Index

A

accuracy, 82, 82*f*
action, 7, 77–79, 82, 96
  case study, 85
  collective, 152–153
  in VSAL model, 65, 66*f*, 67, 95
action planning
  in concept mapping, 102–103
  for research utilization, 89, 91–92, 91*f*
active agents, 77–78
adaptation
  of collective vision, 70
  in loosely coupled systems, 75
  in planning, 71
adaptive agents, 45
adaptive organizations, 62, 73–74
administrative work, 52
adolescents
  smoking prevalence among, 15–16
  in system dynamics models, 126, 127*f*, 128–129
advertising, tobacco industry, 13, 16–17, 232
  in causal maps, 119*f*, 120
advocates, participation of, 3*f*, 271, 271*t*
age factors, in system dynamics models, 126, 127*f*, 128–129, 133–134, 134*f*
Agency for Healthcare Research and Quality, 200
agenda setting, 50, 194
agent(s)
  active, 77–78
  adaptive, 45
  in learning organizations, 79
  and missions, 77–78
  network models based on, 179
  participatory, 77–78
agent-centered principle, 68–69
alignment, 116
Amazon.com, 239
American Cancer Society (ACS), 174, 200–201
American College of Surgeons Commission on Cancer, 200
American Legacy Foundation, 27, 169
American Medical Association, 24
American Stop Smoking Intervention Study for Cancer Prevention (ASSIST), 17, 22–24, 228–229, 233–234, 251
  models, 23, 23*f*–24*f*
  monograph on, 245–246
  strength of tobacco control measure, 48, 94–95, 118, 229, 242, 245–246
  analysis
  consensus, 102
  cultural, 43–44
  data, 99–100, 167–168
  network (*See* network analysis)
  in systems approaches, 230–231, 231*t*
antitobacco constituencies, in causal maps, 121, 121*f*
appreciative inquiry summit methodology, 73
approval process, streamlining of, 53
architecture workspace, 205
assessment
  needs, 71
  participatory methods for, 50
ASSIST project. *See* American Stop Smoking Intervention Study for Cancer Prevention (ASSIST)
attractor, 46
audience, for knowledge translation, 191
autonomy, networks and, 157
autopoiesis, 46
awareness of health risks, in causal maps, 120–122, 120*f*–121*f*

B

Battelle Centers for Public Health Research and Evaluation, 92, 253
  behavior
  determined by structure, 116
  models of, 45
  network, 8, 152–154, 181
  organizational, 63, 188
  as system, 111–113, 116
  tobacco use (*See* smoking behavior)
behavioral management, 63
Behavioral Risk Factor Surveillance System, 201
best practice. *See* evidence-based practice
Best Practices for Comprehensive Tobacco Control Programs (CDC), 169
"better before worse" scenario, 115–116

Note: Page numbers with *t* indicate tables; page numbers with *f* indicate figures.

betweenness centrality, 150–151, 172, 174
boids, 45
Boys and Girls Clubs (B&G Clubs), 172
brainstorming, 71
  in concept mapping, 98
  overlap with data collection, 230–231
  in tobacco control systems, 116
broker relationships, 150
buffering, 75
building blocks, in complex adaptive systems, 45
bureaucratic paperwork, 52
business case, in knowledge management, 194

C

Campaign for Tobacco-Free Kids, 27, 199
Cancer Biomedical Informatics Grid (caBIG), 198, 200, 204–205, 207
cancer control
  knowledge resources, 199–206
  research utilization in, 87–92, 95
Cancer Control Plan, Link, Act, Network with Evidence-based Tools (PLANET), 186, 198–203, 229
  knowledge management strategy, 209, 210*t*, 237, 242
Cancer Information Service (CIS), 161, 201
Cancer Intervention and Surveillance Modeling Network (CISNET), 198, 202–203
cancer research tools, integrative, 204
capacity building
  knowledge management, 195, 241–242, 244
  network, 160, 177
  systems thinking, 6, 241, 244
Capra, F., 43
CAS. *See* complex adaptive systems (CAS)
CATWOE, 43–44
causal maps, development of, 118–125, 119*f*–125*f*
causal model, 110–111, 115, 141, 231–232
  development of, 118–125, 119*f*–125*f*
CBOs. *See* community-based organizations (CBOs)
CBPR. *See* community-based participatory research (CBPR)
CDCynergy, 203
cellular automata, 45–46
Center for Substance Abuse Prevention, 117
Center for the Advance of Health, 87
Centers for Disease Control and Prevention (CDC)
  evaluation framework, 81–82, 82*f*
  guidelines, 55, 169, 186, 201, 252, 267
  IMPACT program, 24, 251
  knowledge management initiatives, 199, 211
  research citations, 186
  syndemics initiative, 39
  system dynamics model validation, 131–132, 132*f*
  tobacco control initiatives, 24, 201, 242
  tracking systems, 229, 242
  transdisciplinary efforts, 27, 235–236
centers of excellence, creation of, 243
centrality of networks, 150–151, 172, 174
centralization index, 172, 174
chaos theory, 46, 48, 113, 187, 232
Checkland, Peter, 43–44, 112–113, 226, 252
Chief Executive Office Roundtable on Cancer, 27
children
  smoking prevalence among, 15–16
  in system dynamics models, 126, 127*f*, 128–129
CHP (Consumer Health Profiles), 199, 203
Chronic Disease Directors Association, 169
cigarettes
  design of, 14–15
  distribution of, 16–17
  history of, 16–17
CIS (Cancer Information Service), 161, 201
CISNET (Cancer Intervention and Surveillance Modeling Network), 198, 202–203
classical management theory, 63–65, 65*t*
clean indoor air laws, 20
client referrals, 164, 174–175, 174*f*
Clinical Guide to Tobacco Use Counseling, 201
Clinical Practice Guideline on Tobacco Cessation, 201
clinical trial management systems, 204
cliques, 150–152
closeness centrality, 150–151
cluster rating map, 100
  examples of, 88–89, 90*f*, 92–93, 93f, 101*f*
  interpretation of, 101
  for tobacco knowledge base, 212, 212*f*
Cochrane Collaboration, 252
cognitive maps, 72
collaboration
  among stakeholder groups, 54, 62, 148, 240
  in collective vision, 71
  in community-based participatory research, 80
  in concept mapping, 83–95
  facilitation of, 54, 156
  knowledge base for, 189
  multiple levels of, 154
  navigating, 75

