Levinson back 12/3/02 11:07 AM Page 1

Index

3PLs. *See* Third-party logistics systems
3S. *See* Smoke soot smudge
5S-CANDO. *See* Cleaning up Arranging Neatness Discipline Ongoing improvement

A
Accounting book values, meaning, 127
Accumulation, 65
Accuracy. *See* Variation/accuracy
Achilles, 91
Acquisitions, 131
Administrator, 34
Adsorption-desorption process, 179
Advertising
  as waste, 120
Air quality, 271
Alcuin of York, 90
Alexander the Great, 18, 34, 35–36, 76, 77, 91
Aluminum casting, 37
Alzheimer's disease, delay, 30
Amazon.com, 105
American invention. *See* Lean manufacturing
American Society for Quality, 8
American Society for Testing and Materials (ASTM), 266
American Society of Manufacturing Engineers, 112
American society (transformation), Ford (impact), 5–6
American-manufactured goods, cost, 143
Americans with Disabilities Act (ADA), 10
Ammonium sulfate, 181
Anchor draggers, 85
Andon lights, 227
Anti-utopia, 5
Apple Computer, 127
Arjuna, 29
Armed Forces, 146
Assembly. *See* Parallel processing/assembly; Point-of-use assembly
  aiding, 247
  directions, 248
  line. *See* Ford Motor Company River Rouge plant
    layout, 222
    operation, 217–218
    origin, 233–234
  principles, 217
ASTM. *See* American Society for Testing and Materials
Atago Shrine, 81
Auto-By-Tel, 116
Automatic machines, Ford definition, 226
Automatic sorting, 259
Axis powers, 4

B
Bacteria, recognition. *See* Ford Motor Company River Rouge plant
Bar codes, usage, 243
Barbarian, aspects, 31, 33
Bat-and-mole twilights, usage, 280
Batching, 205, 244
Battle of Agincourt, 316
Bedridden workers, experiment, 68–69
Benchmarking, 254
Bennett, Harry, 93, 95, 99, 165
  competition, 76
  yes-man, 91
Best practice deployment, 199–200
Bethlehem Steel, 38, 324
Bhagavad Gita, 49, 91
Bill of materials (BOM), 208
Birmingham machines, design, 107
Black Belts, 268
Blackthorne, John, 90
Blue gas, 182
Bodek, Norman, 9

Levinson back 12/3/02 11:07 AM Page 2

BOM. *See* Bill of materials
Bombay Co., 115
Bonhomme Richard, 82–83
Bowers, Joseph, 125
Breakdowns, avoidance, 62
Britain, success. *See* Manufacturing
Buffer inventory, 240
Builder, aspects, 33–34
Built-in waste. *See* Supply chain
Bukko (priest), 29
Business
  barometer, 134
  cost accounting system, impact, 126–128
  cycles, 133–135
  growth, manager/worker involvement, 66
  principles, disregard, 49–50
  profits, 49
  running, Taylor opinion, 62
  stockholders, impact, 128–130
  success, 327
Byproducts, profit, 180–181

C
Cables, avoidance, 249
Cadillacs, disassembly, 263
Caesar, Julius, 77
Calibration program, usage, 265
Capacity-constraining operation, 213
Capacity-constraining resource (CCR), 231
Capital
  expenditures, 294
    ability, 161
    delay, 126
  inventory, impact, 229
  investments, 290
Car bodies, shipping, 173
Car dealerships
  introduction, 116
  showrooms, value addition, 116–119
Carbon monoxide poisoning, 273
Carbon taxes, 142
Carrying costs. *See* Inventory
Cathaginians, 38
CCR. *See* Capacity-constraining resource
Cellular manufacturing, 192, 222–227
Champion, companion, 91
Change
  involvement, 321–322
  management, principles, 319–320
  promotion, visible successes (usage), 320
Chaplin, Charlie, 195, 234
Charlemagne, 90
China, success. *See* Manufacturing
Chipless machining, 169–173
Citizens General Hospital, 155
Civil War, 141
Cleaning up Arranging Neatness Discipline Ongoing improvement (5S-CANDO), 8, 11, 192, 201–228
  aspects, 93
Clockwork, model, 16
Coal
  burning, innovation, 182–186
  coking, 180–181
Coating operation, fumes, 178–180
Coke, burning (innovation), 182–180
Colt Armory, 206
Columbus, Christopher, 39
Comfort. *See* Workplace
Commissaries. *See* Employees; Ford Commissaries
  cash-and-carry, 72
Commitment, 47. *See also* Management/labor; Mutual commitment
Committees/experts, impact. *See* Initiative; Progress
Commodities
  relationship. *See* Luxuries/commodities
Communication. *See* Labor
Companies, running, 130
Companionship, 91
Competition, disregard, 21–22
Complacency, 32–35
Compliance. *See* Malicious compliance
Compliant parts, usage, 249
Concrete heads, 85
Confucius, 46
Conservation principle, 148. *See also* Mass conservation
Constitution. *See* U.S. Constitution
Constraints. *See* Theory of Constraints
Construction material, selection, 250–251
Constructive imagination, 81
Consumer, goods delivery, 48
Consumption, importance, 60
Containment action, 6
Continuous flow
  effectiveness, 239–240
  model, 262
  operations, 240
  processes, 262
Continuous improvement, 8, 30–40, 195–200, 304
  gains, 198
  impact. *See* Price

