarz, N., 301
 Schwinger, Julian, 268–270
 Scientists. *See also specific scientist*
 arrogance in, 362–363, 368–369, 370, 372
 artists compared, 360–365
 flexibility in, 363, 372–373
 nonsocial personality traits of, 362
 open-mindedness in, 363–365
 personality and creativity in, 360–365
 personality profile, 362–363
 psychopathology and genius in, 311
 social personality traits of, 362
 studies of personality, 368–369, 372–373
 Seifert, C.M., 277–278
 Selective combination in insight, 389
 Selective comparison in insight, 389
 Selective encoding in insight, 388–389
Sergeant Pepper's Lonely Hearts Club Band (Beatles), 185, 187
 Shakespeare, William, 54
 Shared vulnerability hypothesis
 cognitive disinhibition as factor, 305–306
 overview, 305
 preference for novelty as factor, 306
 questions regarding, 307
 risk/protective factors, 306–307
 vulnerability factors, 305–306
 Shopping carts
 Deep Dive shopping cart (*See* Deep Dive shopping cart (IDEO))
 overview, 3–4
 safety problems, 7–8
 theft of, 8
 Shortlisting, 176
 Short-term memory (Gsm), 342
 Sightedness, 259–260
 Silicon Valley, 13
 Silver, Spencer, 132–134. *See also* Post-It Notes
 Silvia, P.J., 244, 343–344, 348, 349
 Simon, H.A., 92–93, 191–192, 253, 394
 Simonton, D., 65–66, 211, 259–262, 285–288, 453
 Simultaneous-convergence solution, 150–151, 155
 Sio, U.N., 264–265
 Siqueiros, David Alfaro, 124–126
 Sistine Chapel, 59

- Slater, E., 295–297
 Sleep, role in incubation, 272–273
 Sloboda, J.A., 202–204
 Smith, K.A., 348–349
 Smith, S.M., 276–277
Smithsonian (magazine), 6
 Snyder, A.W., 444–446
 Social psychology and creativity, 400. *See also*
 Componential theory of creativity
 Space Telescope Strategy Panel, 165
 Spanish Civil War, 18–19
 Special process thinking, 16–17
 Spontaneous far analogical transfer
 inert knowledge problem and, 160–161
 lack of, 157–158
 Stability, 356–358, 359
 Stage theory of creativity, 256. *See also*
 Wallas, G.
 illuminations, 256
 incubation, 256
 preparation, 256
 verification, 256
 Standard definition of creativity, 43–44
 Starr, Ringo, 185
 Steep hierarchies, 258, 349, 350
 Sternberg, R.J., 198, 201, 205–206, 207, 211,
 386–391, 392–393, 394–395, 396–397,
 398, 399, 416, 419. *See also* Investment
 theory of creativity; Triangle theory of
 creativity
 Stigler, J.W., 170
 Streeter, N.L., 228
 Structured imagination, 212
 Structure of analytic thinking, 85–86
 Study of Mathematically Precocious Youth
 (SMPY), 339–340
 Sub-goals, 83
 Subtraction method, 425–426, 428–429,
 435–436
 Surprise component of creativity, 50–51
 “Sylvia Plath Effect,” 291–292
 Systems view of creativity, 44–46
 Talent
 achievement, relationship with,
 202, 204
 The Beatles and, 185–186
 defined, 186
 genius versus, 65
 giftedness and, 186
 Mozart and, 198
 overview, 37, 179
 Picasso and, 198
 practice versus, 183–184, 198–199, 204, 214
 (*See also* Practice)
 precociousness and, 186, 205
 rejection of, criticism of, 198
Taliesin (Frank Lloyd Wright), 118
 Telephone, 218–219
 Tennant, William, 77, 80–81, 84–85, 86, 90,
 110, 149. *See also* Dunkirk rescue
 Tension view
 bridge and, 211
 chess and, 212
 criticism of, 212–213
 laboratory research supporting, 211–212
 overview, 210–211, 213
 structured imagination and, 212
 “10-year rule”
 The Beatles and, 192, 213
 chess and, 190–192
 Mozart and, 195, 209–210, 213
 in music, 195
 origins of, 192
 overview, 190–192, 196
 in painting, 195–196
 Picasso and, 195
 skills developed during, 209–210
 Tesch-Römer, C., 196–197
 Testing for creativity. *See* Divergent-thinking
 (D-T) tests
 Thompson, L., 161
 Thompson-Schill, S.L., 448
 Thrakal, P.P., 446
 Three-factor definitions of creativity, 50–51
 3 M, 132–134
 Threshold theory, 337–339
 Top-down processing in analytic thinking,
 86–87, 110, 379
 Torrance, E.P., 328, 333
 Torrance Tests of Creative Thinking (TTCT)
 figurative scale, 330–331
 non-verbal tasks, 330–331
 overview, 328
 predictive validity, 333–334
 verbal scale, 328–330
 verbal tasks using non-verbal stimuli,
 329–330
 verbal tasks using verbal stimuli, 328–329
 verbal versus figurative forms, 331
 Toulouse-Lautrec, Henri, 208
 Transcranial direct current stimulation (tDCS),
 444–446
 Transcranial magnetic stimulation (TMS), 446
 Transparent analogies, 153
 Trench, M., 171–174