in networks, 74, 158
promotion of, 28–29
transdisciplinary (*See* transdisciplinary approach)
trust in, 80
collective action theories, 152–153
collective learning, 78
collective vision, 70–73, 84*t*
building, 86, 235
link between mission and, 77–79, 82–83, 95
command-and-control structures, 62, 64–65
alternatives to, 73–74
versus collaboration, 28–29
versus loosely coupled systems, 75
COMMIT (Community Intervention Trial for Smoking Cessation), 22, 228, 233, 251
commitment, to networks, 154–155, 157–158
Common Data Elements, 204–205
communication
in networks, 153, 175
of positive outcomes, 52
between researchers, 53
communities of practice, in knowledge management, 195
community-based organizations (CBOs), 76–77
community-based participatory research (CBPR), 80, 236
community building, 78
Community-Campus Partnership for Health, 245
Community Intervention Trial for Smoking Cessation (COMMIT), 22, 228, 233, 251
community-level participation, 244–245
compensation, for system changes, 115
competency development, 75, 271
competition
among public health agencies, 124–125
in networks, 157, 206
for scarce resources, 52
complex adaptive systems (CAS), 44–45, 113, 226–227, 232, 255
Comprehensive Cancer Control Leadership Institutes, 202
computer software
concept mapping, 97–103
for knowledge management, 196–197
for network design, 179
of system dynamics, 111–114, 142
system dynamics models, 126
concept mapping, 7, 9, 71–72, 96
case studies, 87–88, 87*f*, 91–93, 93*f*, 95
collaborative, 83–95
example of, 101
interpretation in, 100–101
methodology, 97–103
overlap with network analysis, 230–231
of tobacco control knowledge base, 209–217, 212*f*, 215*f*, 237
Concept System computer software, 97–103
conceptual domain, generation and structuring of, 97–99
conference, on systems thinking, 244
conference model, 72
conflict
networks and, 157–158
structure and, 76–77
congestion, network, 178
consensus analysis, 102
consensus building, 195
Consumer Health Profiles (CHP), 199, 203
contact networks, state level, 172, 173*f*, 174
contemporary management theory, 63
contingency perspective, 63
controlling function
in traditional model, 64, 65*t*, 68
in VSAL model, 69
cooperation. *See also* collaboration
in networks, 157
critical mass, 229
critical systems thinking, 113
Crossing the Quality Chasm: A New Health System for the 21st Century (IOM), 232
cross-sectional studies, of networks, 165
Cullman, Joseph III, 17
cultural analysis, 43–44
Current Citations (CDC), 186
Current Population Survey Tobacco Use Supplement, 201
curriculum, systems theory, 244, 272
cybernetic loop, 114–115

D

data analysis
in concept mapping, 99–100
in network analysis, 167–168
database technology
dynamic, 239
in knowledge management, 196–197
data collection
for concept mapping, 97–100
for network analysis, 160, 165–171
overlap with brainstorming, 230–231

decentralized networks, 151
decision making, in networks, 157–158
dedicated network alliance function, 155
degree centrality, 150–151
delays, in causal maps, 119
Delphi technique, 71
demographic change, preparation for, 241
density, network, 151, 175, 178
design, network, 179–180
diagnosis, network, 176–177
diagrams, causal loop, 118–125, 119*f*–125*f*
directories, network, 201
discovery, network, 176
dissipative structure
  of collective vision, 70
  in complex adaptive systems, 46
distribution, of collective vision, 70
diversity, in complex adaptive systems, 44
duplication of effort, avoiding, 54, 206, 240
dyads, 149–150, 153
dynamic database principle, 239

E

ecological context, of knowledge translation, 191, 217
ecological thinking, 43, 44*t*, 226, 235–236, 238–239, 245
edges, 46
emergence, in complex adaptive systems, 46
empowerment
  evaluation, 80
  participants, 116
engagement, of stakeholder groups, 116
environmental factors
  affecting tobacco control, 13, 19–22, 175, 232, 236–237
  knowledge translation and, 191
Environmental Public Health Indicators (CDC), 229
environmental scanning, 178, 231, 238
evaluation
  dynamic databases for, 239
  empowerment, 80
  fostering, 239–240
  knowledge base for, 201–202
  participatory, 79–82, 82*f*, 226
  system models for, 81–82, 82*f*
evaluation function
  in traditional model, 64, 79
  in VSAL model, 67, 69, 79, 84*t*
evidence-based practice, 252
  attitude of user toward, 80
  encouragement of, 54
  knowledge base for, 189, 201
evidence-based priorities, setting of, 28
evolution
  concept of, 73
  of management theory, 63–65, 70, 79
  of networks, 153–154, 165, 178
  of public health, 12–13, 39, 142, 226
  of systems, 46, 113
  of systems thinking, 273
  of tobacco control, 12–13, 30, 39, 133, 142, 227–228, 228*f*, 233–234, 250, 250*f*, 252
exchange theories, 152
explicit knowledge, 188, 221, 227
  shift from tacit knowledge to, 193, 207, 214
exploitation, network, 155
exploration, network, 155

F

facilitation
  of collective vision, 71–73
  in concept-mapping interpretation, 101
facilitative leadership, 77–78, 84*t*
FCTC (Framework Convention for Tobacco Control), 29
feasibility, 82, 82*f*
Federal Cigarette Labeling and Advertising Act, 133
Federal Trade Commission, 14–15
feedback, definition of, 45
feedback loops, in system dynamics, 110, 114–115, 114*f*, 132–133, 133*f*, 141–142, 226
filters, 14
financial climate, for state tobacco control programs, 171–172, 172*t*, 173*f*
financial infrastructure, for knowledge management, 196, 209
Finland, North Karelia Project in, 21
“fishing net” approach, 156
flocking model, 45
flows
  in causal maps, 119, 131, 142, 231
  in complex adaptive systems, 44

focused goals, 269–273
focused integration, 154, 180
focus groups, 71
follow-up studies, in network analysis, 167
formal relationships, network, 163–164
Forrester, Jay, 111–113
fractals, 46
fragmentation, network, 151
Framework Convention for Tobacco Control (FCTC), 29, 161
funding
  ISIS, 252–253
  for tobacco control
    in causal maps, 121, 121*f*, 123–124, 124*f*, 135–136, 136*f*
    policy makers and, 53–54
    practitioner services and, 52
    state programs and, 169, 175, 175*f*
    streamlining of, 53
future-search conferences, 72