Levinson back 12/3/02 11:07 AM Page 3

Continuous improvement *continued*
standardization support, 197–198
usage. *See* Mass production; Sales per customer increase
Continuous price reduction, benefits, 121–123
Control, 287
internal locus, 82
Conveyors, 16
Corners, cutting (contrast). *See* Scientific management
Corporate culture. *See* Ford Motor Company
Corrective action, 281–282
Cost accounting system
impact. *See* Business
role, 126
Cost reduction, profitability, 324
Couzens, James, 9, 34, 264, 302
Covey, Stephen, 9, 23
description. *See* Scarcity mentality
ideas, 75
writings, 47, 52
C.R. Wilson Body Company, 298
Cranes, locking, 275–276
Credit unions. *See* Employees
Cross-functional communication, 86
Cross-training, 86
Crowther, Samuel, 93
Custom Foot (shoe manufacturer), 115
Customer
needs
identification, 287–288
meeting, 83
relationships, 285. *See also* Supplier/customer
reliance. *See* Ford
requirements, 252
serving, 47–48
Cutbacks, implementation. *See* Development; Employees; Research
Cycle time
accumulation, 235
addition, 245
queue, 236
reduction, techniques, 227, 235
Cyclic stress, 262
Cyclical demand, 289

D

Damage, opportunity for, 225
Darwinism. *See* Economic Darwinism
Deaf employees, 69
Dealerships. *See* Car dealer
Defects, 270
Defoe Shipbuilding, 269
Delivery. *See* Packaging
Dell Computer, 105
Demand. *See* Cyclical demand; Universal demand
creation, 285–288
Deming, W. Edwards, 9, 10, 15
advice, 85
principles, 204
Depreciation, inclusion, 127
Design. *See* Maintainability; Reliability
cycles, 248
disaster, 322–325
handling/orientation/adjustment, 249
parts, number, 247–248
Design for assembly (DFA), 13, 192, 247–254
Design for manufacture (DFM), 8, 13, 192, 247–254
Design of experiments (DOE), 12
Destiny. *See* Ford
Detroit Edison Company, 60
Detroit Electric Company, 60
Detroit Toledo & Ironton (D.T. & I.) Railroad, 2
departmental consolidation, 87
Ford Motor Company purchase, 242
visual controls, 202
DFA. *See* Design for assembly
DFM. *See* Design for manufacture
Dharma, personification, 25, 29
Diehl, Fred, 98
Discrete-unit operation, 262
Disorderly element, demand, 45, 65
Dividends, payment, 65
Document control system, 197
Dodge Brothers
lawsuit, 129
Sorensen accusation, 98
DOE. *See* Design of experiments
Dollar-an-hour labor, 194
Dot-com companies, 4, 105
Dot-com stocks
price-earnings ratios, 135
purchase, 126
Doughnut hole, 167–168
Drinks, bottling, 173
Drum-Buffer-Rope (DBR) production control, 233, 240–242, 245. *See also* Ford Motor Company; Toyota
D.T. & I. *See* Detroit Toledo & Ironton
Duke of Gloucester, 75
Duke of Wellington. *See* Wellesley
Durable goods, 119
Dysfunctional behavior, 47

Levinson back 12/3/02 11:07 AM Page 4

Dysfunctional economic driving forces, 142
Dysfunctional performance measurements, 309

E
Eastern philosophy, connection. *See* Ford
Economic Darwinism, 114, 315
Economic environment. *See* Competitive economic environment
Economic law, escape, 24
Economic prosperity, 140
Economic science, 26
Economics
  Ford, opinion, 133
Economies, awareness. *See* False economies
Economy, contrast. *See* Parsimony
Efficiency
  impact. *See* Unemployment
  improvement, process changes (impact), 256–257
Employees. *See* Deaf employees; Front-line employees; Mute employees
  benefit, 72
  commissaries, 71–72
  credit unions, 73
  housing/stores, 70–73
  injury, reporting, 270
  laying off, 128
  movement. *See* Work
  restrictions, 67
  training, cutbacks (implementation), 129
Employer/employee
  interdependence, 56–57
  involvement, 61
Employers
  job, 64
  paternalism, 72
  resources, 57
Employment
  process, 61
  value, 61
En bloc cylinder, 281
Energy
  costs, increase (consequences), 141–144
  role, 138–144
  shortages, 141–142
Environmental Protection Agency (EPA), 3, 10, 178
Equal Rights Amendment (ERA), 10
Equipment
  depreciation, 264
  purchase, 246
  running, 69
  usage. *See* Ford Motor Company Highland Park plant; Ford Motor Company River Rouge plant
  utilization, 293
Ergonomics, 276-277
Error-proofing. *See* Poka-yoke
Europe, regression, 44–46
Experts, impact, 35. *See also* Initiative; Progress
Explorer, aspects, 32, 34
External setup, 208

