

## Index

- Abrahamsen, Adele, 129  
 activation, 24, 45–47, 48–52, 57–61, 67,  
   80–81, 84–85, 98–99, 117–118  
 Alzheimer’s disease, 9, 95, 103–107  
 analogy, 64–65, 111–112, 131  
 Anderson, James, 131  
 Aristotle, 65  
 artificial intelligence (AI), 3, 77, 128–129, 132  
 association, 9, 35, 38, 45, 61, 66–67, 70–72, 118  
 attractor, 58–63, 80, 112–114, 125  
 autism, 60–61  
 axon, 23–27, 103–104
- Bechtel, William, 129  
 brain damage, 9, 95–107, 133  
 Buck, Linda, 86, 132  
 Bunge, Mario, 130
- Chomsky, Noam, 79  
 classical theories, 3–5, 116  
 classification, 58–61, 68, 71  
 cognitive psychology, 31, 35, 39, 82  
 cognitive science, 3  
 Collins, A. M., 130  
 color vision, 2, 20, 22  
 communication, 71  
 computer models, 1, 5, 8, 31–34, 75–85, 122,  
   132, 134  
 concepts, 3–4, 35–39, 41–46, 67, 86, 116–117,  
   121  
 connectionist theory, 1–6, 8–10, 30, 32, 75,  
   79–86, 88–89, 95, 113–134  
   *see also* networks, connectionist  
 consciousness, 5, 7, 12, 129  
 context, 66  
 cortex, 2, 8, 90, 133  
 criticism, 10
- DeBono, Edward, 43–44, 114–115, 131, 133  
 deduction, 72–73
- dendrites, 23–27, 103–104  
 Dennett, Daniel, 7, 37, 129, 131  
 Descartes, Rene, 13  
 Dewdney, A. K., 119–125, 133  
 differentiation, 62, 68–70, 113  
 distributed knowledge, 4, 98  
 Dreyfus, Hubert, 128–129, 134  
 Dreyfus, Stuart, 128–129, 134  
 dualism, 13, 130
- Edelman, Gerald, 130  
 electric charge, 23–26  
 emotions, 7–8  
 environment, 19  
 error, 77–85  
 executive function, 6, 101–103  
 experience, 5, 28, 53  
 experiments, 9, 10, 30–31, 33, 73, 75–85, 122,  
   126
- feedback, 22  
 “flashbulb” memories, 92  
 Fodor, Jerry, 19, 116–118, 130, 133  
 frequency effect, 84  
 frontal lobes, 101–103
- generalization, 17, 60–62  
 grammar, 22, 118  
 grammatical transformation, 67–68
- habituation, 58  
 Hebb’s rule, 28, 56–57  
 heredity, 18  
 hierarchy, 6–7  
 hill-climbing problem, 125–126  
 Hinton, Geoffrey, 41, 131  
 hippocampus, 90–91, 100, 133  
 homunculus argument, 38, 44
- inhibition, 24, 47, 48

- injuries, head, 9  
 Internet, 5–6  
 IQ tests, 101, 120–121
- learning, 54–65, 68–70, 77–82, 106–107,  
 110–111, 127, 132–133  
 letters, 34, 47, 82–85, 121–122  
 levels of explanation, 2–3  
 logic, 73, 76–77
- McClelland, James, 41, 79–85, 89, 121–123,  
 126–127, 129, 131–133  
 McNaughton, Bruce, 89, 133  
 meaning, 82–83  
 membrane, 23–26, 28  
 memory, 4, 9, 87–94, 99–100, 102, 108–110,  
 132–133  
 metaphor, 64–65  
 mind-reading, 15–19, 130  
 Minsky, Marvin, 124  
 models, 30, 32–35, 42, 48, 75, 80, 88–89  
 modules, 21–22, 27, 31–32, 67  
 monism, 13, 130
- nerve cells, 1, 2, 3, 21–22, 24, 105  
*see also* neurons  
 networks, 6–7, 91–93, 95–98, 104, 109–110,  
 113, 116–119, 121  
   connectionist, 40–74, 77, 80–82, 88–89  
   neural, 1, 8, 10, 21, 26–27, 32, 35, 43–44,  
   55–59, 74, 87, 89–90, 96–97, 103–104,  
   124–126  
   semantic, 35–41, 54, 67, 70, 72–74, 117,  
   130–131  
 neurons, 1, 3, 15–19, 20, 21–29, 31–32, 37,  
 42–45, 48–58, 61, 85–86, 89–92, 94,  
 95–97, 103–106, 110, 126, 130  
   regeneration of, 105–106  
   *see also* nerve cells  
 neuropsychologist, 97, 101  
 neurotransmitter, 25  
   *see also* transmitter  
 nonword, 83–85
- odorant, 86  
 O'Reilly, Randall, 133
- Papert, Seymour, 124  
 parallel distributed processing (PDP), 1, 2, 4,  
 41–42, 123, 129, 134  
 parallel pathways, 101–103  
 pattern of activity, 43, 45–54, 56–64, 67–70,  
 73, 80–81, 86, 111–114, 117  
 perception, 2–3, 27, 82–85, 121–122  
 perceptron, 124  
 perspective shift, 113–114  
 PET scans, 15, 31
- Pinker, Steven, 126–127, 134  
 plasticity, 28  
 Prince, Alan, 127, 134  
 problem-solving, 125–126  
 process–content distinction, 13–14  
 Pylyshyn, Zenon, 116–118, 133
- Quillian, M.R., 130
- reaction time, 77  
 reading, 33–34  
 receptors, 24–25, 85–86, 132  
 Reed, Randall, 86, 132  
 regularization, 79–82  
 rehabilitation, 98–103  
 relations, 9, 35, 38–39, 41, 66–74, 117  
 representationalism, 116–119, 127–128, 130,  
 134  
 Rosenberg, Charles, 77–79, 132  
 Rosenblatt, Frank, 124  
 rule-following, 73, 79–82  
 Rumelhart, David, 41, 79–85, 121–123,  
 126–127, 129, 131–132
- Seidenberg, Mark, 127, 134  
 Sejnowski, Terry, 77–79, 132  
 self-reflection, 12, 115  
 sentences, 22, 67–69, 73, 117–119  
 Shanon, Benny, 128, 134  
 simulation, 30–32, 75–85, 131–132  
 smell, 85–86  
 Smullyan, Raymond, 130  
 spinal-cord injury, 105–106  
 stroke, 9, 95–100, 102  
 studying, 108–110  
 synapse, 23–29
- teaching, 110–112  
 theories, 30, 33–35, 39  
 therapist, 113–114  
 token–token identity, 14–15  
 traffic accidents, 101–103, 134  
 transmitter, 24–25, 28  
   *see also* neurotransmitter  
 Tulving, Endel, 132
- vision, 75–77  
 Vygotsky, Lev, 63–64
- Winston, P.H., 131  
 word fragments, 84–85  
 words, 33–34, 38–39, 77–85, 97, 118–119,  
 121–122  
 word-superiority effect, 82–85, 132
- zone of proximal development (ZPD), 64