G

General System Theory: Foundations, Development, Applications (von Bertalanffy), 40
generation step, in concept mapping, 97–98
genetic basis, for smoking behavior, 16
geographic dispersion, problems related to, 156
GlaxoSmithKline, 117
Global Links program, 237
Global Tobacco Research Network (GTRN), 161–162, 237, 253
  network analysis of, 160–169, 181
goals
  focused, 269–273
  ISIS, 48*t*, 54–55, 226, 254, 256
  knowledge management, 48*t*, 216
  network, 48*t*, 155, 160
  purposeful, 73
  setting of, 29
  system dynamics, 84*t*, 114–115
  tobacco control, 12
governance
  network, 151, 154, 178, 180
  of self-managed groups, 76
government, willingness to take action, in causal maps, 123, 123*f*
government agencies, collaboration among, 27
government awareness, of health risks, in causal maps, 121*f*, 122
government health warnings, 133
government intervention sector, in system dynamics models, 118, 140, 140*f*
government legislation, 20, 118, 133
  in causal maps, 123–124, 124*f*
government sector, in system dynamics models, 130, 130*f*, 139–141, 140*f*, 144*f*
go-zone plots, example of, 89, 91, 91*f*, 102–103, 103*f*
group modeling, 116
groupware, 196
GTRN. *See* Global Tobacco Research Network (GTRN)
Guidance for Comprehensive Cancer Control Planning (CDC), 267
Guide to Clinical Preventive Services, 55
Guide to Community Preventive Services, 55, 186, 201, 252

H

Hawaii, tobacco control program in, 171–175, 172*t*
health care costs, in causal maps, 122, 122*f*
health system, as ecosystem, 191
Healthy People 2010, 12, 30, 117
holistic thinking, 40
home, smoking in, 20
homophily, 153
horizontal networks, 164–165
hotlines, national network of. *See* North American Quitline Consortium
humanistic management, 63
human resources, shortage of, 241

I

IMPACT (Initiatives to Mobilize for the Prevention and Control of Tobacco Use), 24, 251
implementation framework, for systems thinking, 259–275, 266*f*
implementation function
  ecological perspectives on, 238–239, 260
  knowledge management in, 187, 189
  in traditional model, 64
  in VSAL model, 67, 74
in-degree centrality, 150–151

Indiana, tobacco control program in, 171–175, 172*t*, 173*f*, 175*f*–176*f*
Indiana Tobacco Prevention and Cessation Agency (ITPC), 172
individual-level network theories, 149–150
Industrial Revolution, management theory and, 65
informal relationships
  client referrals and, 174–175, 174*f*
  network, 164
information
  versus knowledge, 186–187
  shared, 164
information dissemination, 28, 53, 186, 252
  and attitude of user, 80
  network efficiency for, 178
  policy makers and, 54
  in system dynamics models, 127, 127*f*, 129, 135–137, 136*f*–137*f*, 144*f*
information infrastructure, 196, 209–210, 242
Initial Outcomes Index (ASSIST), 242
Initiative on the Study and Implementation of Systems project. *See* ISIS (Initiative on the Study and Implementation of Systems) project
Initiatives to Mobilize for the Prevention and Control of Tobacco Use (IMPACT), 24, 251
Inquiring Knowledge Networks On the Web system, 170
Institute of Medicine
  Crossing the Quality Chasm: A New Health System for the 21st Century, 232
  2001 report, 87
institutional-community relations, 244–245
integration, focused, 154, 180
integration and implementation sciences, 254, 272
  framework of, 48–49, 49*t*
integrative cancer research tools, 204
integrative management theory, 63
interaction guidelines, for power issues, 76–77
interfaces, focus on, 75
internal models, in complex adaptive systems, 44–45
interorganizational ties, 152
interpretation step, in concept mapping, 100–101
intervention, participatory methods for, 50
interviews, for network analysis, 167, 169
in vivo imaging, 204
involvement, in network relationships, 154
ISIS (Initiative on the Study and Implementation of Systems) project
  case studies, 47–50
  common methodologies, 230–231, 230*t*
  conclusions, 255–256
    chapter, 6–9
    crosscutting, 243–245
    general, 5–6, 29–30, 231–232
    specific, 234–245
  as framework for public health issues, 5, 39
  funding for, 252–253
  future steps for, 274–275
  goals of, 48*t*, 54–55, 226, 254, 256
  history of, 249–256
  implementation framework, 259–275, 266*f*
  key facets of, 26, 48*t*
  knowledge management review, 242
  lessons from, 25–29
  monograph framework, 3–5, 254–255
  network analysis in, 170–171
  participants in, 251, 253–254, 256
  policy makers and, 53–54
  practitioners and, 51–52
  purpose of, 2, 26, 38–39, 55, 227
  researchers and, 52–53
  summit meetings, 253–255
  synthesis of, 227–231
  system dynamics in, 116–133, 141–142
  vision of, 245, 260
issue exploration, 50
ITPC. *See* Indiana Tobacco Prevention and Cessation Agency (ITPC)

J

Johns Hopkins Bloomberg School of Public Health, 92, 162
journals, research published in, 52–53, 136, 186, 236