F
Factories. *See* Ford Motor Company
  job creation, 111–112
  layout strategies, 11
  operations, 240
  ordering. *See* Just-in-time
  workers, relationship, 194–195
Failure mode effect analysis (FMEA), 254
Fairchild Semiconductor, 246
False economies, awareness, 320
Family-owned business, tax effect, 148–149
Farm employment, reduction, 45
Fasteners, replacing, 248
Fear, absence, 21
Federal Reserve, 135, 136
Fiber-optic communication channels, usage, 243
Finance, perspective, 124–126
Fisher, Fred, 298
Fixed labor costs, 127
Flanders, Walter, 9, 223
Flat organizational structure, 9, 14, 87
Flat Rock, headlight factory, 87
Flexible components, usage, 249
Flexible system, contrast. *See* Rigid system
Floors, usage, 254
Flow stations, 16
Fluorescent lighting, usage, 193, 279
FMEA. *See* Failure mode effect analysis
FMSs. *See* Freight management systems
Food shipments, 6
Ford Clothes Shop, 71
Ford Commissaries, 71
Ford, Edsel, 32, 34, 91, 99, 101
  competition, 76
  leadership, 98
Ford, Henry
  answers. *See* Zen riddle
  dislike. *See* Financiers
  eastern philosophy, connection, 27–30

Ford, Henry, *continued*
greatness, 35
impact. *See* American society; Scarcity mentality
Japanese connection, 27–30
karma/destiny, 28–29
opinion. *See* Economics; Government; Health care; Inheritance tax; Labor relations
personal leadership, 94–95
philosophy, 21
price reduction, customer reliance, 58
principles, 17–18, 21. *See also* Personal success; Individual success
scientific management (correlation), 304–305
success, Sorensen role, 60
Taylor, influence, 304–305
weaknesses, 34
Ford, Jr., Henry, 99
Ford Motor Company
blast furnaces, 164
breakthrough (1908), 4–6
corporate culture, 88–95
culture, loss, 96–101
DBR production control, 233, 234, 240–242
definition. *See* Automatic machines; Quasi-automatic machines
factories, 191
heritage, discovery, 96–97
inventory control, 229–230
Iron Mountain (sawing operation), 164
logistics system, coordination/effectiveness, 296
machinery, 263
operations, JIT nature, 297
organization
collapse (1943), 98–100
operation, 92
Piquette Avenue plant, 5, 223
product creation, single production line (usage), 16
production
classifications, 66
control, 229–230
production system, success, 235
results, 3–4
safety policy, 270
success, 8
tool standards, 247
unionization, 62, 100–101
waste reduction, principles, 177, 188
Ford Motor Company Highland Park plant, 36, 72, 95, 199
assembly lines, 242
examples, 210, 214, 223, 226–227, 230
inspectors, usage, 282
metallic fire curtains, 273
productivity, reduction, 277
transportation distance, reduction, 224
Ford Motor Company River Rouge plant, 176, 221, 225, 228, 238–239
assembly lines, 242
payroll system, 261
PPE, usage, 274–275
safety, 274
France
unemployment, level, 45
work, amount, 45
Franklin, Benjamin
influence, 327
opinion, 195. *See also* Government; Initiative; Inventory; Money; Persistence; Self-reliance; Speculators; Waste
Free lunch. *See* There Ain't No Such Thing As A Free Lunch
concept, 64–66, 124–131
illusion, 145
Freight management systems (FMSs), 192, 295–297
Friction, 7, 162, 239, 255. *See also* Lean enterprise
history, 65
suppression, 93
Frictionless marketplace, 112, 126
Fuel cell, usage, 182–186

G

Gage blocks, 13
Gage calibration, 13, 265–267
Gage capability, 265–267
Gage control, 13
Gage precision, requirement, 265
Gantt, H.L., 11, 198
GDP. *See* Gross Domestic Product
Gemba, 88, 222
kaizen, 10–11
managers, 92
General Motors, 186
Generalists, Inc., 107
Germany, work (amount), 45–46
Gilbreth, Frank B., 10–11, 146, 305
studies, 216, 307
Gilgamesh (epic), 91
Go-and-no-go gage, 260
Goldratt, Eliyahu, 11-12, 232–237
Government
efficiency/responsibility, level, 146–148

Government, *continued*
foundation, natural law (usage), 27
problem, 149–150
role, 145–153
waste, Franklin (opinion), 331
Grant, Ellsworth, 110-11
Greenhouse gases, reduction. *See* Livestock
Greenspan, Alan, 135
Gross Domestic Product (GDP)
consideration, 4
manufacturing share, 104-105
Groupthink, 89

H
HAMs. *See* High agility machines
Handicapped workers, role, 68–69
Hand-to-mouth component production, 230
Harvard School of Public Health, 155
Health care, 153–159
error-proofing, 154–157
Health management organizations (HMOs), 50, 153–154, 157–159
Heat treatment, 206
Henry and Clara Ford Hospital, 10, 153–154
Henry V
actions, description, 316–317
leadership role, 79
Henry VI, 79
Hercules, role model, 35
High agility machines (HAMs), 169
Highland Park plant. *See* Ford Motor Company
Hill, Napoleon, 89
HMOs. *See* Health management organizations
Holes, drilling vs. cutting, 166
Hoshino, Yukinori, 13
House of quality, 192, 252
Housing. *See* Employees
spending, percentage, 70
Human behavior
principles, 17
universal code, 25–27
Human resources, practices, 66–70
Huxley, Aldous, 2, 5, 51
Hygiene. *See* Workplace