- “Triangle of coins problem,” 94–95, 107, 237
- Triangle theory of creativity (Sternberg). *See*
 - also Investment theory of creativity (Sternberg and Lubart); Lubart, T.I.; Sternberg, R.J.
- case studies and, 399
- criticism regarding defiance, 398–399
- crowd, defiance of, 392
- defiance in, 392, 394
- double helix structure of DNA and, 398
- Fallingwater* and, 398–399
- Guernica* and, 398
- negative consequences of expertise and, 399
- overview, 386, 391, 399, 419–420
- reinitiation in, 394
- self, defiance of, 392–393
- synthesis in, 394
- testing of, 395, 398
- types of creativity, 394–395
- Zeitgeist*, defiance of, 393–394
- Ulcers, bacteria as cause of, 126–132
 - analytic thinking and, 131–132
 - gastric biopsies and, 127–128
 - H pylori* and, 129–131
- Unconscious processes
 - “Aha!” experiences and, 252
 - associative connections and, 262–263
 - associative hierarchies and, 257–258
 - Campbell on, 256–257
 - combinations of ideas, 253–256
 - Compound Remote Associates (CRA) problems and, 282
 - conscious work hypotheses, 266, 275–276
 - Csikszentmihalyi in, 262–263
 - escape fire and, 253, 258–259
 - evolutionary theory of creativity, 256–257
 - fresh look hypothesis, 266, 276–277
 - Fuchsian functions and, 250–251
 - how combinations becomes conscious, 255–256
 - illuminations, 256, 266
 - incubation (*See* Incubation)
 - laboratory research regarding, 271–272
 - lack of single “correct” theory, 279–281
 - mechanisms of combinations of ideas, 253–254
 - Mednick on, 257–258
 - opportunistic assimilation and, 266, 277–278
 - overview, 38, 252–253, 283
 - Poincaré on, 253–256
 - preparation, 256
 - ring structure of benzene and, 251–252, 263, 267–268
 - sightedness and, 259–260
 - Simonton on, 259–262
 - stage theory, 256
 - subjective reports as evidence of, 266–271
 - theories of, 255
 - verification, 256
 - Wallas on, 256
 - “Yesterday,” McCartney and, 249
- Unconscious Thought Theory, 271
- Under-the-radar innovation
 - airline overflights, savings involving, 137–138, 139–140
 - analytic thinking in, 142–143
 - bacon, eliminating problems with freezing, 141
 - bottles, eliminating problem of oil on, 141
 - coffee lids, savings involving, 137, 139–140
 - cooking spray, eliminating waste of, 140
 - food processors, keeping lids clean, 141–142
 - hypothermia in infants, solutions to, 138–140
 - Mistake Out, 112–113, 139–140
 - overview, 112–113, 136–137
 - questions regarding, 139–140
 - water pitchers, eliminating problems in filling, 142
- Value component of creativity
 - gatekeepers, disagreement among, 47
 - ordinary language, conflicts with, 47–48
 - overview, 46–47, 51
 - posthumous creativity, 48–49
 - problems with, 47–50
 - subjects of study, 49–50
- van Gogh, Vincent, 41–42, 48–49, 53, 54, 71
- Vann, S.D., 439
- Vasari, Giorgio, 59–60
- Velcro, 167–169, 266
- Verbal protocols, 92–93
- Vul, E., 348–349
- Wallach, M., 337
- Wallas, G., 256, 262, 263, 266–267, 268. *See also* Stage theory
- Wang, J.Z., 53
- Ward, T.B., 178, 212
- Warhol, Andy, 308, 311
- Warren, J.R., 127–132
- Water pitchers, eliminating problems in filling, 142

- Watson, James, 54, 145–148, 152–153, 157,
218–219, 336, 378–379, 398, 416–417. *See*
also DNA, double helix structure of
- Watson, John B., 189, 192
- Weisberg, R.W., 95, 226–228, 229, 235–236,
237, 238–240, 244, 247, 297–298, 445–446
- Weyers, S., 50
- Wide Field Photo Camera (WFPC), 163–167.
See also Hubble Telescope
- Wiley, J., 212, 232, 233, 234–235, 244, 253, 259
- Wilkins, Arnold, 217–218, 240, 241
- Wilkins, Maurice, 148
- Winner, E., 201, 204, 205
- Woodworth, R., 276
- Woollett, K., 442–443
- Wordsworth, William, 62
- Working memory capacity (WMC),
342
- Working memory (WM) tests, 228
- Wright, Frank Lloyd
Fallingwater (*See Fallingwater* (Wright))
Prairie House, 118–120, 398–399
Taliesin, 118
- Wright Brothers, 218–219
- Wynn, V., 326, 347
- Yao, L., 53
- “Yesterday” (Beatles), 249, 272
- Zhang, L., 397