K

key informants, in network analysis, 166, 168–169
KMT. *See* knowledge management and translation (KMT)
knowledge
  definition of, 221
  explicit, 188, 221, 227
    shift from tacit to, 193, 207, 214
  versus information, 186–187
  organization of, 190, 192–193
  tacit, 188, 193, 221, 227
  types of, 190, 216, 221
knowledge architects, 195

knowledge base. *See* tobacco control knowledge base
knowledge brokers/managers, 195
knowledge champions, 194–195
knowledge conversion, 221
knowledge development, 196
knowledge development tools, 196
knowledge management and translation (KMT), 8–9, 56, 141–142, 185–222, 226–227
  benefits of, 189, 216
  capacity building for, 195, 241–242, 244
  case studies, 48*t*, 197–216
  current directions in, 232–233, 233*t*
  definition of, 187, 221–222
  examples of, 228, 229*t*
  formal methodology, 186
  four Ps of, 194–196, 195*f*, 207–208, 214, 218–220
  framework for, 188–191, 189*f*, 217, 222, 222*f*
    conceptual, 189–194, 190*f*, 192*f*
    strategic, 194–197, 195*f*
  goals of, 48*t*, 216
  infrastructures, 188, 196–197, 206–209, 216–217, 242
  integration of, 192–194, 193*t*, 216
  ISIS conclusions on, 241–243
  key factors in, 188
  overlap with other approaches, 230–231, 230*t*
  project types, 188
  resources for, 186
  role of, 187
  social context of, 191, 217
  strategy maps, 197, 198*t*, 199*f*, 209, 210*f*, 210*t*–211*t*
    for infrastructure, 197, 198*t*, 199*f*, 208–209, 218–220
  terminology, 221–222
knowledge map, systems-level, 207, 207*t*, 219–220
knowledge navigation/access tools, 196
knowledge networks, 222
knowledge-outcome map, 220
knowledge production, 190, 192
knowledge refinement, 190–191, 193
knowledge repositories, 155, 196
knowledge resources
  tobacco control, 199–206
  value of, 196
knowledge transfer, 56, 141–142
  case studies, 48*t*
  facilitation of, 156–157
  goals of, 48*t*
  two-way, framework for, 268–269, 268*f*
knowledge-translation networks (KTNs), 236, 242–243
knowledge use, 190, 193

L

laboratories, virtual, 235
ladder graph, for pattern matching, 102, 102*f*
large group interventions (LGIs), 77–78
large-scale change, framework for, 268–269, 268*f*
large-scale interactive process, 72
Latino Agencies (Oklahoma), 174
laws
  clean indoor air, 20
  tobacco control, 118, 133
    in causal maps, 123–124, 124*f*
leader–follower principle, 68–69
leadership
  collective vision and, 70–71
  facilitative, 77–78, 84*t*
  fostering, 244
  in knowledge management, 194–195
  of loosely coupled systems, 75
  participation of, 271, 271*t*
  self-organization and, 73–74
  in systems approach, 3*f*, 64, 68
leadership program, creation of, 237
leading function
  in traditional model, 64, 65*t*, 68
  in VSAL model, 69
learning, 7, 79–83, 96
  case study, 85
  collective, 78
  definition of, 79
  enhancement of, 156–157, 235
  team, 43
  in traditional model, 79
  in VSAL model, 65, 66*f*, 67, 69, 84*t*, 95
learning organizations, 113, 226
  development of, 42–43, 79, 235–236
legitimacy, network, 154–155
letters of support, for network analysis, 167
LGIs. *See* large group interventions (LGIs)
lifestyle clusters, 203
linkages, among network members, 154
local efforts, linking with, 244–245
logic models, 72, 81, 92, 95–96, 229
longitudinal studies, of networks, 165–166, 175
long-term development, participatory methods for, 50–51
loop(s), in causal maps, 119

loop model, causal, 118–125
loosely coupled system, 74–76
loyalty conflicts, networks and, 157–158

M

machines, organizations as, 64
Making Health Communications Programs Work: A Planner's Guide (NCI), 203
management
  basic process of, 64, 65*t*
  of networks, 158
management functions
  in traditional model, 64, 65*t*, 67–68
  in VSAL model, 67–68
management science, 63
management theory
  applied to tobacco control initiatives, 68, 68*f*
  classical, 63–65, 65*t*
  evolution of, 63–65, 70, 79
  humanistic, 63
  integrative, 63
  phases of, 63
  quantitative, 63
  systems approach to (*See* systems organizing)
  traditional, 62–65, 65*t*
    versus systems approaches, 65–70, 66*f*, 83, 95, 226, 234–235
map(s)
  causal, development of, 118–125, 119*f*–125*f*
  cluster rating (*See* cluster rating map)
  cognitive, 72
  knowledge, systems-level, 207, 207*t*, 219–220
  knowledge management, 72, 197, 198*t*, 199*f*, 207–209, 210*f*, 210*t*–211*t*, 218–220
  mind, 71–72
  outcome, 72, 220
  4P-KMT, 197, 198*t*, 199*f*, 207–208
  planning, 71–72, 83 (*See also* concept mapping)
marketing, tobacco, 13, 16–17, 232
  in causal maps, 119*f*, 120
Massachusetts Institute of Technology, 117
Master Settlement Agreement (MSA), 18, 171, 232
matrix approach
  to network analysis, 160
  to tobacco control, 23, 23*f*
MDS. *See* multidimensional scaling (MDS)
mental models, 42, 116, 194
Michigan, tobacco control program in, 171–175, 172*t*, 173*f*
mind maps, 71–72
Minnesota Heart Health Program, 21
mission
  establishment of, 77
  link between vision and, 77–79, 82–83, 95
Mississippi, tobacco control program in, 171–175, 172*t*, 173*f*
Missouri, tobacco control program in, 171–175, 172*t*
mobilization, network, 155
model(s)
  behavior, 45
  causal, 110–111, 115, 141, 231–232
    development of, 118–125, 119*f*–125*f*
  cellular automata, 45–46
  conference, 72
  evaluation, 81–82, 82*f*
  group, 116
  internal, 44–45
  logic, 72, 81, 92, 95–96, 229
  mental, 42, 116, 194
  network, 179
  participatory intervention, 80
  planning, 71
  system dynamics (*See* system dynamics models)
  system knowledge, 4
  systems organizing, 65–83, 66*f*
  visual, 71–72
  VSAL, 65, 66*f*, 67
motivation, for knowledge translation, 191
multidimensional scaling (MDS), 97
multidisciplinary approach. *See* transdisciplinary approach
multiple needs, addressing, 156
multiplexity, of networks, 150, 154
multivariate analysis, 230
  of tobacco control, 23, 24*f*
  of tobacco knowledge base, 212