I
Ieyasu, Tokugawa, 90
IG Metall (union), 45
Imai, Masaaki, 12, 88, 92, 329
definitions, 163
Imperial Mine, 70
Importance ratings, computation, 253
Inaction/indolence. *See* Ozio
Independent work groups, 219
Individual success, Ford principles, 75
Industrial espionage, 107
Industrial justice, 59–60
Industrial safety principles/practices, 270–281
Industries, power. *See* Value-adding industries
Inefficiencies, elimination, 329
Inflation
reduction, 135
relationship. *See* Unemployment
Inheritance tax, Ford opinion, 148–149
Initiative, 83–85
committees/experts, impact, 84–85
exercising, 84
Franklin, opinion, 331–332
Input, output (relationship), 65
Inspections, 258–259
aiding, 248
Inspectors, usage. *See* Ford Motor Company Highland Park plant
Institute of Medicine, 154
Interaction matrix roof, 252
Interchangeable parts, introduction, 44
Interest rates, increase, 135
Internet
increase, 286
usage, 114–115
Interplant supply system, 295
Inventory
accumulation, avoidance, 17, 201, 213
carrying costs, 116
concept, 9
control. *See* Ford Motor Company
Franklin, opinion, 330–331
impact. *See* Capital
liquidation, 125
purchase, 324
reduction, 222, 228–246
impact, 229
selling, 116
symptom, 244–246
Irwin, Bill, 38
ISO 9000, 8, 157, 276, 203, 205
auditing, 12
conscious workplace, 156
considerations, 266
consistency, 312
lighting, 279
quality systems, 153
requirement, 165. *See also* Product

Levinson back 12/3/02 11:07 AM Page 7

ISO 9000, *continued*
standard, 193
support, 267
ISO 9001
support, 67
synergism, 213, 247, 258, 265, 281
ISO 14000, 8, 270
cost, 178–188
current usage, 187–188
environmental standard, 186–187
standard, satisfaction, 3
usage, 187
Iwata, Yoshiki, 85

J
JIT. *See* Just-in-time
Job
creation. *See* Factories; Model T
division, steps, 307–309
elimination, 109
redesign, 307
security, 43
Jobs, Steven, 127
Johansson, Carl E., 13, 265
blocks, 13, 263, 266
gages, 13, 260
John Deere, 290
Johnson, Lyndon B., 145, 152
Jones, John Paul, 82
Juran, Joseph, 98
Just-in-time (JIT), 9
delivery, 243, 295
factory ordering, 116
manufacturing, 8, 128, 228–246, 295
origin, 233–234
production, 6, 192
system, 292
quantities, 295
transportation reliability, need, 242–243

K
Kaizen, 10, 30–40, 195–200. *See also* Gemba
blitz, 43, 304–305
advantage, 320
events, 304
principles, 196–197
teaching, 96
Kanban, 16
Karma, 23–25, 28–29
Keim presses, 264
Keynes, John Maynard, 79
Khan, Kublai, 35
Kingsford Products Company, 164
Kipling, Rudyard, 57–58, 201–202, 219, 314
Knacks, 198, 310
Koan (riddle), 27–28, 29
Krishna, 29, 91
Kyoto Global Warming Treaty (Kyoto Protocol), 138, 139, 142–144

L
Labor. *See* Dollar-an-hour labor; Offshore labor
communication. *See* Management/labor
costs. *See* Fixed labor costs
reduction, 306
goals, 56
leader, 57
mutual trust/commitment. *See* Management/labor
partnership. *See* Management/labor
problems, communication, 62–63
relationship. *See* Management/labor
response. *See* Taylor
Labor relations
Ford, opinion, 55
natural law, relationship, 46–47
Taylor
opinion. *See* Dysfunctional labor relations
relationship, 312–313
Large-scale production, 39
Law of the situation. *See* Situation
Layout change, principles, 309
Leadership. *See* Ford; Principle-centered leadership; Servant leadership
qualifications, Taylor citation, 81–82
role. *See* Henry V
Lean enterprise
defining, 6–18
friction, 7–8
Lean manufacturing, 108, 135, 200–201, 304–305
American invention, 8–14
general principles, 11
implications, 42–44
maxim, discussion, 100
support, 234, 258
systematization, 8
transition, 59
Leape, Lucian, 155
Learning curve concept, 246
Lehr, usage, 37
Leland, Henry M., 262
Lighting, 271. *See also* Workplace

Levinson back 12/3/02 11:07 AM Page 8

Livestock, greenhouse gases
reduction, 186-187
Lock-and-key security, 275
Lockout-tagout, 10, 275–276
Long-term competitiveness, 129, 128
Long-term results, seeking, 125
Louis XIV, reign, 137
Luddites, 42–43, 140
Ludditism, prevention, 67
Luxuries/commodities, relationship, 60