N

National Blueprint for Adult Tobacco-Use Cessation, 251
National Cancer Data Standards Repository (NCI), 205
National Cancer Institute (NCI), 200, 228. *See also specific NCI project*
  Cancer Information Service, 161, 201
  Consumer Health Profiles, 199, 203

knowledge management infrastructure, 206–209, 217, 242
knowledge management initiatives, 200–206, 217, 221–222
National Cancer Data Standards Repository, 205
research funding by, 27–28
research utilization initiative, 87
Smoking, Tobacco, and Cancer Program, 22
Smoking and Tobacco Control Monographs, 20, 234, 245–246
systems dynamics simulations, 117
Tobacco Control Research Branch, 251
transdisciplinary efforts, 27
National Institute on Drug Abuse, 27
National Institutes of Health (NIH), Roadmap Initiative, 27, 235
National Program of Cancer Registries, 201
National Tobacco Control Program (CDC), 24
needs assessment, 71, 238
network(s), 4, 6, 8, 226–227
agent-based simulations of, 179
benefits of, 156–157
capacity building, 160, 177
centrality of, 150–151, 172, 174
creation of, 6, 243, 270
cross-organizational cooperation in, 62
definition of, 2, 149
delineation of, 170
design of, 179–180, 270
diagnosis, 176–177
discovery, 176
effective, 154–155
evolution of, 153–154, 165, 178
examples of, 228, 229*t*, 264–265
goals of, 155, 160
governance of, 151, 154, 178, 180
horizontal, 164–165
ISIS conclusions on, 240–241
knowledge, 222
knowledge base for, 189
location of, 153, 164–165
nodes of, 161, 172, 174
shortcomings of, 157–158
small-world, 149, 155
"star," 155
structure of, 150–152, 160, 164–165, 172, 175, 175*f*, 178–180
systems organizing structure and, 74, 141
tobacco control, research on, 165–169
unique properties of, 151
value of, 148–149, 155–159
vertical, 164
network alliance function, dedicated, 155
network analysis, 8, 56, 147–181
application of, 159–160
benefits of, 159–160, 180–181
case studies, 48*t*, 157, 169–180
comparative, 180
current directions in, 232–233, 233*t*
data collection for, 160, 165–171
definition of, 159
goals of, 48*t*
guidelines for, 160, 181
information needed for, 161–165
for ISIS, 170–171
ISIS conclusions on, 240–241
key informants in, 166, 168–169
levels of, 149–152
network selection for, 166, 168
organization identification for, 161–162
overlap with other approaches, 230–231, 230*t*
quantitative, 165–166
relationship identification for, 163–164
services identification for, 162–163, 166, 168
streamlining, 168
in tobacco control
case study, 169–180
data collection methods for, 160–169
translation into practice, 175–180
Web-based environment for, 170
network applications, in public health, 8
network attributes, as measure of tobacco control efforts, 8
network behavior, theories of, 8, 152–154, 181
network bounding, 161
network development, in knowledge management, 196
network directories, 201
network leaders, data collection from, 166
network organizations, 74
network relationships
client referrals and, 174–175, 174*f*
institutionalized, 180
strength of, 154, 270
type and frequency of, 163–164, 178, 180
weak, 168
network theory, 46
individual-level, 149–150
overview of, 148–154
New Citations, 186

"new sciences," 40–41
New York State
  tobacco control program in, 171–175, 172*t*
  welfare reform study, 115
nicotine, "free-base" form of, 15
nicotine addiction, potential for, 15
nicotine delivery
  efficacy of, 14–15
  measurement of, 14–15
nicotine replacement therapy, 13, 28
NIH (National Institutes of Health), Roadmap Initiative, 27, 235
nodes, network, 161, 172, 174
nominal groups approach, 71
nonlinear systems, 44, 46
North American Quitline Consortium, 160–161
  network analysis of, 160–169, 181
North Karelia (Finland) Project, 21

O

obesity control initiative, 85–86
Oklahoma, tobacco control program in, 171–175, 172*t*, 173*f*
open-space meetings, 72–73
open systems framework, power issues and, 76
operating system, 65
operational milestones, 75
organization(s)
  adaptive, 62, 73–74
  definition of, 62
  evolution of, 153–154
  identification of, for network analysis, 161–162
  learning, 113, 226
    development of, 42–43, 79, 235–236
  as machines, 64
  "network," 74
  networks of, 62, 152
  as organisms, 73, 78
  purposeful, 62, 73–74
organizational behavior, 63, 188
organizational change. *See also* system dynamics
  approaches to, 78
  theories of, 153–154
organization infrastructure, for knowledge management, 196, 208
organizing function
  in traditional model, 64, 65*t*, 68
  in VSAL model, 69, 84*t*
outcome maps, 72
out-degree centrality, 150–151

P

parameters, estimation of, 116, 132–133
participants
  empowerment of, 116
  ISIS, 251, 253–254, 256
  in knowledge management, 194–195, 195*f*, 208
  network, data collection from, 167
  substitution of, 75
participative work redesign, 72
participatory action research, 78–80, 234
participatory agents, 77–78
participatory evaluation, 79–82, 82*f*, 226
participatory intervention model, 80
participatory methods, 47, 50–51, 84*t*, 226
  key elements of, 50
  of needs assessment, 238
  for planning, 72–73
  structured process for, 77
  types of, 50
  value of, 50–51
participatory research
  community-based, 80, 236
  power balance in, 76
passive smoking, 18, 20
pathology tools, 204
pattern matching, 102
  example of, 88–89, 90*f*, 102, 102*f*
  for tobacco knowledge base, 214, 215*f*
Pawtucket Heart Health Program, 21
Pennsylvania, tobacco control program in, 171–175, 172*t*
people. *See also* participants
  in knowledge management, 194–195, 195*f*, 208
per capita spending, on tobacco control, 171
persistence, 75
personal mastery, 42
Philip Morris, 17–20, 29
physical proximity, networks and, 153, 164–165
Pink Book, 203
4P-KMT map, 197, 198*t*, 199*f*, 207–208
PLANET project, 186, 198–203, 229
  knowledge management strategy, 209, 210*t*, 237, 242
planning
  dynamic databases for, 239