M
Machiavelli, 75–77, 80
Machines
availability, assuring, 238–239
production, 39
role, 140–141
Machining. *See* Chipless machining
Mahan, Alfred Thayer (captain), 106
Maintainability, design, 251–252
Make-to-order, 119
Malicious compliance, 42
Management. *See* Supply chain management
blame, 57
goals, 56
principles. *See* Change
rationing/cutting corners, contrast. *See* Scientific management
systems. *See* Freight management systems; Mechanistic management systems; Organic management systems
team, value, 98–99
time, value. *See* Project management
Management by Wandering Around (MBWA), 10, 93, 316–19
Management/labor
communication, 62–63
mutual trust/commitment, 57–59
partnership, 47, 56–64, 315
Managers, involvement. *See* Business
Manufacturing. *See* Green manufacturing
backbone. *See* Prosperity; Security
Britain, success, 106–107
China, success, 107–108
engineer, role, 109
prestige, 108–109
process, 22
replacement, 109–111
share. *See* Gross Domestic Product
techniques. *See* Japanese manufacturing techniques
Marketing
plan, 285
vision statement, 288–289
Markets, identification, 285–289
Mass conservation, principle, 65
Mass production, continuous improvement (usage), 39
Master Mind, 89
Materials
traceability, 165
transportation. *See* Raw materials
MBWA. *See* Management by Wandering Around
Mechanical energy, recovery, 183
Mechanistic management systems, 84
Medical savings accounts (MSAs), 157
Medicine
argument. *See* Socialized medicine
man (shaman), 89
Mehrlander, Carmie, 115
Mental condition. *See* Workers
Mergers, 131
Middlemen. *See* Non-value-adding middlemen
value addition, 113–119
Military power, backbone, 108
Miller, Lawrence, 31, 33–34
Model A, introduction, 32
Model K, introduction, 250
Model T, 250
all-terrain capability, 287
contribution. *See* Prosperity; Wealth
impact, 1
job creation, 111
success, 32, 250, 332
successor, 52
Modular designs, usage, 247
Monetary systems, impact. *See* Wealth
Money
Franklin, opinion, 333–334
makers, 50
making, 49
medium, 137
supply, 137
use, 333
Moral law, 25
Motion efficiency, 201, 216–222. *See also* Taylor
experiments, 321
principle, Ohno adoption. *See* Toyota Production System
MSAs. *See* Medical savings accounts
Muda (waste), 18, 163, 208, 255
Multifunctional parts, 248
Muri (strain), 18
Mute employees, 69
Mutual commitment, 59

N
Napster, contoversy, 119
Nasser, Jacques, 118, 229
National Cash Register, 85
National Semiconductor, 238
Natural law, 17, 21, 22–27
  absolute sovereignty of, 46
  extension, 40
  influence, 64
  principles, application, 46
  relationship. *See* Labor relations
  self-evidence/self-reinforcement, 23–25
  usage. *See* Government
  violations, 23
Navigation Acts, 106
Nazi coercion, failure, 147
Nihon Chukuko, 254
Non-lean suppliers/subcontractors, reliance, 297
Non-union workmen, oppression, 314
Non-value-added time, 140
Non-value-added work, 258
Non-value-adding activity, 210
Non-value-adding entities, 70
Non-value-adding handling, 197
Non-value-adding middlemen, 71, 142
Non-value-adding motion, 192, 214, 215
Non-value-adding overhead, 104
Non-value-adding setup times, 208, 211
Non-value-adding steps, 237
Nuts, usage, 248

O
Obedience, perpetuation, 29
Obsolescence. *See* Planned obsolescence
Occupational safety, 270–281
Offshore labor, 108, 256, 294
Ohno, Taiichi, 4, 9, 11, 12, 15–16
  approach, 223
  citation, 161
  definitions, 163
  motion efficiency principle adoption. *See* Toyota Production System
  opinion, 43
Older workers, role, 69–70
Omission, errors, 77
OPEC oil embargo (1973), 294
Opportunity, 80
Organic management systems, 87–88, 92
Organization
  collapse. *See* Ford Motor Company
  flattening, 87
  wealth, 31
Organizational barriers, destruction, 9, 10, 85–88
  recommendation, 15
Organizational behavior
  principles, 17
  universal code, 25–27
Organizational psychology, 55
Organizational structure. *See* Flat organizational structure; Porous organizational structure
Organizational success, 89
  principles, 75
Organizational transformation, 8
OSHA, 10, 178, 270, 280
Output, relationship. *See* Input
Overhead, inclusion, 127
Ozio
  contrast, 78–79
  inaction/indolence, 77
Ozone generator, 266

P
Packaging
  delivery, 267–268
  reuse, 166
Packing material, usage, 173
Padilla, James, 96
Painting, procedure, 187
Parallel processing/assembly, 192, 213
Paranoia, 98
Parsimony, economy (contrast), 61–62
Part casting operation, 255
Partnership. *See* Management/labor
  spirit, 55, 62
Paterno, Joe, 28
Patient control database, 155
Patterson, John, 85
Patton, George (general), 57, 80
PDCA. *See* Plan-do-check-act
Peanut packing, 173
Pedestrianism, 97
PENNSAFE initiative, 277
Percent tolerance (P/T) ratio, 265
Performance
  measurements. *See* Dysfunctional performance measurements
  problem, 186
Persistence, 81–83
  Franklin, opinion, 331–332
Personal duty/destiny, idea, 28–29
Personal leadership. *See* Ford
Personal protective equipment (PPE). *See* Ford Motor Company River Rouge plant
  usage, 274
Personal success, Ford principles, 75
Personal vitality, 145