knowledge base for, 201–202
map-based approaches to, 71–72
model of, 71
participatory methods for, 72–73
planning function
collective vision and, 71
in traditional model, 64, 65*t*, 68
in VSAL model, 68–69, 84*t*
policy makers, participation of, 51, 53–54, 262–263
policy resistance, 115–116
policy simulation, 117
political climate, for state tobacco control programs, 171–172, 172*t*, 173*f*
population-level efforts, at tobacco control, 20–25, 30, 39
population science special interest group, 205
population surveillance systems, development of, 28
power, structure and, 76–77
practice domain, in systems organizing model, 67, 69
practitioners
participation of, 3*f*, 51–52, 261, 271, 271*t*
value of networks for, 156–157
PRECEDE/PROCEED framework, 234
prevention, focus on, 28
process
in knowledge management, 195–195, 195*f*, 208
in systems approaches, 230–231, 231*t*
product
in knowledge management, 195*f*, 196, 208
tobacco as, 14
program development databases, 239
program evaluation, 169
program evaluation databases, 239
program theory, 81
Project Low-Fat Eating for America Now (LEAN), 85–86
propriety, 82, 82*f*
protobacco constituencies, in causal maps, 122–124, 123*f*
proximity, networks and, 153, 164–165
public, undecided, in system dynamics model, 139–140, 139*f*–140*f*
publications, 52–53, 136, 186, 236
public awareness, of health risks, in causal maps, 120–121, 120*f*
public goods theory, 153
public health
concept mapping in, 72
evolution of, 12–13, 39, 142, 226
ISIS project as framework for, 5, 232
knowledge management framework for, 188–191, 189*f*, 222, 222*f*
network analysis in, 155–156, 159
system dynamics in, 117
systems approaches to, 47, 55, 235–236, 241–242, 260
public health agencies
collaboration among, 27
competition among, 124–125
public health planning, large-scale framework for, 268–269, 268*f*
public opinion, influences on, 130
public opinion sector. *See also* social norms
in system dynamics models, 126, 126*f*, 129–134, 131*f*–134*f*, 137–141, 138*f*–140*f*, 145*f*
public support, and research utilization, 135–139, 136*f*–139*f*
purpose
in knowledge management, 194, 195*f*, 207
shared, 236, 263
purposeful goals, 73
purposeful organizations, 62, 73–74
puzzle-solving methods, 50

Q

quality assurance, 201
quantitative analysis, of networks, 165–166
quantitative management, 63
questionnaires, for network analysis, 167
quitlines, national network of. *See* North American Quitline Consortium

R

rating task, in concept mapping, 98–99
real-time strategic change, 72
receptor capacity, lack of, 205–206
reciprocity, network, 158
referrals, client, 164, 174–175, 174*f*
refutability, 116
relationship(s)
broker, 150
exchange, 152

formation of, 78
network (*See* network relationships)
between public sector and tobacco industry, 18
reputational sampling techniques, 162, 166, 168, 170
research
collective vision in, 235
effect on smoking prevalence, 139, 139*f*
funding for (*See* funding, *specific topics*)
participatory, 78–80, 234, 236
relevance of, 206
research approval, streamlining of, 53
research domain, in systems organizing model, 67, 69
researchers
awareness of health risks, in causal maps, 120–121, 120*f*
communication between, 53
participation of, 3*f*, 51–53, 262, 271, 271*t*
power issues, 76
research fraction, public support and, 135–136, 136*f*, 137–139, 138*f*–139*f*
research sector, in system dynamics models, 127, 127*f*, 129, 135–137, 136*f*–137*f*, 144*f*
research utilization, 13, 27–28, 52–53
case study, 87–92, 95
framework for, 268–269, 268*f*
knowledge base for, 189
networks and, 240
power issues with, 76
in system dynamics models, 135–139, 136*f*–139*f*
trust and, 80
resource(s)
for effective networks, 155
optimal use of, 156
resource allocation, 53, 158
resource dependence theories, 152
respect, development of, 76–77
responsibility, cluster rating map of, 93, 94*f*
Richmond, Barry, 42, 111–113
risk factor data, 201
Roadmap for Medical Research Initiative (NIH), 27, 235
Robert Wood Johnson Foundation
research utilization initiative, 87
SmokeLess States Program, 24, 251
system dynamics simulations, 117
transdisciplinary efforts, 27
Turning Point grant, 157
root definition, 43–44
rules, *versus* recipes, 74
rural chronic disease, network analysis of, 157

S

Saint Louis University School of Public Health, Center for Tobacco Policy Research, 169
SAMHSA (Substance Abuse and Mental Health Services Administration), 27, 117, 200–201
Santa Fe Institute, 232
satisfaction, with loosely coupled systems, 75
"scale free" networks, 151
scanning, network capacity for, 178, 231, 238
scientific discovery. *See* research
scientific management, 63
search conference, 73
secondhand smoke, 18, 20
SEER registry, 199, 201–202
self-interest theories, 152
self-management, 76, 78
self-organization, 234, 269
in complex adaptive systems, 46, 62, 73–74, 83
September 11, 2001, systems view of, 115
service implementation network, 163
shared information, 164
shared purpose, 236, 263
shared situational awareness, 238
shared vision, 42–43
SimSmoke, 117
site visits, for network analysis, 167, 169
skilled personnel, lack of, 241
small-world networks, 149, 155
SmokeLess States Program, 24, 251
smokers, in causal maps, 119–120, 119*f*
smoking
adverse health outcomes associated with, first report of, 17, 133, 227, 251
passive, 18, 20
prevalence of, 15–16, 19, 30
effect of research on, 139, 139*f*
models of, 128–129
social attitudes toward (*See* social norms)
Smoking and Tobacco Control Monographs (NCI), 20, 234, 245–246
smoking behavior, 15–16, 20. *See also* tobacco use
genetic basis for, 16
and nicotine yield, 14–15