Levinson back 12/3/02 11:07 AM Page 10

Per-unit production costs, dilution, 127
Peter Principle, 34
Peters, Tom, 9, 10–12, 14–15, 93, 135, 312
  recommendation, 90, 167, 85, 163
Phantom orders, creation, 129
Pillowcase manufacturing, 308–309
Piquette Avenue plant. *See* Ford Motor Company
Plan-do-check-act (PDCA) improvement cycle, 198, 312
Planned obsolescence, 51–52
Play, relationship. *See* Work
Point-of-use assembly, 268–269
Poka-yoke (error-proofing), 8, 154–157, 233, 260–261. *See also* Health care
  concept, 96
  description, 255
  incorporation, 215
  premise, 157
  principle, 268
Poor Richard's Almanac, 327–328
Porous organization, 85, 87
  creation, 9
  dichotomy, Sorensen identification, 87–88
Porous organizational structure, 14–15
Porsche, 264
Portugal, ruin, 106
Poverty
  abolishment, 3
  taxes, impact, 151–153
Power, roles, 140–141
PPE. *See* Personal protective equipment
PPG Industries, 37
PPOs, 154
Practice, deployment. *See* Best practice deployment
Pratt & Whitney, 110
Pre-constraint operations, 242
Preventive action, 281–282
Preventive maintenance, 158, 204–205
  usage, 263
Price reduction, 124
  benefit. *See* Continuous price reduction
  continuous improvement, impact, 39–40
  customer reliance. *See* Ford
  principle, 123
Price, selling, 298–300
Pricing strategy, 290–292
Principle-centered leadership, 10, 52
Private enterprise, accountability, 331
Private membership association, 73
Proactive leader, 79
Process
  capability, 263–264. *See also* Six Sigma
  changes, impact. *See* Efficiency
  simplification/improvement, 192, 254–267
Processing, variation suppression, 234–238
Process-oriented layout, 225
Product. *See* Value-adding product
  improvement, 263–264
  quality, 264–265
  traceability, ISO 9000 requirement, 155
Production
  classifications. *See* Ford Motor Company
  control. *See* Drum-Buffer-Rope production control; Ford Motor Company
  costs, 303–304
    dilution. *See* Per-unit production costs
  flow, smoothing, 16
  managers, 167
  periods, 45
Productivity
  gains, 41
  improvements, 43–44, 218, 312
    activities, 233
    methods, 8
    techniques. *See* Japanese productivity improvement techniques
  increase, 45
  reduction. *See* Ford Motor Company Highland Park plant
Profitability, 162. *See also* Cost reduction
  improvement. *See* Short-term profitability
Profits. *See* Business
  relationship. *See* Service
Progress. *See* Change
  committees/experts, impact, 84–85
Project management, time (value), 246
Prophet, aspects, 33, 34
Proportional-integral-derivative control, 262
Prosperity, 332. *See also* Economic prosperity
  manufacturing backbone, 50
  Model T, contribution, 111
  stock market relevance. *See* National prosperity
Protective apparel, 274–275
P/T. *See* Percent tolerance
Public Act 271 of 1941 (Michigan), 72
Pull system, 11

Q
QFD. *See* Quality Function Deployment
QS-9000, 265
Quality, 287. *See also* House of quality; Product; Service
  assurance methods, 281
  auditing, 282–283
Quality, *continued*
  concept, purchase, 290
  control, 281–283
  cost, 329–330
  goal, 48
  improvement methods, 8
  managers, 167
  selling, 124, 290–292
  systems. *See* ISO 9000
Quality Function Deployment (QFD), 192, 252–254
Quasi-automatic machines, Ford definition, 226

R
Rate-limiting operation, 231
Rationing, contrast. *See* Scientific management
Raw materials, transportation, 174
Real estate prices, 70
Recycling, 174–177
Reliability, 287. *See also* Service
  design, 251
Repetitive motion injuries, 276–277
Research, cutbacks (implementation), 129
Resources, utilization, 163–177
Revere, Paul, 59
Richard II, 77
Richard III, 77
Ridge, Thomas (governor), 277
Rigid system, flexible method (contrast), 88
River Rouge plant. *See* Ford Motor Company
Rivets, 248
Road locomotives patent, 82
Rolling blackouts, 141
Royal Automobile Club, 263
Royal College of Surgeons, 154

S
Safeguards, absence, 270–271
Safety. *See* Occupational safety
  committees, 277–278
  principles/practices. *See* Industrial safety principles/practices
  tradeoffs. *See* Performance
Sales per customer increase, continuous improvement (usage), 123
Sam's Club, 72
Sash enclosures, 16
Saxe, John Godfrey, 7
Scarcity mentality
  Covey description, 41
  Ford/Taylor impact, 42
Schwab, Charles, 38
Scientific management, 42, 200, 301–305
  correlation. *See* Ford
  element, 50
  outgrowth, 108
  rationing/cutting corners, contrast, 157–158
Scrap, 232
  cars, 176
  paper, conversion, 166
  wood, 176
Securities and Exchange Commission (SEC) regulations, 126
Security. *See* Lock-and-key security
Selden patent, 22
  lawsuit (1909), 82
Self-check gages, 244
Self-check systems, 192, 255, 258–260, 263
  usage, 265
Self-limiting paradigm, 41
Self-reliance, 75, 81
  Franklin, opinion, 331–332
Selling. *See* Price; Quality
Semiconductor market, cycle, 133
Seppuku, 97
Serapis, 82
Service, 47–52. *See also* Trouble-free service
  profits, relationship, 49–50
  quality, 51–52
  reliability, 51–52
SFM. *See* Synchronous flow manufacturing
Shewhart, Walter, 12, 14, 193
Shingo, Shigeo, 9, 12, 85, 177, 187, 200, 233, 258–259
  comparisons, 239
  definitions, 208
  ideas, 162, 208, 212
Sho dan (black belt), 31
Shopping mall, usage. *See* Used shopping mall
Shortage chasers, 230
Short-term costs, reduction, 128
Short-term profitability, improvement, 126
Silver salts, recovery, 166

Levinson back 12/3/02 11:07 AM Page 12

Sinclair, Upton, 100
Single-minute exchange of die (SMED), 6–7, 192, 200–201, 207, 208–213, 233
  examples, 210–211, 214
  usage, 11–14, 15
Single-piece flow, value, 206
Single-unit flow, merits, 206
Single-unit processing, 192, 200, 205–208
Situation, law, 88
Six Sigma, 12
  process capability, 13
  project, 268
Slater, Samuel, 107
Sloan, Alfred, 34
Small lot processing, 192, 200, 205–208
SMED. *See* Single-minute exchange of die
Smoke soot smudge (3S), 201
Smokestacks, examination, 180–181
Smorgen Steel Group Ltd., 164
Snap fits, usage, 248
Social morality, 26
Social Security system, pyramid scheme, 150
Socialized medicine, argument, 158–159
Society, serving, 49
Soldiering, 42, 45
  defined, 41
  prevention, 67
SOPs. *See* Standard operating procedures
Sorensen, Charles E., 5, 92–94, 165
  accusation. *See* Dodge Brothers
  competition, 76
  Henry Ford man, description, 90–91
  identification. *See* Porous organization
  opinion. *See* Incompetence
  remarks, 38, 149, 310
  retirement, 98–99
  role, 89–90. *See also* Ford
  writings, 49
Spaghetti diagram, 224
Spain, ruin, 106
Spanish Armada, 106
SPC. *See* Statistical process control
Speculators, Franklin (opinion), 333–334
Stakeholders, business (serving), 33, 47
Standard operating procedures (SOPs), 311
Standardization, 97, 199–200
  description, 197
  support. *See* Continuous improvement
Statistical process control (SPC), 12, 14, 112, 193, 205
  reactivity, 263
  usage, 262
Stevens, Anne, 1
Stick-to-it-iveness, 332
Stock market
  increase/decrease, 135
  performance, 126
  reaction, 138
  relevance, 135–138
Stockholders, 125, 136
  demand, 65
  impact. *See* Business
Stop-and-start actions, 213
Stores. *See* Employees
  usage, principles, 70–73
Strain. *See* Muri
Strike. *See* UPS
  losers, 63–64
Success, 30. *See also* Ford Motor Company; Model T
  components, 113
  danger, 32
  failure, relationship, 332
  impact, 31
  usage. *See* Change
Suction systems, 16
Supplier. *See* Offshore supplier
  development, 285, 297–298
  relationships, 285
Supplier/customer, relationship, 77
Supply chain
  built-in waste, 113
  management, 131, 244, 285, 292–298
Suvorov, Aleksandr V. (field marshal), 80, 92, 246
Synchronization, model, 16
Synchronous flow manufacturing (SFM), 86, 201, 206, 245
  production control, 241
System Company, 204, 302

T

Tag and flag system, 276
Tagout. *See* Lockout-tagout
Takt time, concept, 16
TANSTAAFL. *See* There Ain't No Such Thing As A Free Lunch
Tao (the Way), 21
Task completion times, 237
Task study and redesign, 309
Task subdivision, 201, 216–222
Tax
  Ford, opinion. *See* Inheritance tax
  impact. *See* Poverty
Taylor, Frederick Winslow, 11-12, 198, 301
  citation. *See* Leadership
  impact. *See* Scarcity mentality