smoking cessation
biobehavioral aspects of, 15–16, 20
in system dynamics models, 134–135, 135*f*
smoking initiation
biobehavioral aspects of, 15–16, 20
in system dynamics models, 126, 127*f*, 128–129, 133–134, 134f
snowball sampling approach. *See* reputational sampling techniques
social contagion, 153
social context
of knowledge management, 191, 217
of tobacco control, 13, 19–22
social networks, theories of, 152–154
social norms. *See* also public opinion
in causal maps, 119–120, 119*f*, 123, 134–135, 134*f*–135*f*, 138
influences on, 130
socioeconomic factors, in tobacco use, 15–16
soft systems methodology, 43–44, 112–113
software. *See* computer software
SoTC (Strength of Tobacco Control) measure, 48, 94–95, 118, 229, 242, 245–246
span gaps, in networks, 150
stability, network, 155, 178
stadium wave, complex behavior of, 45
stakeholder groups, 240. *See also* network(s)
collaboration among, 27, 54
dialogue among, 78
engagement of, 116
evaluation driven by, 79
identification of, 206
implementation of conclusions with, 271, 271*t*
inclusion of (*See* participatory methods)
knowledge management and, 193, 215–216
model of, 3*f*
similarities among, 263
systems thinking driven by, 113
types of, 51
Stanford Five-City Project, 21
"star" networks, 155
State Cancer Legislative Database, 203
state cancer profiles, 201
state government, tobacco control support from, 171
state health departments, 23, 27
State Tobacco Activities Tracking and Evaluation Systems (CDC), 242
state tobacco control programs
cooperative, 92–95
financial and political climates, 171–172, 172*t*, 173*f*
funding changes and, 169, 175, 175*f*
network analysis of, 169–180
statistical competence, development of, 271
steering behaviors, 45
stocks, in causal maps, 118–119, 131–132, 132*f*, 142, 231
strategic planning, collective vision and, 71
Strategies to Control Tobacco Use in the United States: A Blueprint for Public Health Action in the 1990's (NCI), 20, 234
strategy maps, 72
knowledge management, 197, 198*t*, 199*f*, 207–209, 210*f*, 210*t*–211*t*, 218–220
SoTC (Strength of Tobacco Control) measure, 48, 94–95, 118, 229, 242, 245–246
structural holes, in networks, 150
structure, 7, 73–77, 83, 96
behavior determined by, 116
case study, 85
of networks, 150–152, 160, 164–165, 172, 175, 175*f*, 178–180
power and conflict issues with, 76–77
in VSAL model, 65, 66f, 67, 95
structured conceptualization. *See* concept mapping
structuring step, in concept mapping, 98
Substance Abuse and Mental Health Services Administration (SAMHSA), 27, 117, 200–201
superorganisms, complex behavior of, 45
Surgeon General's Advisory Committee on Smoking and Health, 17, 133
Surgeon General's report, first, 17, 133, 227, 251
Surveillance, Epidemiology, and End Results (SEER) registry, 199, 201–202
survey instruments, for network analysis, 167
system(s)
behavior as, 111–113, 116
as cause, 114
complex adaptive, 44–45, 113, 226–227, 232, 255
definition of, 14, 39
evolution of, 46, 113
loosely coupled, 74–76
natural formation of, 74
nonlinear, 46
structured development of, 77
tobacco use as, 13–20, 25, 141, 246
system dynamics, 4, 6–8, 56, 109–145, 227
applied to tobacco control, 116–133
brainstorming in, 116

case studies, 48*t*
characteristics of, 116
computer simulation of, 111–114, 142
current directions in, 232–233, 233*t*
definition of, 2, 41–42
examples of, 228, 229*t*
feedback loops in, 110, 114–115, 114*f*, 132–133, 133*f*, 141–142, 226
goals of, 48*t*
ISIS conclusion on, 237–240
overlap with other approaches, 230–231, 230*t*
versus systems thinking, 41–42, 111–113
uses of, 110–111
system dynamics models, 4, 8, 72, 110–111, 113, 227
causal mapping for, 118–125, 119*f*–125*f*, 231–232
development of, 125–131, 143, 143*f*–145*f*
examples of, 115, 117
overlap with other approaches, 231
results of, 133–141
sector component groupings, 117–118, 118*f*
validation of, 131–132, 132*f*
value of, 131–132, 141
system networks. *See* network(s)
systems approaches
benefits of, 5, 7, 232, 238
capacity building for, 6, 241, 244
case studies of, 47–51
common methodologies across, 230–231, 230*t*
definition of, 14, 39
integration of, 2, 3*f*, 49, 49*f*, 55, 228–230, 260–266
framework for, 269, 269*f*
importance of, 6, 30
large-scale framework for, 268–269, 268*f*
potential uses of, 5, 7, 38–39, 49–50, 55–56, 226, 246, 271
versus traditional management theory, 65–70, 66*f*, 83, 95, 226, 234–235
types of, 2, 4, 7
systems concepts, 45–47
systems knowledge, 4, 6
definition of, 2
management of (*See* knowledge management)
systems methods, definition of, 14, 39
systems organizing, 4, 56, 61–103, 226
case studies, 48*t*, 83–95
current directions in, 232–233, 233*t*
definition of, 2
development of, 243
examples of, 228, 229*t*
goals of, 48*t*
ISIS conclusions on, 234–237
model of, 65–83, 66*f*
overlap with other approaches, 230–231, 230*t*
principles of, 7, 65, 66*f*, 67–68, 84*t*, 95–96
role of, 5–6
systems theory
curriculum for, 244, 272
development of, 237, 272
evolution of, 47–50, 113
history of, 40
systems thinking, 37–59, 245, 250
barriers to, 236–237, 244
capacity building for, 6, 241, 244
critical, 113
current directions in, 232–233, 233*t*
definition of, 14, 39–42, 111, 113–114
evolution of, 273
examples of, 41
frameworks for, 41–45, 55–56
implementation framework for, 259–275, 266*f*
integrated approach to, 47, 49, 49*f*, 55, 228–230, 260–266
framework for, 269, 269*f*
in learning organizations, 42–43
misconceptions about, 40
mixed-methods, 237–238
national conference on, 244
participatory methods for, 47, 50–51
skills of, 42, 42*t*
versus system dynamics, 41–42, 111–113
vision for, 269–273

T

tacit knowledge, 188, 193, 221, 227
shift from explicit to, 193, 207, 214
tagging, in complex adaptive systems, 44
tar yield, 14
taxes
in causal maps, 123–124, 124*f*
at state level, 171
taxonomy, for knowledge base, 4, 9, 212–214, 213*t*, 217
team(s)
conflict within, 76–77
self-managing, 76
team approach, to complex issues, 156
team learning, 43
technical management theory, 63
technology, in systems approaches, 230–231, 231*t*

technology infrastructure, for knowledge management, 196, 208, 242
telephone interviews, for network analysis, 169
Terry, Luther, 17
thinking
ecological, 43, 44*t*, 226, 235–236, 238–239, 245
effective, principles of, 43
holistic, 40
system (*See* systems thinking)
The "Thinking" in Systems Thinking: Seven Essential Skills (Richmond), 42
3D model, of network development, 176–180
time factors
in knowledge management, 194
in network analysis, 158, 165–166, 168–169, 175
tissue banks, 204
tobacco control
cooperative programs, case study, 92–95
evolution of, 12–13, 30, 39, 133, 142, 227–228, 228*f*, 233–234, 250, 250*f*, 252
goals of, 12
history of, 17–18, 133, 227–228
knowledge management framework for, 188–191, 189*f*
case studies, 197–209
management theory applied to, 68, 68*f*
as model for public health, 5, 232
network analysis in, 160–169
population-level efforts, 20–25, 30, 39
societal and environmental factors affecting, 13, 19–22
stakeholder organizations in, 27
state-level programs (*See* state tobacco control programs)
state of, 4–7, 11–30, 39, 55, 226, 267
success of, 13
system dynamics applied to, 116–133
systems approaches in, 2, 3*f* (*See also* ISIS (Initiative on the Study and Implementation of Systems) project)
application of, 51–54
beginnings of, 20–25
examples of, 228, 229*t*
implementation of, 273–275
need for, 12–20, 55
systems problems in, 25–29, 38–39
tobacco control knowledge base, 199–206
concept mapping of, 209–217, 212*f*, 215*f*, 237
development of, 193
infrastructure, 206–209, 207*t*, 242
missing pieces in, 205–206
taxonomy for, 4, 9, 212–214, 213*t*, 217
transdisciplinary, 243–244
Tobacco Control Network (CDC), 201
tobacco control networks
case study, 169–180
data collection, 165–169
tobacco control sector, in system dynamics models, 118
tobacco grower factors, in causal maps, 119–120, 119*f*
tobacco health risk, awareness of, in causal maps, 120–122, 120*f*–121*f*
tobacco industry, 16–20
advertising by, 13, 16–17, 232
business coalitions with, 19
in causal maps, 122–124, 123*f*
image of, 19
lack of intelligence about, 205–206, 216
public sector relationship with, 18
response to tobacco control efforts, 12–13, 17–19, 25, 29
state-level, 171
tobacco industry sector, in system dynamics models, 118
Tobacco Information and Prevention Source (CDC), 242
Tobacco Institute, 18
tobacco marketing, 13, 16–17, 232
in causal maps, 119*f*, 120
tobacco products, complexity of, 14
tobacco revenues, in causal maps, 120, 120*f*, 121, 123
tobacco settlement funds, 18, 171, 232
tobacco taxes, in causal maps, 123–124, 124*f*
Tobacco Technical Assistance Consortium, 186
tobacco use. *See also* smoking behavior
biobehavioral aspects of, 15–16, 20
as complex system, 13–20, 25, 141, 246
societal and environmental factors affecting, 13
Tobacco Use Prevention Service (TUPS), 174
tobacco use sector, in system dynamics models, 118, 126, 127*f*, 133–135, 134*f*–135*f*, 143*f*
traditional management theory, 62–65, 65*t*
functions in, 64, 65*t*, 67–68
versus systems approaches, 65–70, 66*f*, 83, 95, 226, 234–235
transaction cost economics, 152
transactive memory systems, 157
transdisciplinary approach
facilitation of, 53, 235–236, 240–241
in ISIS project, 254

to knowledge management, 243–244
need for, 26–27, 39, 148
Transdisciplinary Tobacco Use Research Centers (TTURCs), 27, 166, 234, 236
translational research. *See* research utilization
trust
in collaboration, 80
development of, 76–77
in networks, 154, 158, 164, 178, 180
between practitioner and client, 52
and research utilization, 80
TUPS. *See* Tobacco Use Prevention Service (TUPS)
Turning Point grant, 157

U

U.S. Department of Defense, 28–29
U.S. Food and Drug Administration, 28, 118
utility, 82, 82*f*

V

VENSIM software, 126
vertical networks, 164
vertices, 46
virtual laboratories, 235
vision, 7, 70–73, 82, 96, 235
case study, 85–86
ISIS, 245, 260
link between mission and, 77–79, 82–83, 95
shared, 42–43
for systems thinking, 269–273
in VSAL model, 65, 66*f*, 67, 84*t*, 95
visual models, 71–72
vocabularies, 193, 204–205
von Bertalanffy, Ludwig, 40
VSAL model, 65, 66*f*, 67

W

W. K. Kellogg Foundation, 157
Washington, tobacco control program in, 171–175, 172*t*
Web-based environment, 241
knowledge resources in, 155, 198–206, 242
for network analysis, 170
for program design, 239
systems approaches in, 243
"Web of Science," 236
Weissman, George, 17
welfare reform study (New York State), 115
whole-systems perspective, 78
Wikipedia, 187, 239
workspaces, 204–205
World Health Organization, Framework Convention for Tobacco Control, 29, 161
Wyoming, tobacco control program in, 171–175, 172*t*