influence. *See* Ford
methods, labor response, 315
motion efficiency, 305–309
opinion, 191. *See also* Business; Dysfunctional labor relations
principle, 112
relationship. *See* Labor relations
Taylorism, 199
truth, 309–319
Team-oriented problem solving, eight disciplines (TOPS-8D), 245
Tear-down
room, 254
usage, 250
Textile/Clothing Technology Corp., 115
Theory of Constraints (TOC), 11, 231–233
There Ain't No Such Thing As A Free Lunch (TANSTAAFL), 45, 46, 65, 124
Thermodynamics, laws, 182–183
Third-party logistics systems (3PLs), 295
Tiananman Square, 108
Tickler system, 205
Time
losses, irrecoverability, 232, 324
value. *See* Project management; Transportation
waste, 232
Time-per-unit, 16
Tokimune, Hojo (general), 29
Tool efficiency, improvement, 192, 213–215
Tooling changeovers, 15
TOPS-8D. *See* Team-oriented problem solving, eight disciplines
Toranaga, Yoshi, 90
Total Productive Maintenance (TPM), 2
Total quality management (TQM), 193
Towne, Henry, 112
Toyota, DBR production control, 240–242
Toyota Production System (TPS), 4, 11, 43
comparison. *See* Ford Motor Company
Ford/Taylor motion efficiency principle, Ohno adoption, 218
TPM. *See* Total Productive Maintenance
TQM. *See* Total quality management
Transportation. *See also* Raw materials
activities, time (value), 293–295
distances, reduction, 11. *See also* Ford Motor Company Highland Park plant
reliability, need. *See* Just-in-time
times, 245
waste, 17, 173–174
Trine, Ralph Waldo, 80, 333
Trouble-free service, 51
Truck sharing, 295
Twain, Mark, 2, 110
Tzu, Sun, 26, 46, 96

U
Unclean conditions, 271
Unemployment
efficiency, impact, 42
inflation, relationship, 137–138
level. *See* France
UniCo (warehouses), 331
Unions, 314
blame, 57
leaders, 71, 313
shop work rules, 67
Unitary machines, 192, 222–227
concept, support, 238
United States Steel, 38
United States, warning, 104–112
Universal code. *See* Human behavior; Organizational behavior
Universal demand, 286
Unplanned machine downtime, 238
Unterkunft, 80
UPS, strike (1997), 64
U.S. Constitution, 27
U.S. Postal Service, 146

V
Value
addition, 113. *See also* Car dealerships; Middlemen
government creation, 145
perception, 103
selling, 120
Value-adding industries, power, 3
Value-adding operation, 256
Value-adding product, 183
Value-adding workplace, 82
Variation/accuracy, 192, 261–263
Vertical integration, 35, 131
Vibration, problem, 261–263
Vietnam War, 145
Virtù (vitality), 75–78, 82
leader, 79
Vishnu, 29
Vision statement. *See* Marketing
Visual controls, 11, 227–228. *See also* D.T. & I. Railroad
Visual workplace, 227–228
Vitality. *See* Virtù
von Bismarck, Otto, 163
von Clausewitz, Carl (General), 7, 79, 162
von Moltke, Helmuth, 82
von Steuben, Baron, 209

W
Wages
advantages, 60, 64
delivery, 43
earners/spenders, 60
earning, 219
erosion. *See* World War I
increase, 4, 48. *See also* Worker
Wal-Mart, 105
Wars of the Roses, 65, 78
Waste. *See* Muda; Supply chain; Transportation
avoidance, 329–330
elimination, 18, 161–189
forms, 63
Franklin, opinion, 328–331. *See also* Government
motion, elimination, 257–258
progression, 171–172
reduction. *See* Ford Motor Company
treatment, 187
Wasting energy, 139
Water gas, 182
Wealth. *See* Organization
creation, 3
monetary systems, impact, 137
Model T, contribution, 111
resources, unit, 66
Welfare, 149
Welles, Orson, 35
Wellesley, Arthur (Duke of Wellington), 317
Wells, H.G., 34
Wheatley, Frank, 83
White mutiny, 42
Whitman, walt, 82–83
Whitney, Eli, 44
Whiz Kids, 99
Wibel, A.M., 98, 99
Wills, C. Harold, 9
WIP. *See* Work-in-process
Wiremold, 243
Wires, avoidance, 249
Wong, Tai Gong, 25
Woolley, Edward Mott, 306–307
Work
amount. *See* France; Germany
arrival times, suppression, 234–238
cells, 11, 217, 222–224, 225
elasticity, 323
employee movement, 218
groups. *See* Independent work groups
motion, testing, 213
play, relationship, 93–94
rules, restrictions, 67
subdivision, 216
Workdays, missing, 70
Worker-initiated improvements, 311
Workers. *See* Frontline worker; Production
clothing, usage, 271
demand, 65
empowerment, 199
experiment. *See* Bedridden workers
goggles, usage, 271
involvement. *See* Business
mental attitude, 320
mental condition, 272
products, selling, 77
relationship. *See* Factories
role, 55. *See also* Handicapped workers; Older workers
tool delivery, 220
wages, increase, 124
Work-in-process (WIP), 192
levels, usage, 245
Workmanship, payment, 61
Workplace. *See* Value-adding workplace; Visual workplace
comfort/hygiene, 278–279
dehumanizing, 194
departmental barriers, erasing, 87
lighting, 279–281
Workstations, distances, 17
World War I, 314
depression, 134
wage erosion, 71
World War II, 269
Ford Motor Company, experience, 99
success, 4–6

X
Xerox, copiers, 247–248

Y
Yamamoto, Isoruku (Admiral), 4–5
Yes men, 90–91

Z
ZBP. *See* Zero base pricing
Zen goal, 28
Zen riddle, Ford answer, 29–30
Zero base pricing (ZBP), 297
Zero Emission Coal Alliance (ZECA), 185

Levinson back 12/3/02 11:07 AM Page 15

Levinson back 12/3/02 11:07 AM Page 16